C-4

FRONTISPIECE.—Viridian Dacnis, Mielero Esmeraldino, *Dacnis viguieri*.

QL
687
W54
Pt. 4
BIRDS v. 2

SMITHSONIAN MISCELLANEOUS COLLECTIONS

VOLUME 150, Part 4

THE BIRDS OF THE REPUBLIC OF PANAMÁ

Part 4.—Passeriformes:
Hirundinidae (Swallows) to
Fringillidae (Finches)

By
ALEXANDER WETMORE
Research Associate (Deceased)
Smithsonian Institution

ROGER F. PASQUIER
International Council for Bird Preservation
Smithsonian Institution

AND

STORRS L. OLSON
Curator, Division of Birds
Smithsonian Institution

SMITHSONIAN INSTITUTION PRESS
City of Washington
1984

Copyright © 1984 by the Smithsonian Institution. All rights reserved.
Published in the United States by the Smithsonian Institution Press.

Library of Congress Cataloging in Publication Data
(Revised for volume 4)

Wetmore, Alexander, 1886—

The birds of the Republic of Panama.

(Smithsonian miscellaneous collections ; v. 150)

Pt. 4 by Alexander Wetmore, Roger F. Pasquier, and
Storrs L. Olson.

Vols. 1-2: Publication 4617, 4732.

Includes bibliographical references.

Supt. of Docs. no.: SI 1.2:B53/2/pt.4

CONTENTS: 1. Tinamidae (tinamous) to Rynchopidae
(skimmers).—pt. 2. Columbidae (pigeons) to Picidae
(woodpeckers).—[etc.]—pt. 4. Order Passeriformes,
suborder Passeres, Hirundinidae (swallows) to Fringillidae
(finches).

1. Birds—Panama—Collected works. I. Pasquier,
Roger F. II. Olson, Storrs L. III. Title. IV. Series.
Q11.S7 vol. 150, etc. 598.297287 66-61061
ISBN 0-87474-122-X (v. 3)

Part 1 of *The Birds of the Republic of Panamá* by Dr.
Alexander Wetmore was published by the Smithsonian
Institution in 1965 as volume 150 of its *Miscellaneous
Collection* series. It covers in systematic sequence the
Tinamidae (Tinamous) through the Rynchopidae
(Skimmers).

Part 2 of *The Birds of the Republic of Panamá* by Dr.
Alexander Wetmore was published by the Smithsonian
Institution in 1968 as volume 150, Part 2, of its *Miscel-
laneous Collections* series. It covers in systematic sequence
the Columbidae (Pigeons) through Picidae (Wood-
peckers).

Part 3 of *The Birds of the Republic of Panamá* by Dr.
Alexander Wetmore was published by the Smithsonian
Institution in 1972 as volume 150, Part 3, of its *Miscel-
laneous Collections* series. It covers in systematic sequence
the Dendrocolaptidae (Woodcreepers) to Oxyruncidae
(Sharpbills).

CONTENTS

	Page
Introduction	1
Acknowledgments	3
Order PASSERIFORMES	4
Family Hirundinidae: Swallows, Golondrinas	4
Family Corvidae: Crows and Jays, Cuervos y Urracas	41
Family Cinclidae: Dippers, Mirlos Acuáticos	52
Family Troglodytidae: Wrens, Cucaracheros	55
Family Mimidae: Thrashers, Mockingbirds	124
Family Turdidae: Thrushes, Zorzales	128
Family Ptilonotidae: Solitaires and Silky-flycatchers, Solitarios y Dorales Sedosos	165
Family Sylviidae: Gnatwrens and Gnatcatchers, Cazajenes ..	177
Family Motacillidae: Pipits and Wagtails, Bisbitas y Lavanderas	190
Family Bombycillidae: Waxwings, Chinitos	193
Family Ploceidae: Weaver Finches, Pinzones Tejedores.....	196
Family Sturnidae: Starlings, Estorninos	196
Family Vireonidae: Vireos, Peppershrikes and Shrike-Vireos, Vireos y Follajeros	196
Family Parulidae: Wood Warblers, Reinitas	242
Family Icteridae: Blackbirds and Orioles, Turpiales y Chacareros	332
Family Thraupidae: Tanagers, Tangaros, Tanagras y Fruteros	382
Family Coerebidae: Honeycreepers, Mieleros	498
Family Fringillidae: Finches, Gorriones y Pinzones	526
Appendix: Addenda to Volumes 1-3	623
Index	639

LIST OF ILLUSTRATIONS

FRONTISPIECE—Viridian Dacnis, Mielero Esmeraldino,
Dacnis viguieri.

FIGURE

1. Mangrove Swallow, Golondrina Manglera, <i>Tachycineta albilinea</i>	9
2. White-thighed Swallow, Golondrina Muslos Blancos, <i>Neochelidon tibialis minima</i>	30
3. Portion of outer primary feather of the Rough-winged Swallow, Golondrina Ala de Sierra, <i>Stelgidopteryx ruficollis</i> , showing hooklike leading barbs.	37
4. Black-chested Jay, Chochó, <i>Cyanocorax affinis zeledoni</i>	46
5. Silvery-throated Jay, Urraca Garganta de Plata, <i>Cyanolyca argentigula argentigula</i>	49
6. American Dipper, Mirlo Acuático Americano, <i>Cinclus mexicanus ardesiacus</i>	53
7. Black-capped Donacobius, Paralauta de Agua, <i>Donacobius atricapillus brachypterus</i>	58
8. White-headed Wren, Cucarachero Cabeciblanco, <i>Campylorhynchus albobrunneus</i>	61
9. Band-backed Wren, Cucarachero Listado, <i>Campylorhynchus zonatus costaricensis</i>	65
10. Bay Wren, Cucarachero Cabecinegro, <i>Thryothorus nigricapillus</i>	85
11. White-breasted Wood-wren, Cucarachero Pechiblanco, <i>Henicorhina leucosticta</i>	110
12. Slaty-backed Nightingale-thrush, Zorzal Pizarreño, <i>Catharus fuscater</i>	154
13. Black-faced Solitaire, Solitario Carinegro, <i>Myadestes melanops</i>	168
14. Long-tailed Silky-flycatcher, Capulinero Colilargo, <i>Ptilogonys caudatus</i> , male	173
15. Tropical Gnatcatcher, Cazajén Tropical, <i>Poliophtila plumbea</i> , male (below), female (above)	179
16. Yellowish Pipit, Bisbita Amarillenta, <i>Anthus lutescens parvus</i> .	191
17. Cedar Waxwing, Chinito Cedroso, <i>Bombycilla cedrorum</i>	195
18. Rufous-browed Peppershrike, Pájaro Perico, <i>Cyclarhis gujanensis</i>	199
19. Green Shrike-Vireo, Follajero Verde, <i>Smaragdolanus pulchellus</i> .	205
20. Yellow-winged Vireo, Vireo Aliamarillo, <i>Vireo carmioli</i>	212
21. Scrub Greenlet, Verdecillo Rastrojero, <i>Hylophilus flavipes</i>	238
22. Black-and-white Warbler, Reinita Trepedora, <i>Mniotilta varia</i> , male	247

23. Yellow Warbler, Reinita Mangletera, <i>Dendroica petechia</i> , a male of the <i>erithachorides</i> (Mangrove Warbler) group.	260
24. Collared Redstart, Candelita Collareja, <i>Myioborus torquatus</i> ...	312
25. Buff-rumped Warbler, Reinita de Rabadilla Anteada, <i>Basileuterus fulvicauda</i>	326
26. Zeledonia, Zeledonia, <i>Zeledonia coronata</i>	331
27. Montezuma Oropendola, Chacarero de Montezuma, <i>Psarocolius montezuma</i>	337
28. Chestnut-headed Oropendola, Chacarero Común, <i>Psarocolius wagleri</i> , male	342
29. Giant Cowbird, Vaquero Gigante, <i>Scaphidura oryzivora</i> , male ..	356
30. Bronzed Cowbird, Vaquero Bronceado, <i>Molothrus aeneus aeneus</i> , female (left), male (right)	359
31. Yellow-tailed Oriole, Parao Coliamarillo, <i>Icterus mesomelas</i> ...	370
32. Swallow-Tanager, Azulejo Golondrina, <i>Tersina viridis occidentalis</i> , male	389
33. Spot-crowned Euphonia, Tanagra Coronimanchada, <i>Euphonia imitans</i> , male (above), female (below)	406
34. Spangle-cheeked Tanager, Tangaro Carirrayado, <i>Tangara dowii</i>	432
35. Crimson-backed Tanager, Sangretero Común, <i>Ramphocelus dimidiatus</i> , male (above), female (below)	441
36. Rosy Thrush-Tanager, Frutero Rosaceo, <i>Rhodinocichla rosea eximia</i>	484
37. Black-and-yellow Tanager, Frutero Orinegro, <i>Chrysothlypis chrysomelas</i> , male (below), female (above)	488
38. Bananaquit, Mielero Platanero, <i>Coereba flaveola</i>	501
39. Slaty Flower-piercer, Mielero Picaflor, <i>Diglossa baritula plumbea</i> , male	506
40. Scarlet-thighed Dacnis, Mielero Patirrojo, <i>Dacnis venusta</i> , male	523
41. Black-headed Saltator, Saltator Cabecinegro, <i>Saltator atriceps lacertosus</i>	531
42. Buff-throated Saltator, Saltador Gargantanteado, <i>Saltator maximus</i>	533
43. Streaked Saltator, Saltador Pechirayado, <i>Saltator albicollis</i>	536
44. Slate-colored Grosbeak, Piquigruoso Apizarrado, <i>Pitylus grossus saturatus</i> , male	545
45. Blue-black Grassquit, Arrocero Piquiagudo, <i>Geospiza jacarina splendens</i> , female (left), males (right)	558
46. Distribution of the races of <i>Sporophila americana</i> in Panamá (from Olson, 1981)	567
47. Volcano Junco, Junco del Volcán, <i>Junco vulcani</i>	610
48. Rufous-collared Sparrow, Gorrión de Collar Rojizo, <i>Zonotrichia capensis costaricensis</i>	612
49. Wedge-tailed Grass-finch, Pinzón Yerberero Coliacuñado, <i>Emberizoides herbicola hypochondriacus</i>	617

THE BIRDS OF THE REPUBLIC OF PANAMÁ
PART 4: ORDER PASSERIFORMES, SUBORDER
PASSERES, HIRUNDINIDAE (SWALLOWS)
TO FRINGILLIDAE (FINCHES)

BY ALEXANDER WETMORE

Research Associate, Smithsonian Institution (Deceased)

ROGER F. PASQUIER

*International Council for Bird Preservation,
Smithsonian Institution*

and

STORRS L. OLSON

Curator, Division of Birds, Smithsonian Institution

INTRODUCTION

As with so many ambitious works in ornithology, Alexander Wetmore's *Birds of the Republic of Panamá* unfortunately required more than a lifetime to complete. Those of us around the Division of Birds who were privileged to work with Dr. Wetmore could only hope that he would live to see his magnum opus finished, but even his indefatigable constitution inevitably gave way to the attrition of time. He was 86 years old in 1972, when Part 3 appeared, and it is a tribute to his endurance that he proceeded as far with the manuscript for Part 4 as he did. When his health failed, he had prepared accounts for almost all of the "ten-primaried oscines." Alexander Wetmore died at his home on December 7, 1978, at the age of 92 after a long illness.

Dr. Wetmore's colleague and friend of long standing, S. Dillon Ripley, Secretary of the Smithsonian Institution, approached me, when it became certain that Dr. Wetmore would be unable to continue his studies, to inquire into the feasibility of completing Part 4 of *Birds of the Republic of Panamá*. I agreed to be responsible for the identification of specimens and for systematic decisions, provided someone else could be found to compile the species accounts and descriptions that remained to be done. Happily for all concerned, we were able to enlist the services of Mr. Roger F. Pasquier, who has attended this task with determination and assiduity.

In addition to the large collections that Dr. Wetmore himself had made in Panamá, he worked simultaneously upon extensive collections

from Colombia obtained by M. A. Carriker. When I began work on the project, there still remained thousands of specimens of nine-primaried oscines and a few other families from Panamá and Colombia that had not been identified or incorporated in the main collections. I have evaluated the geographic variation in each of these remaining species and have made all of the decisions about subspecific limits. In some instances I was not able to recognize taxa that are currently held to be valid, whereas in others I was able to discern undescribed subspecies. Most major innovations I have proposed elsewhere in technical journals. I have made no attempt to try to guess how Dr. Wetmore might have interpreted each species; therefore, the systematics used in the section from the Ptiligonatidae onward is mine alone. An exception is made for the subspecies of North American migrants, where I have deferred to the judgment of my colleagues John W. Aldrich, M. Ralph Browning, and Allan R. Phillips, each of whom has been consulted regarding particular taxa.

Any sequence of species is bound to be to some extent arbitrary. Because Ridgely (1976) followed the sequence that Dr. Wetmore had used in the first three volumes of this series, we have simply adopted the sequence of species in Ridgely for the present volume, in order to make the two works compatible. Exceptions are *Donacobius*, now placed at the beginning of the Troglodytidae, *Myadestes*, which appears in the Ptiligonatidae, and *Spiza*, which now leads off the Icteridae. The artificial family "Coerebidae" we have placed after the Thraupidae, in which family most of the coerebid genera properly belong. Although we have included the Cyclarhidae and Vireolaniidae in the Vireonidae, and the Zeledoniidae in the Parulidae, this has not affected the sequence of species.

As mentioned, Dr. Wetmore had completed his studies on the taxa up to the Ptiligonatidae, and this portion of the text we have attempted to leave as intact as possible, although the effort has been made to include information published since the manuscript was originally completed. Mr. Pasquier has assembled the species accounts from the field notes and bibliographic index left by Dr. Wetmore and from the subsequent literature. Because so much of the information comes directly from Dr. Wetmore's field notes, the first person singular has been retained throughout, which also conforms with the first part of the volume, written by Dr. Wetmore alone. In places I have interjected my own comments, these being initialled and set off in brackets. Citations of "*in litt.*" refer to correspondence received by either Pasquier or Olson, unless indicated otherwise. From the Ptiligonatidae onward, all

descriptions and measurements were made by Mr. Pasquier. Spanish names through the Ptiligonatidae are from Dr. Wetmore's manuscript, with occasional modification by Eugene Eisenmann; the remaining Spanish names were kindly provided by Drs. Pedro Galindo and Eustorgio Mendez of the Gorgas Memorial Laboratory in Panamá. Although the Canal Zone no longer exists as a political entity, we have continued to use this designation to reflect the localities that appear on specimen labels and to be consistent with the remainder of this series.

Several species belonging to families treated in the first three volumes have subsequently been found in Panamá for the first time. Accounts of these species appear in an appendix. As in the earlier volumes, accounts of species whose presence in Panamá has not been supported by specimens are bracketed, and literature citations appear within the text. We have resorted so frequently to Ridgely's indispensable *Guide to the Birds of Panama* (Princeton University Press, Princeton, N. J., 1976), that this reference is cited simply as "Ridgely, 1976," with the appropriate page number.

Dr. Wetmore originally intended to include a complete bibliography as well as an account of the history of ornithology in Panamá, but we have not attempted to provide either and have settled simply for finishing the species accounts. A gazetteer is in preparation to be published separately. As we could not hope to emulate the devotion that Dr. Wetmore invested in the production of the first three volumes in this series, we can only trust that the ultimate result will be judged better than nothing at all.

ACKNOWLEDGMENTS

We are especially indebted to the late Eugene Eisenmann and to Robert S. Ridgely, who read over drafts of the manuscript and used their special knowledge of Panamanian birds to suggest many valuable alterations and additions. We have also had the pleasure of consulting frequently with Mrs. Alexander Wetmore concerning various aspects of the production of this volume. Further information and specimens that were of use in the preparation of this volume were provided by John Farrand, Jr., John W. Fitzpatrick, Pedro Galindo, Frank B. Gill, John W. Hardy, C. Lynn Hayward, Ned K. Johnson, Lloyd F. Kiff, Wesley E. Lanyon, Marcy Lawton, Eustorgio Mendez, John P. O'Neill, Kenneth C. Parkes, Allan R. Phillips, Ralph W. Schreiber, Robert W. Storer, and Melvin A. Traylor, to all of whom we remain indebted.

Although many of the text drawings for this volume had already

been executed by the late Walter Weber, certain prominent taxa were lacking. We were fortunate to have Guy Tudor to remedy the deficiencies and also to render the color frontispiece. Finally, it should be recognized that were it not for the vigorous support and warm encouragement of S. Dillon Ripley, this volume would never have been completed.

STORRS L. OLSON
Smithsonian Institution
Washington, D. C.
April 1982

Order PASSERIFORMES

Family HIRUNDINIDAE: Swallows, Golondrinas

The swallow family, almost worldwide in its distribution, has 11 species found regularly in Panamá. All are birds of active flight that feed on insects captured mainly on the wing. Winter migrants from the north include 6 kinds, one of them, the Rough-winged Swallow, also represented by a local race that nests widely through the Isthmus. Two others, less numerous, are recorded as visitors from South America during the months of southern winter, one of them—the Blue-and-white Swallow—also with a resident subspecies in the western highlands. The Southern Martin of southern South America is definitely known from a single specimen record in eastern San Blas. The Cave Swallow is reported only from a specimen of uncertain history.

Migrant flocks of swallows during the months of northern winter may include large numbers of a single kind, but it is usual to see 2 or more species in mixed company, joined where insects are abundant through this common source of food. While most common in the lowlands, swallows may be found in open lands at any elevation. The northern migrants, especially the Barn Swallow, most abundant in western Panamá, often gather at dusk in large groups to sleep in growths of rushes in marshy areas or in sugarcane. Mixed with others of the family, they range in companies through the day. The Brown-chested Martin, a southern season migrant, late April to October, from Brazil and Argentina, gathers at night to sleep in trees (at least in its breeding range) in large assemblages. It appears that this species, now common, may have extended its winter range to Panamá within recent years, as it was not reported by the early naturalists who made collections and observations in its present isthmian range.

KEY TO SPECIES OF HIRUNDINIDAE

1. Back brown, no trace of blue..... 2
Back steel blue or green..... 5
2. Undersurface entirely sooty brown, except thighs.
White-thighed Swallow, *Neochelidon tibialis minima*. p. 29
Undersurface partially white..... 3
3. Outer edge of outermost primary serrated; no distinct breast band.
Rough-winged Swallow, *Stelgidopteryx ruficollis*. p. 36
Outer edge of outermost primary entire; distinct dark breast band..... 4
4. Throat white, total length 125 mm or less.
Bank Swallow, *Riparia riparia riparia*. p. 5
Throat white, total length 155 mm or more.
Brown-chested Martin, *Progne tapera fusca*. p. 27
5. Back bright metallic green.
Violet-green Swallow, *Tachycineta thalassina lepida*. p. 11
Back entirely or partly steel blue..... 6
6. Undersurface cinnamon-rufous.
Barn Swallow, *Hirundo rustica erythrogaster*. p. 13
Undersurface white or steel blue..... 7
7. Rump buff to brown.
Cliff Swallow, *Petrochelidon pyrrhonota*. p. 14
Rump steel blue or white..... 8
8. Rump white.
Mangrove Swallow, *Tachycineta albilinea*. p. 8
Rump dark..... 9
9. Throat white..... 10
Throat steel blue or with brown..... 11
10. Larger, total length 130-140 mm.
Tree Swallow, *Tachycineta bicolor*. p. 7
Smaller, total length 110-125 mm.
Blue-and-white Swallow, *Notiochelidon cyanoleuca*. p. 32
11. Undersurface steel blue.
Purple Martin, *Progne subis*,* male. p. 22
Undersurface brown and white..... 12
12. Forehead feathers tipped gray or whitish.
Purple Martin, *Progne subis*,* female. p. 22
Forehead steel blue or brown.
Gray-breasted Martin, *Progne chalybea chalybea*. p. 19

**RIPARIA RIPARIA RIPARIA (Linnaeus): Bank Swallow,
Golondrina Barranquera**

Hirundo riparia Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 192. (Sweden.)

Small; undersurface white, with a distinct grayish brown band across the lower foreneck and upper breast.

*There is also one specimen record of the Southern Martin, *Progne elegans*, from Panamá. For comparison with *P. subis* see text, p. 25.

Description.—Length 115-125 mm. Adult (sexes alike), upper surface of body, including side of head, and tail grayish brown; forehead slightly paler than crown; back also usually somewhat paler; scapulars, tertials, rump, and upper tail coverts with lightly marked paler margins; wings, including coverts, darker (blackier); undersurface, including sides and undertail coverts, white; a broad band of a grayish brown across the foreneck and upper breast, continued laterally on the upper sides.

Immature, rump, upper tail coverts, tertials and wing coverts tipped with cinnamon-buff; chest band also with paler tips.

Measurements.—Males (10 from New Jersey, Rhode Island, Iowa, Nevada, and Alaska), wing 99.7-105.7 (102.0), tail 47.0-51.7 (49.1) culmen from base 8.0-8.9 (8.3), tarsus 10.0-11.1 (10.4) mm.

Females (10 from New Jersey, District of Columbia, Louisiana, Kentucky, Illinois, Idaho, and Ontario), wing 94.4-102.1 (98.0), tail 42.6-49.6 (47.6), culmen from base 7.0-8.7 (7.8), tarsus 9.9-11.7 (10.6) mm.

Winter visitor from the north, September to April, found irregularly, often with flocks of other swallows. The first fall migrants may appear early, as Ridgely (*in litt.*) reported 2 at El Llano, eastern Province of Panamá on August 2, 1974, Arbib and Loetscher recorded 1 at Gatún, Canal Zone, August 26, 1934, and Eisenmann reported some seen with other swallows on the savannas of Coclé, September 1, 1954. There are numerous records through September and October, when they appear still to be in southward passage. Specimens in the British Museum were taken by H. J. Kelsall at sea in the Gulf of Panamá on October 4 and 25, 1924. Griscom recorded 3 taken October 2, 6, and 17, 1930, at Puerto Obaldía on the eastern San Blas coast.

A few may be seen through the winter period, as Eisenmann recorded several at Playa Coronado, November 25, 1962, and Jewel saw them in the Canal Zone on November 30, 1911, and February 22, 1912. The latter date may mark the beginning of the migration northward, during which lesser numbers are recorded in March and April. Late dates of small numbers, presumably stragglers, are reported for May 11, 15, 22, 27 (Ambrose, Ridgely, N. G. Smith) and June 3, 1961 (Gatún Dam, Ambrose, 10 birds). On March 14, 1944, I noted several over the Gulf of Panamá, in crossing from Isla San José to Balboa. Griscom recorded 10 on March 8, 1927, a mile offshore from Cabo Garachiné. Two males in the Hancock collections of the Los Angeles County Museum were collected April 27, 1939, from the deck of the yacht *Velero III* in Bahía Caledonia, on the eastern San Blas coast.

Usually Bank Swallows are noted in company with other migrants of the family, less often alone in groups of up to 100 individuals. During the winter of 1975-76, a year of exceptional swallow flights in Panamá, Ridgely and J. J. Pujals noted about 25 on January 27 at Tocumen, eastern Province of Panamá, with thousands of Barn Swallows that were definitely not migrating. P. Donahue saw 2 on January 2, 1980, at Aguadulce, Coclé (Eisenmann *in litt.*).

TACHYCINETA BICOLOR (Vieillot): Tree Swallow; Golondrina Bicolor

Hirundo bicolor Vieillot, Hist. Nat. Ois. Amer. Sept., vol. 1 (1807), 1808, p. 61, pl. 31. (New York.)

Medium size; undersurface white; adult, above steel blue; immature, duller, browner above; differs from the Mangrove Swallow in lack of white on upper surface, and larger size.

Description.—Length 130-140 mm. Male, upper surface, including lesser wing coverts, greenish steel blue; middle wing coverts black, edged with greenish to steel blue; rest of wings and tail dusky; lores black; undersurface white; axillars and underwing coverts brownish gray; edge of wing white.

Female, similar but usually duller colored above; breast in some washed with brownish gray.

Immature, upper surface dark mouse gray; usually with breast washed with grayish brown; tertials, and in some individuals, outer upper tail coverts, edged narrowly with white to grayish white.

Measurements.—Males (10 from Florida, winter), wing 115.0-125.2 (118.4), tail 52.1-58.0 (54.7), culmen from base 9.0-11.2 (10.2), tarsus 12.0-14.4 (13.1) mm.

Females (10 from New York, Florida, winter, spring), wing 108.8-117.0 (112.2), tail 47.8-53.6 (51.5), culmen from base 8.2-10.9 (9.2), tarsus 11.1-13.2 (12.3) mm.

Winter migrant from the north; irregular, recorded chiefly in the Caribbean coastal lowlands of western Bocas del Toro, and in the Canal Zone.

The Tree Swallow, an abundant species over a wide range in the north, is common during the winter months south to eastern Honduras. Farther south, along the eastern coast of Central America, it is little known.

On January 17, 1958, more than 100 Tree Swallows ranged with other swallows over open lands partly flooded from recent rains near Changuinola, Bocas del Toro. I collected a male there on March 4

from several flying with Barn and Rough-winged Swallows. In the Canal Zone, Eisenmann on February 1, 1973, found a small flock near Gamboa, and on February 4, a larger group of 200-300 at the Gatún Dam spillway. On February 16, 1969, Ridgely (1976, p. 259) photographed Tree Swallows that were part of a flock of 225 at the Gatún Dam. In the early months of 1975 and of 1976 flocks were seen in various locations in the Canal Zone; Ridgely (*in litt.*) found as many as 600 at La Jagua on January 27, 1976. The latest date for which the species is recorded in Panamá is April 5, when in 1975 Eisenmann (*in litt.*) and others saw 6 (2 adults) at Gatún Lake.

Tree Swallows are not found in Panamá every year, but the species has recently been seen in northern Colombia (20 at Salamanca National Park, Magdalena, February 6, 1977, by Ridgely) and in northern Venezuela (at Chichiriviche Lagoon, Falcón, by P. Alden in 1972 and 1976), suggesting that they often travel farther south than was previously known.

**TACHYCINETA ALBILINEA (Lawrence): Mangrove Swallow,
Golondrina Manglera**

FIGURE 1

Petrochelidon albilinea Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, May 1863, p. 2. (Atlantic slope, near the Panama Railroad, Canal Zone, Panamá.)

Small; undersurface, rump, line above lores, and tips of secondaries white.

Description.—Length 105-115 mm. Adult (sexes alike), crown, hindneck, back, scapulars, lesser wing coverts, and upper tail coverts steel blue, with a greenish to bluish sheen (greener when in fresh plumage); a narrow line above lores white; lores and narrow line beneath the eye black; wings and tail dull black; tertials and middle wing coverts edged narrowly with white; lower hindneck with feathers white basally, this reduced in some to an indistinct white line; rump white, with finely marked dusky shaft lines; lower surface, including underwing coverts, white, with the breast and sides faintly washed with pale gray.

Immature, lores dull black, bordered above by a narrow white line; rump white; rest of upper surface, with the wings, drab gray; undersurface white, with a faint wash of somewhat brownish gray on breast and sides; outer underwing coverts banded indistinctly with dull gray.

A female collected at Canita, on the Río Bayano above El Llano, February 6, 1962, had the iris wood brown; tarsus and toes fuscous-black; claws black. In another female, at Puerto Armuelles, Chiriquí,

February 14, 1966, the iris was dark brown, bill black, tarsus and toes fuscous-brown; claws black. A third, from the second locality, March 9, 1966, had the tarsus, toes, and claws black. In this third bird the tongue was flesh color, and the lining inside the mouth was black.

Measurements.—Males (10 from Panamá), wing 93.4-101.1 (96.8), tail 39.6-42.2 (40.8), culmen from base 9.9-11.8 (11.2), tarsus 9.5-10.8 (11.2) mm.

Females (10 from Panamá), wing 92.2-98.2 (94.7), tail 39.8-46.8 (42.0), culmen from base 10.0-11.6 (10.8), tarsus 10.1-11.5 (10.7) mm.

FIGURE 1.—Mangrove Swallow, Golondrina Manglera, *Tachycineta albilinea*.

Resident. Common throughout the lowlands, mainly along the larger rivers and over open water around the coastal mangrove swamps; seen regularly along the Panamá Canal, on Gatún Lake, and in bays on the coasts, usually near the mouths of the rivers. Rare in the highlands.

Recorded on Islas Verde and Cébaco in Golfo de Montijo; Isla Coiba.

From January to May these small swallows are seen in pairs or little groups; in the second half of the year they sometimes gather in larger groups of 50 or more. They range over open water along the larger streams, often resting on fallen branches or logs stranded in the water. A few may be seen flying along beaches or over pastures and other

open lands, but they never seem to stray far from water. They seem to wander rarely to the upland country. My only record there is of one seen at a small lake near El Volcán, March 20, 1960.

The nesting season appears to extend from January to June. A pair taken over the Río Chagres at Juan Mina, Canal Zone, December 14, 1955, while ranging attentively together, showed no development of the sexual organs. Others in January at several localities were breeding individuals. Grown young, recently from the nest, are common in June. They nest in holes in snags and stubs, fallen or standing in the water, sometimes in cavities made originally by woodpeckers. The usual location is low but above flood level. In Gatún Lake they may use the metal cans placed at the tops of channel markers.

January 31, 1957, at Mandinga, San Blas, I found a nest placed in a shallow cavity in the end of one of the pilings supporting an ancient wharf in the sheltered bay, when the female swallow flew out as we passed near in a dugout canoe. The bulky mass of grass and other plant stems that filled the lower part of the cavity held a deep cup of finer materials, lined with the white and gray contour feathers of herons. The 4 eggs, about one-third incubated, were oval in form and white in color, without markings. They measure 18.7×12.6 , 19.0×12.6 , 19.2×12.7 , and 19.4×12.5 mm. A set of 2 in the British Museum (Natural History) sent to Salvin and Godman, by F. Blancaneaux from British Honduras, collected May 5, 1888, also are oval, and white without gloss. They are slightly smaller, as they measure 17.7×13.1 and 18.0×13.4 mm. Russell (A. O. U. Mon. no. 1, 1964, p. 132) says that Peck, in British Honduras, in addition to the usual cavities in stumps standing in water, also found nests placed "in abandoned woodpecker holes in pine trees situated in very open areas of the lowland pine ridges."

Stomachs of a few examined were filled with remains of a variety of small insects, including diptera, hymenoptera, coleoptera, and hemiptera (see also Ricklefs, Auk, 1971, pp. 635-657). A female collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 6.4 g.

At Juan Mina, in January, in evening when Barn and other swallows were moving over the river to communal roosts in marshy areas, I found 20 or so of the present species gathered by themselves to sleep on a many-branched dead snag standing isolated in the river.

The species is one of extensive range from southern Sonora and southern Tamaulipas, Mexico, south along the coastal lowlands through Central America to eastern Panamá, where it is recorded east to the mouth of the Río Mandinga on Golfo de San Blas, western San Blas,

on the Atlantic slope; to Boca de Cupe, above El Real on the Río Tuira, and above the mouth of the Río Tuquesa, on the Río Chucunaque, on the Pacific side. In July 1975, Ridgely (*in litt.*) found this species quite common along the lower Chucunaque (Yaviza area) and Tuira Rivers, but it became relatively scarcer as he proceeded up the latter toward Cerro Quía on the Colombian border. At the base of Cerro Quía, he found only one pair, below the outlet of the Río Mono.

A series of specimens throughout the range from Mexico to Panamá shows no geographic variation. A form *T. a. rhizophorae* described by van Rossem (Proc. Biol. Soc. Washington, vol. 32, 1939, p. 155) on the basis of supposed greater amount of white in the frontal and loreal area, from Tobari Bay, southern Sonora, ranging to Nayarit, proves invalid from the series now available.

Hellmayr (Cat. Birds Amer., vol. 9, 1935, p. 70) has listed another swallow, *Tachycineta stolzmanni* Philippi, known only from Chapén on the coast of northern Peru, also as a race of *albilinea*, but this requires verification. In brief, this Peruvian bird originally was described as *Hirundo leucopygia* by Taczanowski (Proc. Zool. Soc. London, 1880, p. 192) from 4 specimens collected by Stolzmann. As this name was preoccupied by an earlier *H. leucopygia* of 1834, Philippi (Ann. Mus. Nac. Chile, Zool., vol. 15, 1902, p. 23) renamed it *Hirundo stolzmanni*. The type, in the Warsaw Museum, is lost. Hellmayr, who examined one of the original specimens in the Senckenberg Museum in Frankfurt, noted that, compared to *Hirundo albilinea* of Central America, it differed in much smaller bill, lack of white line above the lores, grayish instead of white bases on the dorsal feathers, gray instead of white underwing coverts, and grayish instead of white undersurface, with other minor differences. In spite of the extensive gap in the range, he listed the Peruvian population as a race of *albilinea*. In this he was followed by Peters (Check-list Birds World, vol. 9, 1960, p. 82). Hellmayr's action was accepted also by Zimmer (Amer. Mus. Nov., no. 1723, 1955, p. 33). Since, in spite of modern studies in the area concerned, there is no other report of *T. albilinea* in northwestern South America, the relationship suggested appears doubtful. *T. albilinea*, therefore, is listed as without accepted races.

TACHYGINETA THALASSINA LEPIDA Mearns: Violet-green
Swallow, Golondrina Verde

Tachycineta lepida Mearns, Proc. Biol. Soc. Washington, vol. 15, March 5, 1902, p. 31. (Campbell's Ranch, Laguna Mountains, Coast Range, 20 miles north of Campo, San Diego County, California.)

Medium size; undersurface white; above, green, glossed with purple, with white patches on either side of rump.

Description.—Length 120-130 mm. Adult male, crown and hindneck bronze to purplish green, with a narrow greenish band across lower hindneck; back and scapulars definitely with a purplish tint but greener than crown; rump and upper tail coverts purple mixed with green; wings and tail dull black, with a bluish green sheen; undersurface, including cheeks, scapulars, and undertail coverts, pure white, this color extending posteriorly over sides of rump; underwing coverts pale gray.

Female, duller, greener, less purplish above; crown dull grayish brown, in some with a greenish sheen; side of head and upper hindneck grayish white; undersurface light grayish white on foreneck, upper breast, and scapulars.

Immature, dark grayish brown above; wings and tail dull black; sides of head and undersurface as in female.

Measurements.—Males (10 from Colorado, New Mexico, Arizona, California; April-July), wing 114.2-117.0 (115.9), tail 43.8-49.2 (46.6), culmen from base 7.1-8.9 (7.8), tarsus 11.0-12.7 (11.5) mm.

Females (10 from Colorado, New Mexico, Arizona, California; April-July, December), wing 108.2-114.8 (111.1), tail 41.7-46.3 (43.3), culmen from base 7.1-8.6 (7.6), tarsus 10.5-13.9 (12.0) mm.

Migrant from the north, rare (irregular). Known from numerous sight records in late February 1960, on the lower slopes of Volcán de Chiriquí, Boquete (El Salto), Volcán (El Hato), and Cerro Punta, western Chiriquí.

Dr. Eugene Eisenmann, with Mr. and Mrs. James Linford of Oakland, California, on February 21-22, 1960, found about 50 flying with Chestnut-collared Swifts near El Salto, above Boquete, Chiriquí. From February 23 to 27, in late afternoon, from 70 to 100 were recorded daily over open pastures near the village of Cerro Punta. In the afternoon of February 27, near El Hato del Volcán, 1 perched on a wire, where Eisenmann observed it close at hand.

The Violet-green Swallow nests from the Yukon Valley and Yukon, Canada, to northern Mexico. In winter it is found regularly to El Salvador and Honduras. Southward, in Costa Rica, specimens have been taken at Punta Piedra and Bebedero, Guanacaste, and Matina on the coast of Limón.

In the winter of 1976-77 flocks were again seen in Panamá. A. Greensmith reported seeing small numbers daily at Cerro Campana, western Panamá Province, from December 27-29, 1976, with up to 40

the last day, usually feeding with larger numbers of Blue-and-white Swallows. Then, up to 80 were seen feeding over open hillsides near the Volcán Lakes, western Chiriquí, on January 13-14, 1977. All field marks were noted with care, including the white patches on the sides of the rump, the white vent, and the white on the sides of the head (Toucan, vol. 4, no. 2, 1977, pp. 6-7).

HIRUNDO RUSTICA ERYTHROGASTER Boddaert: Barn Swallow,
Golondrina Tijereta

Hirundo erythrogaster Boddaert, Table Planch. Enlum., 1783, p. 45. (French Guiana.)

Size medium; adult, in full plumage, with long, deeply forked tail (the lateral feathers often lost during the winter molt, so that this character is not evident; identified then by the steel blue back and rump).

Description.—Length 149-186 mm. Adult male, forehead chestnut; rest of upper surface steel blue, including edging on tertials and middle wing coverts; wings and tail dusky; inner webs of rectrices (except central pair) with a white spot; malar area, chin, throat, and foreneck to upper margin of chest cinnamon-rufous; steel blue color on lower side of neck extending over the side of the chest, in some the two sides joined; rest of undersurface, including sides, axillars, underwing coverts and undertail coverts, pale cinnamon-rufous.

Adult female, usually similar, but in some the undersurface paler.

Immature, much duller colored; forehead dull white to buff; crown and hindneck dull brown to sooty black; undersurface duller, browner; in some, breast, sides, and abdomen white.

Measurements.—Male (10 from eastern and western United States, British Columbia, and Alaska), wing 114.3-123.6 (119.9), tail 71.2-92.8 (82.9), culmen from base 9.4-11.5 (10.7), tarsus 11.1-12.0 (11.6) mm.

Females (10 from eastern and western United States, British Columbia, and Alaska), wing 109.1-119.2 (115.7), tail 69.7-83.3 (76.3), culmen from base 10.0-11.9 (10.9), tarsus 11.2-12.2 (11.6) mm.

Migrant from the north, abundant; common winter resident especially on the more open Pacific slope from early September through April, with many in passage to and from wintering grounds in South America. A few remain through the period of northern summer. Most common in the lowlands but ranging also across the higher levels.

Migrant flocks en route to and from South America move regularly over the sea along the Caribbean coast, and also are seen crossing the

Gulf of Panamá and other waters of the Pacific in the direction of Darién or Colombia. Thus, single birds or small groups of Barn Swallows may appear on any of the offshore islands. In stormy weather during periods of migration, hundreds may be encountered. Northward migration is evident by late March and continues into late May, when it becomes difficult to separate northern travelers from summering birds. Birds such as the 2 seen by Eisenmann at Coco Solo, Canal Zone, on July 23, 1956, could be summering or early transients moving southward.

Migrant and wintering groups gather at night to sleep in low trees or reeds around lowland lagoons and marshes, spreading widely in their feeding activities during the day. The roosts are in the open. In 1966, at Puerto Armuelles, Chiriquí, the Chiriquí Land Company had built a roof over a long pier to allow handling of extensive shipments of bananas regardless of weather. During February and March, Barn Swallows gathered nightly to sleep under this shelter, undisturbed by the electric lights that illuminated the area throughout the night, or the workmen busy beneath them.

The annual molt of adults and young comes during the months of northern winter. The full-plumaged birds seen regularly in early May are assumed to be those that will nest in the more northern parts of the breeding range in Alaska and Canada.

Ridgely (*in litt.*) notes that in recent years Barn Swallows have increasingly come to be associated with sugarcane fields, especially during northern winter months; they hawk for insects over and around them, and also roost in them. This seems to be the pattern as far south as eastern Brazil. The considerable increase in Barn Swallows in the past decade may be associated with the great increase in sugar growing in Pacific slope lowlands of Panamá.

PETROCHELIDON PYRRHONOTA (Vieillot): Cliff Swallow,
Golondrina de Paso

Medium size. Tail short, slightly notched at tip; forehead white, buff or chestnut-brown; rest of crown black or dusky; rump buff to brown.

Description.—Length 120-151 mm. Adult (sexes alike), crown and back shining blue-black; forehead white to chestnut (according to race); rump cinnamon-rufous; upper tail coverts grayish brown, edged with paler gray; wings and tail dusky brown; secondaries edged narrowly with white toward the tips; lores blackish; side of head and foreneck chestnut, in some this color extending narrowly across hindneck;

an irregular black mark variable in size, on foreneck, most prominent in adult males, in females often much restricted; sides more or less brownish gray; breast and abdomen white.

Immature, colors much duller; feathers of the upper surface usually with paler margins, and color patterns as a whole less definite.

Cliff Swallows are seen mainly in fall, and in the months of spring, from late February through April, usually in company with other migrant species of the family. It is probable that their principal winter quarters are in South America, so that most may be in transit when seen in Panamá, but winter records have gradually accrued, suggesting that the species regularly winters in Panamá, at least in small numbers.

Geographic races in this species, widespread in its distribution in the breeding season, are not always clearly evident. On their northern breeding grounds 2 main groups may be recognized, one—in which the forehead is white—that is mainly northern, and the other—with this area chestnut-brown—found in the southern section. The distinction of subspecies in those of typical markings is clearly evident, but in the broad area where the two approach during the nesting season, the colors mentioned merge through intergrades so completely that there is no clear-cut division. As a whole, northern populations are larger, but here again, there is intergradation. From the considerable series of specimens available from Panamá, 4 groups may be separated on the basis of color and size. Their records of occurrence are listed under the four headings that follow. (Two others that have been described are not clearly separable.)

While Cliff Swallows as a species may be identified readily in life, the various forms are so similar that the race may not be determined unless the bird is in the hand. Usually they are seen flying in company with other swallows, most frequently with the more abundant Barn Swallows. From available dates, the fall flight southward is recorded in Panamá from August 21 through September to October 6. J. Karr and Ridgely (*in litt.*) saw 2 at Chiva Chiva, Canal Zone, on July 29, 1968.

Winter records known to Ridgely (*in litt.*) include 1 at Tocumen, with 50 Barn Swallows on January 29, 1973; 6 at Flamenco Island (Fort Amador) on January 30, 1973; 2 at La Jagua on January 27, 1976; and from Chiriquí, 1 at Las Lajas on February 13, 1976.

Spring migration evidently begins early. Ridgely and R. McArthur saw 1 Cliff Swallow flying north over Panamá Bay on February 12, 1970. In March and April this species can be as abundant as Barn Swallows. On March 6, 1976, for example, Ridgely saw thousands

along the Pan American Highway from David eastward for 30 km. Cliff Swallows are found in Panamá as late as May 17, when in 1973 Ridgely saw 50 near Escobal.

PETROCHELIDON PYRRHONOTA PYRRHONOTA (Vieillot)

Hirundo pyrrhonota Vieillot, Nouv. Dict. Hist. Nat., vol. 14, September 1817, p. 519. (Paraguay.)

Characters.—Forehead clear white in most individuals, size smaller; wing 107-112.8 mm.

Measurements.—Males (10 from eastern and western United States and southern Canada), wing 108.4-112.8 (109.8), tail 46.6-50.9 (48.9), culmen from base 8.9-10.6 (9.7), tarsus 11.3-13.2 (12.5) mm.

Females (10 from eastern and western United States), wing 107.1-109.9 (108.4), tail 44.7-49.0 (47.9), culmen from base 9.4-10.2 (9.7), tarsus 12.1-12.8 (12.5) mm.

Migrant from the north, common.

Specimens examined are as follows: Male, in the British Museum (Natural History), received in the Tweedale Collection, without date of collection, purchased from the dealer G. A. Frank of London. It is assumed to be from the Canal Zone, as it shows the characteristic preparation of McLeannan. One of his small labels attached reads "45 male." The wing measures 110.5 mm.

Immature male, USNM no. 30556, collected at sea "N. of Panamá, Oct. 20, 1863, Capt. J. M. Dow." The locality is uncertain, but probably means north of Panamá City, off the west coast. The wing measures 108.0 mm.

Female, no. 2378, collection of Gorgas Memorial Laboratory, from Almirante, Bocas del Toro, October 10, 1960; wing 111.0 mm.

Male adult, USNM no. 461062, Las Lajas, Chiriquí, February 26, 1956; wing 109.5 mm, A. Wetmore.

Adult male, AMNH no. 500904, Panamá City, April 3, 1897; wing 110.5, C. M. Harris.

As the breeding range of this race extends widely through the central and northern United States, this subspecies may be the one most commonly represented in the migrant flocks that come to Panamá. These are seen commonly through September and October, and again from late February through March to early May. Apparently the majority are birds of passage with the main wintering ground in South America.

There is considerable variation in size in this nominate race, as indicated by wing length. Those that nest in the west, from Oregon north-

ward, merge gradually into the large population (*hypopolia*) of Alaska. Intermediates from Oregon have been described as a distinct race, *aprophata*, with the "lower parts paler, and forehead more buffy (less clearly whitish)" (*Petrochelidon albifrons aprophata* Oberholser, Scientific Publications Cleveland Museum, vol. IV, no. 1, 1932, p. 6). Individual variation is such that this proposed additional race may not be distinguished with certainty, especially in winter migrants.

PETROCHELIDON PYRRHONOTA HYPOPOLIA Oberholser

Petrochelidon albifrons hypopolia Oberholser, Canadian Field-Nat., 1920, vol. 33, no. 5, p. 95. (Fort Norman, Northwest Territories.)

Characters.—Forehead white; size larger.

Measurements.—Males (10 from Alaska and MacKenzie), wing 112.7-116.1 (114.1), tail 45.7-51.7 (49.2), culmen from base 9.0-10.9 (9.8), tarsus 12.4-14.2 (13.3) mm.

Females (10 from Alaska and MacKenzie), wing 110.5-115.5 (113.1), tail 47.1-53.9 (50.4), culmen from base 9.1-10.6 (9.7), tarsus 12.4-15.0 (13.6) mm.

Migrant from the north, abundance uncertain. At the Ciénaga Santo Domingo, eastern Province of Panamá, below La Jagua, on March 30, 1949, when a flock of 100 or more Cliff Swallows circled near, I shot 1 and the others disappeared. The bird taken was extremely fat and also of maximum size, with the wing measuring 116.5 mm. It agrees fully in this with the population of northern Alaska and northwestern Canada, and is identified as the race nesting in that area. It is the only definite record of this subspecies from Panamá that I have seen.

PETROCHELIDON PYRRHONOTA TACHINA Oberholser

Petrochelidon lunifrons tachina Oberholser, Proc. Biol. Soc. Washington, vol. 16, February 21, 1903, p. 15. (Langtry, Texas.)

Characters.—Forehead light to fairly dark buff (varying from dull buffy white to dull brown). Size small.

Measurements.—Males (10 from Chihuahua, Guanajuato, and Texas), wing 100.0-105.1 (102.5), tail 42.8-45.7 (44.3) culmen from base 8.4-9.9 (9.3), tarsus 11.8-12.6 (12.0) mm.

Females (10 from Texas and New Mexico), wing 101.3-104.7 (103.0), tail 42.6-47.6 (45.2), culmen from base 8.4-9.9 (9.1), tarsus 11.2-12.2 (11.9) mm.

Migrant from the north. Abundance uncertain.

On February 26, 1956, I collected a female, at Las Lajas, near the

coast in eastern Chiriquí. The bird was with a mixed flock of the species, the others taken included birds assigned to *melanogaster* and *pyrrhonota*.

PETROCHELIDON PYRRHONOTA MELANOGASTER (Swainson)

Hirundo melanogaster Swainson, Philos. Mag., n.s. vol. 1, 1827, p. 366. (Real del Monte, Hidalgo, Mexico.)

Characters.—Forehead dark chestnut; size small.

Measurements.—Males (10 from San Luis Potosí, Durango, Tepic, and Arizona), wing 101.4-106.2 (103.0), tail 42.4-46.5 (44.9), culmen from base 7.7-9.5 (8.5), tarsus 10.5-12.7 (11.3) mm.

Females (10 from San Luis Potosí, Durango, Sonora, Oaxaca, and Arizona), wing 101.4-109.2 (104.4), tail 40.6-45.6 (43.3), culmen from base 8.0-9.4 (8.7), tarsus 11.0-12.1 (11.5) mm.

Migrant from the north. Apparently common.

Specimens from Panamá are as follows: A male and 2 females, collected February 26, 1956, on the Savannah Santa Cruz, near the sea, below Las Lajas, Chiriquí, where we encountered a small flight of Cliff Swallows. On March 20, 1961, at La Jagua, 3 small flocks circled over the savannas. When one group came near I collected a female of this race. There is also a male in the Museum of Comparative Zoology, taken by Wedel on October 6, 1930, at Puerto Obaldía, San Blas, (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 358).

Birds from northwestern Mexico and southwestern United States have been described as another race (*Petrochelidon albifrons minima* van Rossem and Hachisuka, Trans. San Diego Soc. Nat. Hist., vol. 9, no. 2, 1938, p. 5), which, however, from material seen is not separable from *melanogaster*.

**[PETROCHELIDON FULVA (Vieillot), Cave Swallow,
Golondrina Pueblera]**

A specimen of this species, no. 85.3.24.59, in the British Museum (Natural History), is labeled "Panama. McLeannan," with no other data. It is in fair condition, except for the feathers of the throat and side of the head, which are considerably stained, perhaps by accident during preparation. It resembles the nominate population of *fulva* of the Greater Antilles.

Salvin and Godman (Biol. Centr. Amer., Aves, vol. 1, 1883, p. 228) listed it as follows: "A single specimen, in bad condition, sent to us by M'Leannan from Panamá, must . . . be referred to *P. fulva* . . . As

M'Leannan once had in his possession a few Cuban birds which he obtained in exchange, it is just possible that his specimen of *P. fulva* may have come from Cuba, and not from Panama; but, on the other hand, one of the island birds may have strayed thus far." The bird, in immature plumage, has no additional data in the museum catalog. The species differs from the Cliff Swallows in paler rufous of the head markings, darker chestnut of the rump, and lack of black spot on the throat.

Sharpe (Cat. Birds Brit. Mus., vol. 10, 1885, addenda, p. 636) lists it under *P. fulva* as "*n. Imm. sk. Panamá (McLeannan). Salvin-Godman Coll.*" Ridgway (Birds North and Middle Amer., pt. 3, 1904, p. 55) cited it as "*Panama?*," with references to Salvin and Godman, and Sharpe.

One Cave Swallow was carefully observed with other migrant swallows at Juan Diaz, eastern Province of Panamá, on March 10, 1976, by Ridgely (*in litt.*). One was seen at Tocumen, eastern Province of Panamá, by V. Emanuel on February 9, 1980.

The data are too uncertain to warrant inclusion of this species as a valid record. The winter range of the Cave Swallow is still unknown.]

**PROGNE CHALYBEA CHALYBEA (Gmelin): Gray-breasted
Martin; Golondrina Urbana**

Hirundo chalybea Gmelin, Syst. Nat., vol. 1, pt. 2, 1789, p. 1026. (French Guiana.)

Slightly smaller than the migrant Purple Martin; end of outer tail feathers somewhat narrowed and tip of tail notched; male and female alike in color pattern on undersurface.

Description.—Length 160-180 mm. Adult male, upper surface, including the lesser wing coverts, dark steel blue, changing on forehead to dull brown; wings and tail black, faintly bluish on outer webs; forehead, side of head and neck, breast and sides dull brown, paler on upper throat which often is mottled with white; upper breast and sides edged more or less with white rarely with the white extensive; lower breast, abdomen, and undertail coverts white, with slightly marked narrow shaft lines of black on undertail coverts; axillars and underwing coverts dark sooty gray; longer underwing coverts usually tipped with white.

Adult female, similar, but duller blue, more brownish above.

Immature, distinctly browner above; upper foreneck and throat whitish in varying amount; breast duller, usually with paler tips on the feathers.

A female, with ovaries not developed, taken at Olivo, 9 km northeast

of Puerto Armuelles, Chiriquí, February 11, 1966, had the iris dark brown, bill black, tarsus and toes fuscous-black, and claws black. Another female, a fully grown bird of the year, collected on the Río Potrero, near the town of El Potrero, Coclé, March 7, 1962, had the iris dark brown, bill black, tarsus and toes fuscous-brown, and claws black.

Measurements.—Males (10 from Chiriquí, Veraguas, Herrera, Coclé, and Province of Panamá), wing 126.9-134.9 (130.1), tail 60.8-65.8 (62.8), culmen from base 14.0-15.3 (14.7), tarsus 14.3-15.4 (14.6) mm.

Females (10 from Chiriquí, Veraguas, Coclé, Province of Panamá, and Darién), wing 124.2-132.2 (128.0), tail 58.8-62.7 (60.8), culmen from base 14.5-15.5 (15.0), tarsus 14.0-15.0 (14.3) mm.

Resident. Common and widely distributed throughout the mainland of the Republic, from the lowlands to 1500 m. In the Chiriquí highlands it has been recorded at Boquete and the Volcán area. Present regularly on Islas Coiba and Cébaco; less abundant, or casual after the breeding season, on islands in the Gulf of Panamá: Isla San José (March 6-8, 1947), Brava. (In March 1904, W. W. Brown recorded a colony nesting on the church at San Miguel, Isla del Rey.)

Possibly there is some seasonal movement among them, as in April, following heavy rains, I have seen hundreds resting on wires in the savanna areas.

The species is one of wide range from Mexico to southern South America. In Panamá it is present regularly in the towns, especially around churches and other buildings in the plazas. In country districts it frequents open pasturelands and fields, where dead trees offer convenient perches. It is usual to find a few associated in small groups from February to June during the nesting season. Following this, they gather in flocks that in evening come to communal roosts. Where these are located in trees in plazas, they may be a nuisance, and more so when they enter openings in the eaves and roofs of buildings.

Their warbling calls are heard mainly around their nest sites, especially in the period when they are pairing and building. On the whole, they are far less vociferous in the breeding season than the Purple Martin of North America at the same period. Nests are placed in cavities in trees, frequently in holes made by woodpeckers. This original custom is varied when they settle around buildings, commonly nesting under eaves and hollow roof tiles or in holes in walls, building on beams or in recesses where space may be available. Nests are constructed of twigs, dried grasses, and other vegetable material, with string or bits of

paper added when the site is in or near human habitation. In any location they seem less gregarious than the Purple Martin, as the nest sites occupied normally are separated, not close together. On Gatún Lake, Canal Zone, pairs build regularly in the top of the metal channel markers. In the nesting period these martins are vigorous in attacking hawks and other large predatory birds that attempt to perch on or near their nesting trees.

Eisenmann writes that the full extent of the nesting season in Panamá still remains to be determined: pairs with eggs or nestlings have been reported from March through early August, and he has seen pairs seemingly on territory near a tree hole or building cranny in February. On the San Blas coast and the nearby island of Mulatupo on December 1 and 2, 1962, he saw a few isolated pairs about nest sites, suggesting that the nesting season may extend over much of the year, unless pairs guard nest sites out of the nesting period.

The eggs are white, with from 2 to 5 recorded in the set. Size ranges from 21.4-26.3 by 15.0-17.1 mm. (Meise in Schönwetter, Handb. Ool., part 17, 1970, p. 193). A. Hartley (in Beebe, Hartley, and Howes, Tropical Wildlife in British Guiana, vol. 1, 1917, pp. 328-334), in an account of this species, recorded careful nest sanitation in which the parents removed the excrement of the nestlings. Food, as usual in this family, is composed of insects taken on the wing. Like other swallows, they swoop regularly to the surface of open waters to drink. Two collected by Burton (Bull. Brit. Orn. Club, 1975, p. 92) at Pacora, Province of Panamá, weighed 40 and 44 g.

At El Real, Darién, on January 7, 1964, I saw a curious aggressive reaction on the part of a Gray-breasted Martin that perched regularly for hours each day in a high dead treetop opposite our house. One afternoon, a skipper butterfly (Family Hesperidae), in its usual rapid, erratic flight, darted about over the trees and houses. Its restless activity seemed to irritate the martin, as whenever the insect rose into the open air, the bird swooped at it and then returned to its perch. This continued until finally the martin hit the insect with its breast, a clearly audible blow that knocked the skipper to the ground. There it lay for a minute or two with spread wings, partly stunned, until presently it rose, darted away, and disappeared. There was no indication that the bird had tried to seize it.

Eisenmann believes that some birds of this race from Mexico at least occasionally winter or pass through Panamá, as birds of northern Mexico are known to be migratory and flocks of this species are sometimes seen when local birds are nesting. The southern race (*domestica*)

of southern South America is highly migratory and regularly reaches Suriname, northern Brazil, and Venezuela; at least occasional occurrence in Panamá is not improbable during the austral winter but specimen examination would be required. As in *P. elegans*, the molting primaries in July would be a strong clue that *domestica* was involved (see Eisenmann, Auk, 1959, pp. 528-532).

PROGNE SUBIS (Linnaeus): Purple Martin, Golondrina Azul

Largest of the swallows found in North and Central America (averaging larger than the Brown-chested Martin, *Progne tapera*).

Description.—Length 170-200 mm. Adult male glossy dark steel blue above and below; partly concealed feather tufts on sides of lower back white; primaries dull black, with the basal area of the shafts dull white basally, changing to dull brown for the remainder of the length.

Adult female, duller colored above (through partial exposure of the basal area of the feathers); forehead and more or less of forecrown sooty gray to white (varying racially and individually in depth of color); lores and auricular region dusky; sides of neck grayish, many individuals with an indefinite dull grayish band across the hindneck; anterior lower surface sooty gray, tipped narrowly with dull grayish white; lower breast, abdomen, and undertail coverts white, in some streaked indefinitely with sooty gray; sides, underwing coverts, and axillars dark sooty gray.

Immature (both sexes), like female but duller above, with glossy area mainly on crown; wing coverts and secondaries tipped narrowly with dull grayish brown; collar across hindneck usually distinct.

The Purple Martin is widely distributed in the nesting season from Baja California, and the mountain areas in the central plateau of Mexico; northward irregularly through the United States to Vancouver Island and southern British Columbia, and central eastern Canada. Following the breeding season, adult and immature martins gather at night in tree roosts that may include hundreds (even thousands) of individuals. At the end of August and in early September these groups disappear as the birds move southward to wintering grounds in South America. In spring when they return north they appear individually or in small groups on their nesting grounds.

Two geographic races have long been recognized, the nominate form, *Progne subis subis*, being the breeding bird found widely through the United States north to south-central Canada. The slightly smaller and paler subspecies, *Progne subis hesperia*, is the nesting form of Baja

California and a western montane race has been described by Behr (Condor, 1968, p. 166) as *Progne subis arboricola*, with the type locality at "Payson Lakes, 8300 feet elevation, 12 miles southeast Payson, Utah County, Utah." The assigned nesting range is from the Wasatch and Pavant Mountains of Utah, south to Arizona from the Mogollon Plateau to the Chiricahua Mountains. It is described as larger than *subis*, with the female like *hesperia* in paler color. Wing measurements of specimens that I have collected in northwestern Utah are as follows: Males, 152.0-157.0 (154.7); females, 144.0-152.0 (148.0) mm.

In fall migration, Paynter (Auk, 1953, p. 347), at the end of August and the beginning of September 1952, recorded Purple Martins in small number in southward migration through the Caribbean islets on the Campeche Bank north of the Yucatán Peninsula. Russell (A. O. U. Orn. Mon., no. 1, 1964, p. 130) noted them as "regular transients" through British Honduras in spring and fall. Monroe (A. O. U. Orn. Mon. no. 7, 1968, p. 278) found them fairly common in spring and fall on the Caribbean side of Honduras. From October 8 to 12, he recorded several males in the Choluteca-Namasigüe region of the Pacific Coast. Martins are passage migrants spring and fall through Panamá, but as yet in detail are relatively little known.

The first two subspecies are recorded in Panamá from specimens. The third may be found also among the migrants, since Purple Martins as a species pass the period of northern winter in Brazil.

Dr. Eugene Eisenmann has furnished the following summary of occurrence in Panamá from his personal observations and those of other observers sent him. The records are based partly on female and immature individuals, which in life differ from the resident Gray-breasted Martin (*Progne chalybea chalybea*) in larger size, and in pale area on the side of the neck and often on the forehead. In the Caribbean area of the Isthmus, in southward flight this martin has been recorded both in small groups and in flocks of 40 to 5000 birds, from August 3 to September 15, at Almirante, Bocas del Toro (N. G. Smith), near Coco Solo, Coco Solito, and Gatún Lake near Gamboa, August 5 and September 21 (E. S. Morton), Barro Colorado Island (Willis), Gatún Dam, Canal Zone; Puerto Pilon, Colón (Ambrose). Reports from the Pacific slope are few: Antón and Penomomé, Coclé, September 18 (H. Loftin, E. Tyson), between Tocumán and Plata-nales, eastern Province of Panamá, September 10 (Pujals et al.), south-western Canal Zone, one September 12 (R. Ryan).

The spring migration northward is little known. At Almirante, Bocas del Toro, on February 18, 1958, during a steady rain, between

35 and 40 Purple Martins came to perch on dead limbs in the top of a tall tree beside our living quarters. Later, on March 2, during travel by launch along the seaward side of the Valiente Peninsula, I noted others flying northward low over the water. Until March 6, I recorded them daily, resting in dead trees over our house, in flight crossing Almirante Bay, or offshore at Boca del Drago. Between March 19-21, 1962, Charles O. Handley, Jr., at various localities en route from Colón to Isla Escudo de Veraguas, recorded several flying northwest offshore over the Caribbean (Wetmore, *Smiths. Misc. Coll.*, no. 145, 1963, p. 2). An "all dark" *Progne* seen at Gamboa on April 1, 1968, by Ridgely was most probably this species, while 2 such at Bayano Lake on April 24, 1968, with Brown-chested Martins, could be late transients or Southern Martins on their migration.

PROGNE SUBIS SUBIS (Linnaeus)

Hirundo subis Linnaeus, *Syst. Nat.*, ed. 10, 1758, p. 192. (Northeastern Manitoba.)

Characters.—Size intermediate between *P. s. hesperia* and *P. s. arboricola*; female with forehead and forecrown dark gray.

Measurements.—Males (10 from the breeding range), wing 145.2-150.3 (146.6), tail 71.2-78.4 (74.2) culmen from base 13.1-14.8 (13.8), tarsus 15.0-15.7 (15.3) mm.

Females (10 from the breeding range), wing 141.0-146.5 (144.5), tail 66.2-73.6 (70.1), culmen from base 14.2-15.4 (14.9), tarsus 15.2-15.9 (15.5) mm.

Migrant and winter visitor from the north. This is the most widely distributed of the races. It is known in Panamá definitely from the following specimens: Coco Solito, Canal Zone, male, collected August 5, 1955; female, August 3, 1956 (J. E. Ambrose, specimens in American Museum of Natural History); Almirante, Bocas del Toro, 2 males, 1 female, February 18, 1958 (A. Wetmore, in the Smithsonian collections).

The type locality for the species given by Linnaeus (from Edwards) as "ad sinum Hudsonis," Hudson Bay, is so listed in the A. O. U. Checklist (1957, p. 365). L. L. Snyder (*Can. Field-Nat.*, vol. 77, 1963, pp. 128-129) reports that "Edwards' pre-Linnaean descriptions and illustrations were based on specimens collected by James Isham between the years 1732 and 1745. . . . When Isham lived in the New World he was stationed mostly at York Factory, but was briefly at Prince of Wales Fort (=Churchill)." From this data Snyder cites the type locality as "northeastern Manitoba."

PROGNE SUBIS HESPERIA Brewster

Progne subis hesperia Brewster, Auk, vol. 6, no. 2, April 1889, p. 92. (Sierra de la Laguna, Baja California, Mexico.)

Characters.—Adult male, like nominate *subis* but smaller; female and immature male averaging paler in general coloration; foreneck, breast, and sides more extensive, white to pale grayish white.

Measurements.—Males (10 from Baja California), wing 140.5-145.0 (142.2), tail 65.0-70.3 (67.7), culmen from base 13.4-15.9 (14.8), tarsus 14.9-15.9 (15.2) mm.

Females (6 from Baja California), wing 136.1-140.7 (138.2), tail 62.1-68.0 (66.6), culmen from base 13.5-15.6 (14.8), tarsus 14.8-15.5 (15.1) mm.

Passage migrant to and from winter quarters in South America. Known definitely in Panamá from a male in immature plumage in the American Museum of Natural History, collected by R. R. Benson, at Cocoplum, Bocas del Toro, October 27, 1927.

Zimmer (Amer. Mus. Nov., no. 1723, 1955, pp. 4, 5) listed this specimen, but with information available at the time was uncertain as to the characters of *hesperia*. The bird, on examination, is an immature male in good plumage, with the paler coloration of *hesperia*, evidently a bird from the preceding summer. With a wing measuring 143.6 mm, it is within the size limits accepted for this race.

An early report of this race in migration is that of Richmond (Proc. U. S. Nat. Mus., vol. 16, 1893, p. 485). He collected a pair of Purple Martins September 13, 1892, in eastern Nicaragua, on a banana plantation on the Río Escondido 50 miles above Bluefields, from "a flock of six or eight which had settled in the top of a dead tree during a shower." These 2 specimens (in the Smithsonian) belong to the subspecies *hesperia* and mark the first record for migrants of this form. Wing measurement for the male is 144.1 mm, for the female, 133.6 mm.

PROGNE ELEGANS Baird: Southern Martin, Golondrina Negra

Progne elegans Baird, Rev. Amer. Birds, May 1865, pp. 274 (in Key), 275. (Vermejo River, Paraguay = Río Bermejo, Argentina.)

Closely similar in appearance to *Progne subis*, but on average slightly smaller; in adult male blue sheen faintly duller, less brilliant; female more heavily marked below and lacking pale forehead and sides of neck; tail more deeply forked than in *subis*.

Description.—Length 175-185 mm. Male, with concealed white on sides and flanks like *subis*, but with undertail coverts duller, less clearly

white; breast and lower undersurface much more heavily marked with dusky, lacking pale area on sides of neck and forehead. Immature male like female but with more blue sheen above and often on sides.

Measurements.—Males (10 from Brazil, Argentina, and Uruguay), wing 137.8-142.5 (139.9), tail 60.5-82.8 (73.7), culmen from base 12.2-15.4 (14.0), tarsus 15.4-17.8 (16.5) mm.

Females (10 from Brazil, Paraguay, and Argentina), wing 132.0-14.0 (135.2) tail 65.7-77.8 (71.2), culmen from base 12.0-15.4 (13.8), tarsus 15.0-16.7 (16.0) mm.

Casual; one definite occurrence in eastern San Blas. Breeds from the highlands of Bolivia and Argentina south to Chubut; in the austral winter regularly north to northern Brazil and Suriname.

The single record for Panamá is a specimen (in the University of Michigan Museum of Zoology) from Obaldía (Puerto Obaldía), San Blas, collected July 14, 1931, by Wedel, with sex marked "♀ ONE" (apparently in error). The bird is immature, with longer wing and tail feathers much worn, in partial molt to adult stage. A few scattered feathers on the left side of the crown above the eye, and others in the tertials and wing coverts, are those of the dark blue male plumage. Though on casual glance the specimen resembles the female sex, on close scrutiny it appears to be a male beginning the change from juvenile dress to that of the adult. (For the record of this specimen, see Eisenmann, *Auk*, 1959, pp. 528-532.) It is identified as *elegans*, as would be expected.

While Peters (Checkl. Birds World, vol. 9, 1960, p. 88, following Hellmayr, 1935) includes this bird of eastern South America as conspecific with *Progne modesta* of the Galápagos, the latter form in series is much smaller, and also lacks the partly concealed white of sides and flanks found in *P. subis* and *P. elegans*. *Progne elegans* here is given separate specific status.

The form *murphyi*, named by Chapman (Amer. Mus. Nov., no. 187, 1925, p. 6), from the coast of Peru, possibly may connect the two, but this needs further checking (the Smithsonian at present has no specimens).

There have been observations in June and July of 1958 and 1970 (Ridgely, 1976, p. 262) and on April 24, 1976 (Ridgely, *in litt.*) of all dark *Progne* in central or eastern Panamá, dates when the northern migratory *P. subis* is very unlikely and when the southern migratory *P. elegans* may well occur (see under *P. subis*). Although separation of adult males in the field seems impracticable, females and immatures are often distinguishable, and some reports of probable adult males of

P. elegans include observations of accompanying *Progne* that had characters of females or immatures of *P. elegans*. Eisenmann believes *P. elegans* to be an irregular migrant in small numbers to Panamá.

**PROGNE TAPERA FUSCA (Vieillot): Brown-chested Martin;
*Golondrina Parda***

Hirundo fusca Vieillot, Nouv. Dict. Hist. Nat., nouv. ed., vol. 14, September 1817, p. 510. (Paraguay.)

One of the larger swallows; white on throat and abdomen; a dark band across the breast; a few blackish spots in center of breast and abdomen.

Description.—Length 155-170 mm. Adult (sexes alike), above dull dark brown, including side of head and wing coverts, the feathers edged indistinctly with lighter brown; wings and tail somewhat blacker; secondaries tipped narrowly with white; throat, lower breast, abdomen, and undertail coverts white; sides and a broad band across upper breast dark brown; a series of spots on the tips of the lower central breast feathers dark brown to nearly black.

A male of this race collected at Kilometer 80, west of Puerto Pinasco, Paraguay, September 18, 1920, had the bill, tarsus, toes, and claws black; iris bone brown.

Measurements.—Males (10 from Argentina, Paraguay, Brazil, and Colombia), wing 134.6-143.0 (139.2), tail 64.4-68.0 (65.9), culmen from base 13.9-15.2 (14.6), tarsus 13.4-15.1 (14.6) mm.

Females (10 from Argentina and Uruguay), wing 131.0-139.9 (134.9), tail 61.8-66.5 (64.0), culmen from base 13.3-15.6 (14.5), tarsus 14.0-14.9 (14.4) mm.

The winter migrants that come to Panamá often have the wings and tail worn, or are in renewal after molt, so that their measurements may differ from those listed above.

Austral winter migrant from South America, where it nests from eastern Bolivia and central Brazil south to northern Argentina, Paraguay, and southern Uruguay. Recorded from April to October in the Canal Zone and the savanna region of eastern Province of Panamá. This southern form of the Brown-chested Martin, long recorded as a winter visitor to northern South America, now regularly extends its migratory flights to Panamá. The species was first reported for Panamá by Eugene Eisenmann (Smithsonian Misc. Coll., vol. 117, 1952, p. 46) from 3 recorded at the Barro Colorado Island laboratory, Canal Zone, July 4, 1949. In July, 1949 and 1951, he observed many about the city of Panamá, and in the Canal Zone. Since then the species has

been reported regularly, although numbers vary greatly from year to year. The earliest specimens known from the Republic are 2 males collected by R. R. Benson near Tocumen, eastern Province of Panamá, August 21, 1931 (received by the Smithsonian in a collection presented in 1954).

The main group of migrants appears to arrive in the last week of April or in early May (with one seen by me April 5, 1954, at Pedro Miguel, Canal Zone, as an early date). Sometimes in late April flocks of hundreds can be seen in the Caribbean side of the Canal Zone. The birds are present in numbers through September, with a few remaining later (18 seen October 26, 1955, by J. E. Ambrose). They have been recorded most commonly in open areas of the Canal Zone, and the adjacent Province of Panamá and also west to western Chiriquí. At evening they may join Gray-breasted Martins to spend the night in communal roosts.

Eisenmann reports seeing them commonly during June, July, and August in some years on the Pacific slope of western Panamá, including Coclé (Penonomé, Antón), Veraguas (near Santiago), Chiriquí (Remedios, David, and many other lowland localities). On the Caribbean slope he observed several as far west as Changuinola, Bocas del Toro, on June 30, 1956 (N. G. Smith noted 3 or 4 there on September 3, 1964) and as far east as Río Piedras, Colón. There seem to be no reports from the Azuero Peninsula, San Blas, or Darién, but this probably indicates absence of observers in open areas during the season of occurrence.

In August 1954 Eisenmann found them exceptionally abundant in open areas—greatly exceeding in numbers the aggregate of all other swallows seen; flocks of several hundreds often perched together on wires, and thousands had been noted in one day (August 9 in Coclé). By early September, numbers were much reduced, although Major Chappelle noted as many as 80 on September 18 on the Pacific slope of the Canal Zone, but numbers kept dropping until he saw his last Brown-chested Martin that year on October 16 (a lone bird perched with Gray-breasted Martins). Although Eisenmann has observed this species in Panamá (since he first recognized it in 1949) whenever he has visited that country from May through early September, he has never seen numbers approaching those in 1954. In 1972 (August 2-4) Ridgely reports seeing flocks of hundreds around El Llano near the Bayano River in eastern Province of Panamá. He saw 5 on January 2, 1974, west of Río Hato, Coclé—evidently birds that had failed to migrate to the breeding grounds.

The brown upper surface and the band across the breast in this martin present much the same color pattern as that of the much smaller Bank Swallow. In their winter flocks these martins are active in circling in the air over wire lines and other perches. In the main, the migrants are silent. On their nesting grounds in Argentina I have heard them giving low calls, *chu chu chup*, that have little carrying power.

Baird (Rev. Amer. Birds, 1865, pp. 272, 383) separated this species under the generic name *Phaeoprogne*, distinguished from *Progne* by slightly forked tail, with the tips of the feathers rounded, and weaker bill and legs, with a line of feathers on the inner margin of the tarsus for two-thirds its length. Sharpe (Cat. Birds Brit. Mus., vol. 10, 1885, p. 172) cited "*P. tapera*" as the type of *Phaeoprogne*. Zimmer (Amer. Mus. Nov., no. 1723, 1955, pp. 9-10) recognized the genus as valid, with two forms listed as races under *tapera*, the older of two names. The characters on which the genus *Phaeoprogne* was proposed by Baird are slight, so that it was not recognized as distinct from *Progne* by Mayr in his revision of Peters's account of the Hirundinidae (Check-list Birds of the World, vol. 9, 1960, p. 85).

The nominate race, *Progne tapera tapera* (Linnaeus), has the throat less extensively white, with the gray of the breast extending on the lower foreneck, and without the dusky black spots down the center of the lower breast and upper abdomen. It appears to be resident from the Caribbean coast and the Magdalena Valley, Colombia, to the Guianas and south to Peru and northern Brazil.

NEOCHELIDON TIBIALIS MINIMA Chapman: White-thighed Swallow,
Golondrina Muslos Blancos

FIGURE 2

Neochelidon tibialis minimus Chapman, Amer. Mus. Nov., no. 138, October 18, 1924, p. 9. (Juntas de Tamaná, Chocó, Colombia.)

Small; upper surface wings and tail dull black; underneath dull brown; feathered area of lower leg white.

Description.—Adult (sexes alike), upper surface of body dull, somewhat brownish, black; loreal area, wings, and tail dull black; undersurface, including underwing coverts, grayish brown; feathers of lower leg (slightly developed as a tuft) white.

Immature, feathers of lower surface faintly edged with dull white.

A male, collected at the head of the Río Guabal, Coclé, July 28, 1962, had the iris dark brown; bill black; tarsus and toes fuscous-black; claws black. A female near the Peluca Hydrographic Station, Colón,

February 23, 1961, had the iris dark mouse brown; maxilla and tip of mandible black; base of mandible fuscous-black; tarsus and toes fuscous-brown; claws black.

Measurements.—Males (10 from northern Coclé, eastern Province of Panamá, San Blas, and Darién), wing 80.5-88.5 (84.8), tail 37.5-45.8 (40.5), culmen from base 7.1-8.4 (7.7), tarsus 9.2-11.0 (10.1) mm.

Females (10 from eastern Colón, Darién, and San Blas), wing 80.5-88.1 (85.1), tail 35.7-46.4 (41.4), culmen from base 7.2-10.3 (8.2), tarsus 9.0-10.5 (9.9) mm.

FIGURE 2.—White-thighed Swallow, Golondrina Muslos Blancos, *Neochelidon tibialis minima*.

Resident. Found locally in pairs or small flocks in humid forest areas of central and eastern Panamá; on the Pacific slope, in the high levels of Cerro Azul, especially around the lake; and in Darién, on the lower Río Sambú, the Río Tuira at the mouth of the Paya, at Cana, along the Río Pucro to the village of Pucro; and around Cerro Tacarcuna from the base to 1250 m; on the Caribbean side, in northern Coclé; in the Canal Zone near the lower Río Chagres; and eastern San Blas near Armila.

On February 28, 1962, I collected a male from a small flock near the head of the Río Guabal, northern Coclé. Ridgely (1976, p. 262) saw 6 at El Valle, Coclé, April 27, 1969. On January 13, 1976, J. J.

Pujals observed 1 above Santa Fé, Veraguas. In the Canal Zone it may be found daily along the Pipeline Road, in the Fort Sherman-San Lorenzo area, and along the Achiote Road.

In 1961, in the region behind Madden Lake, these swallows were fairly common along the Río Boquerón in February, and on the Río Pequení in March. On Cerro Azul, C. O. Handley, Jr., found them numerous in June 1957, and the following year R. S. Crossin collected 1 at the lake on August 12. Near Armila, eastern San Blas, I found them rather common in late February and early March at the edge of forest, back of the Indian farms.

In the Tuira Basin, Darién, in March 1959, I saw a flock of 30 near the mouth of the Río Paya. In late January and February 1964, they were fairly prevalent near the village of Pucro on the Río Pucro; and on March 2, we caught 3 in a mist net set at 250 m on the north fork of this river, in the higher levels of Cerro Tacarcuna. Others were seen in March, lower down at the old village site near the base of the mountain.

Distinguished always by tiny size, they ranged in small flocks, coursing over clearings or above the broader, open stretches of streams. Their flight often seems flitting and irregular compared to that of larger swallows with which they associate. They sometimes hawk for insects over the canopy with *Chaetura* swifts. Occasionally, I noticed them bathing by dipping to the surface of open stretches of water as they circled on the wing. At rest they gather separately from larger swallows, on small branches of dead trees above water or at the border of small openings in the forest. In my experience they were silent. Specimens collected from January to April seemed to be in a resting stage after the nesting season, as some were molting slightly over the body.

A female taken by E. A. Goldman at Cana had the stomach crammed with fragments of tiny beetles, hemiptera, and hymenoptera. Two collected in the Canal Zone area (Strauch, Bull. Brit. Orn. Club, 1977, p. 64) weighed 9.1 and 9.2 g.

The only note on nesting seen is that of Griscom (Amer. Mus. Nov. no. 282, 1927, p. 7). At the end of February 1927, when he was traveling by yacht, "two or three pairs were found on the Sambu River nesting in holes in the river bank directly under Indian huts. The birds were remarkably tame and confiding." No account of the nest and eggs is known to me. Eisenmann, however, has seen pairs guarding woodpecker holes in slender dead trees from at least early April to June, and has never noted nesting in banks. On September 14, 1965, in a wooded

ridge near Cerro Azul he saw a full grown (flying) juvenal being fed by an adult; by this period many birds were in small flocks.

NOTIOCHELIDON CYANOLEUCA (Vieillot): Blue-and-white Swallow, Golondrina Barranquera Azul

Small; undersurface from throat to abdomen white; above, dark steel blue.

Description.—Length 110-125 mm. Adult (sexes alike), tail moderately forked; dorsal surface, including the scapulars, iridescent dark steel blue; lores and space immediately behind eye black; wings and tail dull black; undersurface with throat, breast, and abdomen white; upper sides black; undertail coverts black (nominate race *cyanoleuca*), or black and white (*patagonica*).

Immature, upper surface dull sooty brown on crown and back; elsewhere, including wings and tail, dull brown; throat, band across breast, and sides wood brown; throat, breast, and abdomen white; undertail coverts dull brown, or mixed dull brown and white.

The dark (or partly dark) undertail coverts distinguish this species in life from the Mangrove Swallow, which also is small, with clear white undersurface, but with this color including also all of the undertail coverts. In addition, the Mangrove Swallow has a white rump and a short, narrow white supraloral, lacking in *cyanoleuca*.

Two geographic races are found in Panamá. The nominate form breeds in Panamá, and in South America, from Colombia to southern Brazil, Uruguay, and northern Argentina. The more southern breeding form, *N. c. patagonica*, is recorded as nesting from the mountains in northern Argentina to northern Tierra del Fuego. In the period of southern winter, *patagonica* moves northward, and with it move the more southern populations of nominate *cyanoleuca*. It is probable that the flocks recorded irregularly in Panamá during the breeding season comprise migrants of both races.

NOTIOCHELIDON CYANOLEUCA CYANOLEUCA (Vieillot)

Hirundo cyanoleuca Vieillot, Nouv. Dict. Hist. Nat., nouv. ed., vol. 14, September 1817, p. 509. (Paraguay.)

Characters.—Adult, with all of the undertail coverts black; underwing coverts dark to blackish grayish brown.

Immature, undertail coverts dark brown, in some individuals tipped lightly with white; underwing coverts dark brown.

An adult female, collected at 1350 m along the Río Chiriquí Viejo,

beyond El Volcán, Chiriquí, March 21, 1954, had the iris dark brown; tarsus, toes, and claws fuscous. Another adult female, taken at 1900 m on the west base of Volcán de Chiriquí, March 4, 1965, also had the iris dark brown, tarsus and toes dark brown, claws fuscous-black.

Measurements.—Males (10 from western Panamá and Costa Rica), wing 92.0-99.0 (94.3), tail 45.4-52.6 (49.0), culmen from base 6.7-8.0 (7.2), tarsus 9.1-10.6 (9.8) mm.

Females (10 from western Panamá and Costa Rica), wing 87.5-97.1 (91.5), tail 41.8-52.6 (48.0), culmen from base 6.0-7.9 (6.8), tarsus 9.2-10.6 (9.9) mm.

Resident. Common over open areas in the highlands of Chiriquí above 1000 m elevation, ranging to the higher levels; reported on upper Río Chiriquí (Fortuna Dam site), central Chiriquí (Ridgely) recorded on Cerro Flores, eastern Chiriquí, and also in the district of Calovévora, northern Veraguas; casual at Gatún, Canal Zone. It is also common at Cerro Campana, western Province of Panamá, where Ridgely first found it in December 1967; it was then already numerous and had probably been there for some time.

There is a specimen in the American Museum, taken by Griscom's party east of the main mountain range in western Chiriquí on Cerro Flores, north of Remedios. A male and 2 females in the British Museum, secured by Arcé, are labeled Calovévora, northern Veraguas, 1869.

These small swallows, common over open areas, come regularly about houses and farm buildings. In several seasons I found them nesting on ledges and under the eaves of the house that we occupied at Palo Santo beyond El Volcán, Chiriquí. Hundreds also nested on rock cliffs on the high mountain slopes to 2800 m on El Barú. Nests were made of dried grasses and other vegetation, filling the crevices that they occupied. Some of the structures seemed loosely built, as on several occasions I found broken eggs that had fallen beneath the nests.

Skutch (Auk, 1952, pp. 393-405, and Pac. Coast Avif. no. 34, 1960, pp. 279-280), in detailed studies in southwestern Costa Rica, found them using any available cavities, from those in rotted dead tree trunks to artificial shelters under the eaves of houses, crevices in walls, or occasionally tunnels dug by animals in banks of earth along trails and highways. The thatched roofs on houses and other buildings in country areas also furnish shelter. He reported sets of 2, 3, and 4 eggs. These were glossy white, without markings. Measurements of 6 eggs were 16.3-16.7×11.5-12.2 mm.

He recorded that laying begins in March, with both male and female

incubating and caring for the young. At night, one parent slept on the eggs while the other rested on the rim of the nest. The newly hatched young have a sparse covering of light gray down. A second brood may come in June. When mated, the pair remains together throughout the year following the breeding season.

In most of their activities, I have noted that these swallows are mainly silent. The song is described as "a thin, weak, long-continued trill which slides upward at the end."

One egg in the British Museum collection that I examined, taken by Underwood on Volcán Irazú, Costa Rica, April 25, 1901, was white, without markings and measured 16.9×12.6 mm. The maximum sizes (listed by Meise in Schönwetter, Handb. Ool., pt. 17, 1970, p. 193) which range larger, to 20×14 mm, in part may include specimens from South American localities where nominate *cyanoleuca* is not found.

Fleas parasitic on birds are little known, so it is of interest to report one captured on a specimen of this northern race of the Blue-and-white Swallow, in March 1962, by Vernon J. Tipton and C. L. Hayward. In a report on the fleas (Siphonaptera) of Panamá by Tipton and Eustorgio Mendez (in Wenzel and Tipton, Ectoparasites of Panamá, Field Museum of Natural History, 1966, p. 310) this parasite is listed as *Dasyptyllus sasius venezuelensis* (I. Fox and Anduze), with the comment that it was abundant in swallows' nests, both in buildings and in earth banks. "In one hole in an earth bank the fleas were very numerous in the sand below the scanty nesting material."

NOTIOCHELIDON CYANOLEUCA PATAGONICA (D'Orbigny and Lafresnaye)

Hirundo patagonica D'Orbigny and Lafresnaye, Syn. Av., in Rev. Zool., ann. 7, 1837, p. 69. (Patagonia.)

Characters.—Adult, with only the lower half of the undertail coverts black, the upper area being white like the rest of the undersurface; underwing coverts paler grayish brown.

Immature, with underwing coverts much paler gray; undertail coverts paler with tips more extensively white.

Measurements.—Males (10 from Darién, Argentina, Peru, and Venezuela), wing 101.2-111.9 (104.5), tail 50.1-55.6 (52.6), culmen from base 7.1-8.5 (7.8), tarsus 11.1-12.4 (11.8) mm.

Females (10 from Darién, Argentina, and Chile), wing 99.2-105.6 (102.8), tail 44.7-57.1 (48.7), culmen from base 7.5-9.5 (8.2), tarsus 11.4-12.6 (12.0) mm.

Migrant from southern South America; of irregular occurrence.

The first published record for Panamá is by Chapman (Bull. Amer. Mus. Nat. Hist., vol. 55, 1926, p. 558) of an adult male in the Princeton Museum collected by "J. P. Chapin at Juan Mina, Río Chagres, Panamá, July 17, 1923, while a member of the Charles Rogers Princeton Expedition." In the British Museum there are 4 earlier specimens from Panamá—3 immature birds marked as taken by McLeannan and the fourth, an adult, though not labeled, from its style of preparation evidently also from this collector. One of the immature individuals is marked Lion Hill Station, the others are indicated only as from Panamá. It is probable that these were sent by the collector to Salvin following McLeannan's visit to Panamá in 1873, as they were received in the Salvin and Godman collection, the 3 immature birds having been presented in 1885, the adult in 1888.

A male and female in the Academy of Natural Sciences collected by Jewel on July 7 and 16, 1911, from flocks at Gatún, Canal Zone, were attributed to the nominate form, but proved to be undoubtedly of the migratory southern race *patagonica* when reexamined by James Bond and R. Meyer de Schauensee (Bond to Eisenmann, *in litt.*).

At Cana, on Cerro Pirre, Darién, on May 22, 1912, E. A. Goldman recorded "a flock containing hundreds seen perched on wires. Later in the day at least 100 were sitting close together on a spot where the ground was bare, and where I was unable to find anything to attract them." The 2 specimens that he collected are of the present race.

On April 5, 1954, I saw a swallow resting on high wires opposite the fire station at Pedro Miguel, Canal Zone, that appeared definitely to be *patagonica*. From its elevated position facing me, I had clear view of the undertail coverts, which showed the restriction of the black color to the lower area that marks this subspecies. Guy Tudor saw one over the Bayano River below Chepo on April 2, 1971 (Ridgely, *in litt.*).

Farther north, migrant individuals of *patagonica* have been collected from groups of other swallows by Howell, July 9, 1954, at El Recreo, Depto. Zelaya, southeastern Nicaragua (Condor, 1955, p. 188), and by Alvarez del Toro, May 24, 1954, at Tuxtla Gutierrez, Chiapas, Mexico (Condor, 1957, p. 268).

On June 17, 1971, Eisenmann, with J. J. Pujals, carefully examined a group of swallows on a lowland roadside telegraph wire between Chepo and La Capetana, eastern Province of Panamá, that included 1 South American migrant *P. tapera fusca*, *T. albilinea albilinea*, and 11 *N. c. patagonica*. Ridgely reports seeing what he believes were *patagonica* at El Llano, eastern Province of Panamá, on August 2, 1972, (6 birds, adults and immatures) and 2 on August 5 at Empire Range

near Pedro Miguel Locks. N. G. Smith (Willis and Eisenmann, 1979, *Smiths. Cont. Zool.*, no 291, p. 24) saw 4 at Barro Colorado Island, Canal Zone, on August 20, 1972, that were probably of this race.

STELGIDOPTERYX RUFICOLLIS (Vieillot): Rough-winged Swallow,
Golondrina Ala de Sierra

FIGURE 3

Hirundo ruficollis Vieillot, *Nouv. Dict. Hist. Nat.*, nouv. ed., vol. 14, September 1817, p. 523. (Bresil = vicinity of Rio de Janeiro.)

Above, grayish to blackish brown, darker on remiges and rectrices than on back; throat light brown to grayish white, abdomen white to yellowish white.

Description.—Length 125-132 mm. Adult (sexes alike), above grayish to blackish brown; throat variable in the subspecies from cinnamon-buff to grayish white; breast light brown, rest of undersurface white. Rump varying in subspecies from brownish to whitish. Adult male (and female, to less degree) with the tips of the barbs on the outer border of the first primary stiffened and recurved, so that they are roughened to touch.

These are the most common and widely distributed of the swallows of Panamá, ranging in open areas from the lowlands to the slopes of the mountains. In forested regions they occur along streams and around clearings.

The whitish-rumped resident subspecies is seen often in pairs along roads, especially where these are bordered by cut banks in which there are shallow cavities that may shelter nest sites. In the period of northern winter the 2 dark-rumped migrant races from the north range in small flocks along the larger streams through the lowlands.

The taxonomy of this complex remains in dispute, both as to the number of species and subspecies to be recognized. Here all forms are treated as conspecific.

[Stiles (Auk, 1981, p. 282) has studied the systematics of these swallows in Costa Rica, concluding that 2 species are represented. Because he cites Wetmore's unpublished manuscript for the present volume, we have left Wetmore's account essentially unaltered. Basically, there are 2 distinct forms of *Stelgidopteryx*: a northern one that is uniform brown above and mostly whitish below (*serripennis* group), and a more colorful southern one with a white rump, rufous throat, and yellowish underparts (*ruficollis* group). Stiles maintains that the 2 groups behave as distinct species in Costa Rica, with *serripennis* being

found in montane regions and *ruficollis* at lower elevations. There are localities where they evidently form mixed colonies without intergrading, although it would seem that specimen evidence for lack of intergradation at these sites is scant. The problem remains with what to do with the form *decolor*, which has a rather circumscribed range, being found along the southern half of the Pacific coast of Costa Rica south and east in Panamá to Veraguas. Stiles recognized *decolor* as a subspecies of *Stelgidopteryx ruficollis*, but its characters are exactly those one would expect of intergrades between *ruficollis uropygialis* and *serripennis*; such an interpretation is reinforced by the great variability observed in *decolor*. Based purely on museum specimens, one could argue that *serripennis* and *ruficollis* represent former isolates that in coming in contact along the Pacific Coast have formed a hybrid zone (there apparently are no pure parental types in the range of "*decolor*"), whereas in their area of contact in the montane regions of the Atlantic slope they perhaps behave differently. More fieldwork and collecting will definitely be needed before this problem can be resolved satisfactorily. S. L. O.]

FIGURE 3.—Portion of outer primary feather of the Rough-winged Swallow, *Golondrina Ala de Sierra*, *Stelgidopteryx ruficollis*, showing hooklike leading barbs.

STELGIDOPTERYX RUFICOLLIS SERRIPENNIS (Audubon)

Hirundo serripennis Audubon, Orn. Biogr., vol. 4, 1838, p. 593. (Charleston, South Carolina.)

Characters.—Throat grayish white; rump and upper tail coverts grayish brown concolor with back; pale edgings on secondaries reduced in extent, and darker, less definitely white; upper surface somewhat darker; wings dull black; tail brownish black.

Measurements.—Males (10, taken in the breeding range, March to

June), wing 105.2-111.4 (108.6), tail 47.0-50.6 (48.6), culmen from base 9.8-10.6 (10.2), tarsus 10.3-11.7 (11.2) mm.

Females (10, taken in the breeding range, April to July 2), wing 99.7-104.3 (102.0), tail 45.3-49.5 (47.0), culmen from base 9.3-10.6 (10.2), tarsus 10.3-11.8 (11.2) mm.

Winter migrant from the north, found locally along the lower channels of the larger rivers. This is the breeding form of the eastern United States, southern Ontario, and southwestern Quebec. In Panamá, in the season of migration and the northern winter it is found regularly in small flocks along the larger stream channels in the lowlands. Museum specimens examined include 5 males and 12 females, collected from December 14 to March 8, in Bocas del Toro (Almirante, Changuinola), western Colón (Río Indio), and northern Canal Zone (Juan Mina, above Gamboa, and Gatún).

[I entertain doubts about separating the subspecies *fulvipennis* and *psammochroa* from *serripennis* but A. R. Phillips recognizes all three and has identified specimens of each from Panamá. Many of those identified as *psammochroa* by Wetmore were considered to belong to *serripennis* by Phillips. We have not located an account or synonymy for the race *fulvipennis* among Wetmore's manuscript material and it is not clear whether its omission was an oversight. In his card file is a hand-written entry (dated July 1958) indicating that he considered a specimen from Calovévora, Veraguas, in the British Museum to be referable to *fulvipennis*, but in the Smithsonian collections the only specimens so labeled by Wetmore are a few very old ones from Costa Rica. An adult female specimen taken by Wetmore on June 10, 1953, at Llano del Jardino, 15 miles east of Soná, Veraguas, he originally identified as *uropygialis* and then as a hybrid between *uropygialis* and *fulvipennis*. Wetmore was doubtless influenced by the mid-summer date, however. As the specimen shows no trace of any of the characters of *uropygialis*, it would have to be assigned to *serripennis* in the broad sense. It may represent a bird that simply failed to migrate north in the spring. S. L. O.]

STELGIDOPTERYX RUFICOLLIS PSAMMOCHROA Griscom

Stelgidopteryx ruficollis psammochrous Griscom, Proc. New England Zool. Club, vol. 11, December 14, 1929, p. 72. (Oposura, Sonora.)

Characters.—Like *Stelgidopteryx ruficollis serripennis*, but averaging slightly paler on upper surface. Scapulars, upper wing coverts, and outer web of secondaries and inner primaries edged pale reddish brown.

Measurements.—Males (10 taken in breeding season, March to May in southern Arizona), wing 104.5-111.5 (108.6), tail 45.3-50.0 (47.5), culmen from base 8.5-10.8 (9.7), tarsus 10.2-11.2 (10.6) mm.

Females (10 taken in breeding season, April to June, in Baja California, southern California, and southern Arizona), wing 100.2-107.4 (104.4), tail 42.9-48.7 (46.3), culmen from base 9.1-10.7 (9.9), tarsus 10.2-11.5 (10.9) mm.

Winter migrant from the north, found locally from December to March along the lower channels of the larger rivers. Recorded from specimens in western Colón (Río Indio, Chilar) and the northern Canal Zone (above Gamboa, near Juan Mina).

This is the form that breeds in the western United States and southwestern Canada. The series of 12 specimens taken in Panamá from small flocks during January, February, and March in 1952, 1955, and 1961 includes 9 females and 3 males.

In 1952, in February and March, I found these swallows abundant along the lower course of the Río Indio in western Colón, in small flocks that fed over the water and the adjacent shore. In the main they ranged apart from the scattered pairs of the resident race *uropygialis*, which were more common farther inland along the river.

STELGIDOPTERYX RUFICOLLIS UROPYGIALIS (Lawrence)

Cotyle uropygialis Lawrence, Ibis, ser. 1, vol. 5, no. XVIII, April 1863, p. 181. (Atlantic slope, Canal Zone, Panamá.)

Stelgidopteryx ruficollis decolor Griscom, Proc. New England Zool. Club, vol. 11, Dec. 14, 1929, p. 69. (Divalá, Chiriquí.)

Characters.—In general like the northern migrant races, but throat and upper foreneck rufous; darker above; rump slightly to definitely paler than back, shading from light gray at base of feathers to nearly white at tips; breast, sides, flanks, axillars, and underwing coverts light grayish brown; carpal edge of wing barred rather indistinctly with dull white; center of lower breast yellowish white; abdomen and undertail coverts white, in some tipped with black. Immature, with back, wing coverts, and tertials edged (in part indistinctly) with dull cinnamon; rump, sides, and flanks tinged with cinnamon.

In a female, taken at El Llano, eastern Province of Panamá, February 3, 1962, the iris was wood brown; bill, tarsus, and toes black. In another of the same sex from Puerto Armuelles, Chiriquí, February 7, 1966, the iris was dark brown, tarsus and toes fuscous, claws black.

Measurements.—Males (10 from Canal Zone, eastern Province of

Panamá, and Darién), wing 103.5-112.1 (108.0), tail 47.6-52.5 (50.3), culmen from base 9.1-11.0 (10.2), tarsus 9.6-10.9 (10.1) mm.

Females (10 from Canal Zone, San Blas, eastern Province of Panamá, and Darién), wing 100.0-104.1 (101.0), tail 45.0-49.0 (47.3), culmen from base 9.0-9.9 (9.3), tarsus 9.5-10.7 (10.1) mm.

Resident. Ranges throughout, from the lowlands to 1500 m in the mountains of Chiriquí. They are seen commonly, singly, in pairs, or at the proper season, with groups of young, over streams or ponds, and also where earthen banks border roads. One or two may be noted among flocks of winter migrant swallows from the north, but in general these residents tend to feed and range apart. In late January 1957, at Mandinga, San Blas, 100 or more circled in loose company at sunset, feeding, and at intervals resting, in the open branches of a dead tree until early dusk, when suddenly they disappeared to sleeping quarters that I did not discover. At sunrise they came again to the tree to rest in the sun. When I collected 5 at random to check their identity on the morning of January 23, I was interested to find that all were females. Throughout the Isthmus these flocks are recorded through February. Then, in pairs or groups of half a dozen, they begin to examine the steep earthen banks along the rivers where later they nest. In the last week of March, along the Río Jaqué in eastern Darién, they were starting to dig nest holes. Soon many were nesting, and through April their breeding season was fully under way throughout their range. In early June, near Soná, in the lowlands of western Veraguas, fully grown young were on the wing.

Males at times were protective of their nesting area against intrusion by other swallows. In late February 1960, on the Brackney farm at Palo Santo, Chiriquí, a pair was preparing to nest in a low bank on the shore of a small impoundment to water farm animals. The male dove constantly at the small Blue-and-white Swallows that came to drink and bathe. On one occasion he also pursued a single Vaux's Swift that came down to the water. I was intrigued to observe that in the long, swinging circles of their flight, the swift, in escaping, did not outdistance the swallow.

Like related swallows, these birds feed on small insects captured in endless circling in the air. The only call that I have heard from them is a low, harsh *chip*, a sound without great carrying power.

I have noted that among this race of the Rough-winged Swallow some dig their nest holes while others may use old burrows made by the local kingfishers. The holes may be in the face of a perpendicular bank along a stream, or along a cut bank beside a roadway, away from water.

The nest is a fairly compact mass of leaves, straws, and similar materials, with a depression in the upper side for the eggs. These are white and may be from 4 to 6 in number. Most of the published observations of nesting in this swallow deal with the form or forms found in Guatemala or in Trinidad. According to Belcher and Smooker (Ibis, 1937, pp. 506-507), the subspecies *aequalis* of Trinidad, similar in size and color pattern to *uropygialis* of Panamá but with whiter rump, white edgings on the longer secondaries and inner primaries, lighter breast and yellow abdomen, has the eggs "immaculate white, smooth-shelled and slightly glossy." A set of 3 measured 18×13 , 19×13 , and 18.5×12.5 mm. The measurements cited for the race *uropygialis* in Schönwetter, Handbuch der Oologie (Lief. 17, 1970, p. 194), of $18.5-20.3 \times 13.0-14.5$ mm, average somewhat larger.

The colors recorded in the description above are those typical of *uropygialis* in Panamá from Darién and San Blas west on both Caribbean and Pacific slopes through Veraguas; beyond, through Chiriquí and Bocas del Toro, and continuing in Costa Rica and Nicaragua to southeastern Honduras (Howell, Condor, 1972, p. 326). In addition, there is much individual variation toward the duller colored subspecies *fulvipennis*, found in typical form farther north in Central America. These individuals, with variable, generally paler coloration, were separated by Griscom as another race, *decolor*. They are found regularly through the western sector of the Panamá range of the normally colored *uropygialis* and appear to have no valid racial status.

Family CORVIDAE: Crows and Jays, Cuervos y Urracas

The Corvidae, a family of more than 100 species, are distributed widely through all continents of the World, except Antarctica. It is interesting that the prominent crow-raven group, of large size and mainly black color, found through much of the Old World, even to Australia, in the Americas does not extend south beyond northwestern Nicaragua. The smaller jays range into South America as far as Bolivia.

The jays are omnivorous and feed adeptly in a variety of fashions, even pursuing aerial insects in the manner of a flycatcher. They are usually found in small flocks that move noisily through the woods, traveling at all heights. Nothing seems to be recorded about the nesting behavior of any species in Panamá, although such research would prove most rewarding. Not only are the varying degrees of nesting coopera-

tion in tropical jays of interest, but even within a single species, such as the Brown Jay, the level of participation by morphologically immature birds seems to differ by region.

KEY TO SPECIES OF CORVIDAE

1. Smaller, wing less than 130 mm; wings and tail extensively blue..... 2
 Larger, wing more than 160 mm; wings and tail blacker, with little or no tinge of blue..... 3
2. Throat and foreneck dull black; crown and back of head light blue; throat black. Azure-hooded Jay, *Cyanolyca cucullata cucullata*. p. 50
 Lower throat, foreneck, and a transverse band between the eyes, extending back narrowly on the side of the crown, light blue.
 Silvery-throated Jay, *Cyanolyca argentigula argentigula*. p. 48
3. Foreneck and upper breast deep black; lower breast and abdomen pale yellow; a line on side of jaw and spots above and below eye light blue.
 Black-chested Jay, *Cyanocorax affinis zeledoni*. p. 45
 Foreneck and upper breast dull brownish black, shading to dull white to light brown on rest of lower surface.
 Brown Jay, *Psilorhinus morio cyanogenys*. p. 42

PSILORHINUS MORIO CYANOGENYS Sharpe. Brown Jay, Pia-pía

Psilorhinus cyanogenys Sharpe, Cat. Birds Brit. Mus., vol. 3, 1877, p. 140, pl. 9. (Pearl-Bay Lagoon, Mosquito = Laguna de Perlas, Caribbean coast of Nicaragua.)

Psilorhinus mexicanus captus Kennard and Peters, Proc. New England Zool. Club, vol. 10, August 25, 1927, p. 2. (Chiriquito, Bocas del Toro, Panamá.)

Large; generally dull in color, with long-tipped tail; bill black, or in immatures, yellow; short bristly frontal feathers above base of bill erect.

Description.—Adult (sexes alike), head, neck, and upper breast dark sooty brown, becoming dark grayish brown on back and scapulars, in some, paler on the upper tail coverts; wings and tail deep olive-gray, the inner rectrices usually darker; tail tipped rather broadly with white; lower breast changing to grayish brown, in some the shift in color gradual, in others abrupt; undertail coverts grayish white, occasionally nearly white; underwing coverts and scapulars light gray to dull white.

There is a membranous pouch on the upper breast which, when the bird calls, is inflated so that it is briefly visible.

Measurements.—Males (9 from Bocas del Toro), wing 178.0-200.0 (184.1), tail 175.0-190.0 (187.9, average of 8), culmen from base 39.6-45.4 (42.8), tarsus 45.3-49.0 (47.5) mm.

Females (7 from Bocas del Toro), wing 180.0-193.0 (188.4), tail

172.0-198.0 (185.1, average of 6), culmen from base 40.6-42.7 (41.6), tarsus 46.4-52.2 (48.5) mm.

Resident. Fairly common locally through the lowlands of Bocas del Toro, from near the Río Sixaola west to Chiriquí Grande.

Brown Jays range usually in small bands, in the borders of open forest and second growth; they are not found in extensive stands of heavy forest. Commonly they move about under cover among leafy branches where they may not be noticed. They often fly out singly, however, or as a group across open areas, calling loudly and making a sharp popping sound through quick inflation and deflation of the curious air sac exposed on the upper breast. Lawton (in Jansen, 1983, *Costa Rican Natural History*, pp. 573-574) reports that flocks use 8- to 10-ha home ranges, defending a territory within the home range only when breeding. The limited area where the species is known at present in Panamá marks the southern extension of the species, which is found on the Caribbean slope of Central America, north to northeastern Mexico in Nuevo Leon and to extreme south Texas. It crosses to the Pacific slope only in northwestern Costa Rica.

Adult individuals have the bill and feet black. In immature birds these areas are yellow to partially black, the pattern varying apparently according to age.

Lawton (in Jansen, 1983, *Costa Rican Natural History*, pp. 573-574) found that in Costa Rica young members of the flock help build the nest and will occasionally sit in it, but their efforts are irregular. The number of females that contribute eggs to the nest or take part in incubation varies. In one case where more than one bird was known to have contributed eggs to the nest, only one bird was seen to incubate or brood. The average clutch size of 30 nests examined by Lawton was 4.5, nearly twice that reported by Skutch (*Pacific Coast Avif.*, no. 30, 1960, pp. 231-257), further suggesting wide variability in the breeding habits of this species.

In Guatemala, Skutch recorded a single brood each year, beginning in February and March. The nest site was in trees in pastures or in recent second growth, with the nests high and inaccessible near the tips of long, slender branches. Other locations were in high forks in trees, and in the crowns of banana plants. The bulky nest is made of sticks, with a shallow cup lined with long, fibrous roots pulled by the birds from the earth. Construction, by both male and female, is accompanied by much calling. Lawton and Lawton (*Auk*, 1980, pp. 631-633) have shown that critical factors in nest-site selection are protection from wind and isolation from predators. Thus, the birds seek sites relatively

sheltered from wind, but also isolated from other trees that would give predators easier access. Lawton and Lawton found that nests in more wind-protected sites were more likely to be successful than nests in more exposed sites.

The eggs are bluish gray "thickly covered with fine brown speckles, which on the thicker end nearly obscure the ground color." Seven eggs measured from $32.5\text{--}36.5 \times 23.8\text{--}25.4$ mm. The incubation period ranged from 18 to 20 days. The young at hatching have a yellow skin, sometimes darker on the upper surface, and are without down. Bill and feet are yellow, and the inside of the mouth is red. Skutch noted that the bills of the immature birds darkened slowly with age.

Lawton and Guindon (Condor, 1981, pp. 27-33) found that all members of the flock bring food to the nest. Over the course of the nesting season inexperienced young birds become more efficient at bringing appropriate food items.

The curious inflatable breast sac found in all races of this species of jay appears to have been noted first by Samuel Cabot, Jr. (Journ. Bost. Soc. Nat. Hist., vol. 4, 1844, pp. 460-467), in the race *P.m. vociferus* in Yucatán. He speaks of their calls as loud and disagreeable and in a male and female that he collected, records "a most peculiar formation in the trachea, being a membranous bag, coming off between the rings, about halfway down, and intimately connected with the skin of the neck." There can be no doubt that he noted the peculiar air sac, though his interpretation of it as connected with the trachea was in error.

Lee S. Crandall (Zoologica, vol. 1, no. 18, 1914, p. 337) in observations near Guápiles, on the base of Volcán Turrialba, Costa Rica, in early 1914, made careful observations on the air sac in the field, verified later by data from a captive bird at the New York Zoological Society's Bronx Zoo. He described the popping noise heard in the field, and in the zoo recorded that the bird "never uttered a vocal note, but distended the cervical sac whenever he was excited, making a popping sound which could be heard at a distance of several yards. On examination of this bird after death, the sac was found lying between the branches of the furculum, 1 mm anterior to their point of union. Deflated, it measured 13 mm from base to tip and 19.5 mm along the base, the tip being rounded. . . . The sac communicated directly with the praebronchial or interclavicular air-sac (*Saccus interclavicularis*), through a large opening in the furcular membrane, and doubtless received its air from this source."

A more detailed account is that of Sutton and Gilbert (Condor, 1942, pp. 160-165, figs. 59, 60) based on observations and specimens

from northeastern Mexico. Their illustration of a plucked specimen shows clearly the position of the distended sac, which externally projects from the space between the bifurcation of the two arms of the furcula. This verifies the anatomical details given by Crandall, with the appropriate suggestion that to avoid confusion with terms current for the air sac system in birds it be called the furcular sac.

During fieldwork in southern Veracruz, Mexico, in early 1939, I found the nominate race, *Psilorhinus m. morio*, common, and heard their curious explosive sounds regularly. When they flew overhead, a yellowish spot appeared on the breast, though at rest this was not visible. With birds in the hand I found that the furcular sac was bare except for a few scattered filamentous feathers, mainly on the lower portion. The skin of the upper, anterior half was thin and partly transparent. The thicker-walled lower end, measuring approximately 15×20 mm, was dull buff in color. Posteriorly, the sac narrowed immediately to a slender tube as it entered the breast behind the furcula, and continued thus to its connection with the interclavicular air sac. In jays recently dead, I could inflate and deflate the sac by compressing and releasing the posterior part of the body so that air was forced into it and then withdrawn (Wetmore, Proc. U. S. Nat. Mus., vol. 93, 1943, pp. 298-299).

Hardy, in his revision of the New World jays (Condor, 1969, p. 363) lists the Brown Jay in the genus *Cyanocorax*, subgenus *Psilorhinus*, as *Cyanocorax morio*. As the curious furcular sac has no known approach in any other species of the family, it seems appropriate to place this jay in a distinct genus as *Psilorhinus morio*.

CYANOCORAX AFFINIS ZELEDONI Ridgway: Black-chested Jay,
Chochó

FIGURE 4

Cyanocorax affinis zeledoni Ridgway, Auk, vol. 16, no. 3, July 1889, p. 255. (Talamanca, Costa Rica.)

Fairly large; head, foreneck, and upper breast black; rest of lower surface pale yellow; wings and tail bluish; tail with a broad white tip.

Description.—Adult (sexes alike), head, foreneck, and upper chest black; spot on posterior half of superciliary area, another on posterior half of lower eyelid, and a malar streak, bright blue; nape purplish blue; lower hindneck, back, scapulars, and rump dull, somewhat bluish, brown; wings, upper tail coverts, and tail dull blue, the tail tipped broadly with pale yellowish white.

Juvenile, crown and side of head dull blackish brown; throat, fore-neck, upper breast, hindneck, scapulars, and back dull grayish brown.

An adult male taken at Las Palmitas, Los Santos, January 24, 1962, had the eye yellow; bill, tarsus, and toes black. In a fully grown immature male shot on the same day, the iris was duller yellow, and the external edge of the gape honey yellow. Other markings were as in the adult.

Measurements.—Males (10 from Chiriquí to Darién), wing 163.0-175.0 (167.5), tail 157.0-168.0 (162.1), culmen from base 30.3-36.2 (33.1), tarsus 45.0-52.0 (47.8) mm.

Females (10 from Chiriquí to Darién), wing 159.0-169.0 (164.3), tail 154.0-161.0 (158.3), culmen from base 31.0-35.9 (33.7), tarsus 47.0-51.9 (50.1) mm.

FIGURE 4.—Black-chested Jay, Chochó, *Cyanocorax affinis zeledoni*.

Resident. Common in forested areas (including second growth) throughout the Republic, from near the Costa Rican boundary in Chiriquí (Divalá, Santa Clara) and Bocas del Toro (Río Sixaola, Changuinola) including the Azuero Peninsula (Pedasí, Tonosí, Las Palmitas) on both slopes to the Colombian boundary, to 1300 m elevation (near El Volcán and 1600 m (above Boquete at Horqueta, Velo); 600 m on Cerro Pirre (Cana) in Darién.

As these jays range in forest and brushy cover, when these are cleared in cultivation, the birds disappear. However, if the clearings

are later abandoned so that they are covered gradually by second growth (*rastrojo*), the birds may return. They seem to prefer edges and second growth to mature forest. The species is no longer found in Barro Colorado Island; this may be an indication that it avoids solid forest.

Customarily they range in small groups, scattered through the forest, usually under cover. In early morning they may come out into border fields to rest in the sun in dead trees, but as the morning advances, disappear again into forest cover. Usually from 3 to 6 or 8 are found in company, though once near Mandinga in western San Blas I encountered a flock of 30 ranging through the border of a mangrove swamp where the trees grew in shallow water.

Usually they move quietly, hopping or flying a few feet at a time along the tree limbs. If not alarmed, in crossing rivers or other open areas they begin with quick strokes of the wings and then continue by gliding. They are adept at this, and may sail gracefully for 30 m or more before they lose momentum.

The country name of chochó is given in imitation of their usual call. This name was in common use among the Chocó Indians, but was varied occasionally to a harsher sound, *geo geo*, by some of the Cuna. Though the birds are secretive, they come readily to the usual squeaking sounds that naturalists use to attract birds. Eisenmann interprets one common call as *kyuck-kyuck*, or *kyuck* alone.

Once as the members of a flock called steadily, I approached quietly to find them resting or clinging in close company a meter above the ground, peering down at a small snake partly concealed in the low vegetation. More rarely, I heard low calls of *jay jay* when the birds were not alarmed. Also, I occasionally saw them mobbing small hawks, once, to my surprise, one of the predatory Collared Forest-Falcons. Ridgely (*in litt.*) has seen them mob a roosting Spectacled Owl.

Some of the stomachs that I examined held parts of small lizards, others the remains of large ants, beetles, and seeds and other partly digested vegetable matter. Three birds taken by Burton (Bull. Brit. Orn. Club., 1975, p. 85) weighed 194, 203, and 222 g.

In many days afield where these jays were common, the only observation connected with nesting was near Yepe on the Río Paya, Darién, in mid-March, when one flew across the open river carrying a straw, followed closely by a companion. Goodwin (Crows of the World, 1976, p. 306) describes the nest as being of "sticks and twigs, lined with fine pliable twigs, and probably also at times with tendrils and fibres." A nest found near Río Parancho, lower Atrato Valley,

Colombia, was in "a small isolated tree covered with creeping spiny palms." Goodwin gives the clutch as 3 to 5; the eggs are "pale buff or brownish white, spotted and blotched with olive brown and with underlying lilac or grey markings." Two eggs collected by T. K. Salmon at Remedios, Antioquia, Colombia (no date) now in the British Museum collection measure 34.6×24.6 and 34.0×24.65 mm. In the Santa Marta region of Colombia, nests with eggs have been found from early April until mid-May, and Hardy found a pair with dependent but nearly full-grown young in Venezuela in July.

The nominate race *affinis* found in Colombia and western Venezuela differs in being clear white on the lower surface and the tip of the tail. The difference between the two forms is readily seen when series of birds from the two areas are examined. Occasional birds from eastern Darién and San Blas in eastern Panamá show some approach to this lighter condition, but the population of northern Chocó, Colombia, is like that of Panamá and is assigned to *zeledoni*.

CYANOLYCA ARGENTIGULA ARGENTIGULA (Lawrence):
Silvery-throated Jay, Urraca Garganta de Plata

FIGURE 5

Cyanocitta argentigula Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 11, nos. 3-4, February 1875, p. 88. (Near Pico Blanco, southern Cordillera de Talamanca, Costa Rica.)

Cyanolyca blandita Bangs, Proc. Biol. Soc. Washington, vol. 19, July 30, 1906, p. 109. (Volcán de Chiriquí, above Boquete, 2750 meters.)

Description.—Length 255-265 mm. Adult (sexes alike), head, back, chin, sides of neck, breast, and undersurface of wings black; lower back, scapulars, rump, upper and undertail coverts, abdomen, and flanks dusky, with a dull purplish blue tinge; wings and tail dull blue; fore-neck broadly pale bluish white, with lower margin where it joins the upper breast paler, nearly white; a narrow transverse band of bluish white across the center of the crown at level of the eyes, extending laterally as a narrow line along the side above and behind the eyes on either side.

A male and female, taken along the Boquete trail at 2100 m above Bajo Grande, beyond Cerro Punta, Chiriquí, March 4, 1955, had the bill black; inside of mouth dusky neutral gray; tongue neutral gray; iris dark brown; tarsus, toes, and claws dull black.

Measurements.—Males (10 from Chiriquí), wing 117.8-129.5 (122.7), tail 118.6-133.1 (126.6), culmen from base 27.4-30.8 (29.0), tarsus 34.5-37.2 (35.8) mm.

Females (5 from Chiriquí), wing 118.5-121.1 (119.6), tail 118.7-128.0 (123.2), culmen from base 28.0-30.4 (29.0), tarsus 32.3-36.8 (35.1) mm.

Resident. Found locally on the upper slopes of Volcán de Chiriquí, from 1525 to 3000 m elevation, from above Boquete to above Cerro Punta.

FIGURE 5.—Silvery-throated Jay, Urraca Garganta de Plata, *Cyanolyca argenticula argenticula*.

On the forested slopes of the higher levels of Bajo Grande, beyond Cerro Punta, I found this jay ranging through the higher branches of the forest trees in scattered flocks of a dozen to 20 or more. In mannerism they suggested common species of the north of the genus *Cyanocitta*. Their low calls, *pay pay pay*, uttered slowly, also were similar in tone but less vociferous. While they did not seem timid, the fairly thick growths of the abundant epiphytes and subdued coloration of the birds tended to conceal their movements so that they were not conspicuous. When I took one or two for specimens, their companions seemed little alarmed. If their low calls were heard at a distance, the birds usually came near when I made the usual squeaking sounds of our bird calls. But against the dark background of the tree limbs and thick parasitic growths the birds often were so screened that they could not be seen. Their flights were for only short distances among the branches. The stomachs of those examined were filled with insects.

The type specimen of the nominate race, *argenticula*, in the Smithsonian collections, obtained in April 1874 by Juan Cooper, came from William M. Gabb. It appears to be the only older record known for this form for Costa Rica. Pitelka's (Journ. Washington Acad. Sci.,

vol. 41, 1951, p. 113) thorough study of records of Gabb's itinerary concluded that the specimen was collected "near and more or less north of Pico Blanco," which is near the southern end of the Cordillera de Talamanca. Sipurio, which Pitelka mentions also, is lower down on the Caribbean slope in the area drained by tributaries of the Río Sixaola. In older collections in the British Museum there are 2 specimens collected by Arcé, without other data, except that they are marked "Veragua," a term applied earlier to the whole of western Panamá.

Modern records with definite locality for *argentigula*, mainly those in the Mönniche collection (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 545-546), all lie on the Pacific slope. Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 57) listed a series of 11 taken by W. W. Brown in June 1901 from Volcán de Chiriquí, 3000 m. Bangs *loc. cit.*, p. 16) says that Brown collected "for a short time in June on the northern or Caribbean exposure of the volcano" from which the species has been included by Blake as from the Caribbean drainage. This is not certain, however, as Brown worked mainly near or above Boquete. From there the old trail to the Cerro Punta area was a usual route, which would have taken him into the area where I found this jay common, on the Pacific slope.

Eisenmann and others have seen this species frequently above Cerro Punta, western Chiriquí (on the trail to Boquete) between 1920 and 2190 m, in pairs or small flocks, uttering a rather nasal, but not loud, *chaak*, *cheuk*, *check*.

The race of the mountains of the Cordillera Central, farther north in Costa Rica, marked by paler, whiter throat and crown markings, was named *Cyanolyca argentigula albior* by Pitelka (*cit. supra*, p. 114) from a male in the Smithsonian collections obtained by Ridgway and Zeledon on Volcán Turrialba.

**CYANOLYCA CUCULLATA CUCULLATA (Ridgway): Azure-hooded Jay,
Urraca Corona Azul**

Cyanocorax cucullatus Ridgway, Proc. U.S. Nat. Mus., vol. 8, May 6, 1885, p. 23.
(Navarro, Costa Rica.)

Crown light blue; rest of head and breast black, body dull blue.

Description.—Forehead, side of head, upper breast, throat, hindneck, upper back, and undersurface of wings black; crown and occiput light blue; back, wings, rest of lower surface, and tail dull blue.

Iris maroon (or bright red, as in a specimen collected by Ridgely in Chiriquí); tarsus black (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 465); bill black (note on specimen label).

Measurements.—Males (8 from Panamá and Costa Rica), wing 117.0-128.3 (121.6), tail 127.1-145.9 (136.6), culmen from base 24.7-33.0 (29.3 average of 7), tarsus 35.7-38.2 (37.0) mm.

Females (8 from Panamá and Costa Rica), wing 115.0-131.0 (120.8), tail 115.5-140.3 (120.8), culmen from base 26.3-31.4 (29.1), tarsus 35.4-38.7 (36.6) mm.

Resident. Known definitely in Panamá from a male and female collected March 20, 1926, by Kennard at 900 m on the Boquete trail, inland from Laguna de Chiriquí, and from 3 males recorded by Bangs (Proc. New Engl. Zool. Club, vol. 3, 1902, pp. 57-58) taken on the Caribbean slope at 2100 m by Brown in June 1901. Blake, in his account of the Mönniche collection (Fieldiana: Zool., vol. 36, 1958, pp. 544-545) lists 2, male and female, taken June 26 and July 14 at Camp Holcomb on the Holcomb trail at 1500 m.

The species is known in Panamá definitely from Chiriquí and Bocas del Toro. The following early reports are of uncertain validity. Sharpe (Cat. Birds Brit. Mus., vol. 3, 1877, p. 127) under the heading *Cyanocorax ornatus* (an early name for *C. cucullata*) lists a specimen from "Veragua. M. E. Arcé." Apparently this is the basis for the report of "Panama. Veragua (Arcé)" by Salvin and Godman (Biol. Centr. Amer., Aves, vol. 1, 1887, p. 500, see errata and corrigenda, p. xlv). Ridgway (Bull. U.S. Nat. Mus., vol. 50, pt. 3, 1904, p. 323) included records of 2 specimens that need further consideration. One is a skin marked "Arcé, Veragua, 1877" (originally identified as *Cyanocitta ornata*) that came in the Boucard collection with no other information as to locality. The second is a male purchased from the missionaries Heyde and Lux labeled "Chitra—Prov. Coclé, Isthmus of Panamá, June 18, 1889, irides red-brown, found higher parts of mountain virgin forest." The detailed travels of these travelers are not clearly known, but it appears certain from available data that in the early part of 1889 they crossed from Natá, Coclé, to the Caribbean slope in the upper area drained by the Río Coclé del Norte. Two of their principal localities were "Cascajal" and "Chitra." The region as yet is little known ornithologically.

More recently, Ridgely (*in litt.*) found it fairly common in late February and early March 1976 at the Fortuna Dam site (900-1050 m), east of Boquete, ranging the very humid foothill forest there in small groups and in pairs. The birds were rather noisy, but quite secretive and elusive, and only infrequently seen. He collected 1 on March 4, 1976.

N. G. Smith (*in litt.* to Eisenmann) reports seeing this species in

Bocas del Toro in April 1979 when he crossed the divide at 1700 meters from Cerro Colorado, eastern Chiriquí.

This race also occurs on the Caribbean slope of Costa Rica; other forms are found north to eastern Mexico.

Family CINCLIDAE: Dippers, Mirlos Acuáticos

The 5 species of this family, all of small size with heavy bodies and short tails, in general appearance suggest wrens. They are peculiar in the Order Passeriformes for their specialization for aquatic life, especially through their dense, water-repellant plumage. Dippers are found along swift streams in hill country, where they enter the water to range along the bottom in search of food. In this they move by using the wings as in flight, or walk through skillful use of oblique currents and eddies made by stones and similar obstacles. They spend their lives entirely along streams, even through colder seasons, unless ice prevents their entering the water.

Their bulky, domed nests may be placed at the border of waterfalls, or sheltered by stones along swift-flowing channels. The glossy white eggs, rather large in size, range from 4 to 6 in number. From observations, as yet somewhat limited, it appears that for a period during molt the primary and secondary wing feathers may be renewed in such a manner that the bird may be incapable of aerial flight, but is still capable of its usual aquatic activities.

The 5 species known are widely distributed—one in the Andes of South America; another in southern South America; one in Central America and western North America; one in Europe, northwestern Africa, and central and southern Asia; and a fifth in eastern and southern Asia.

CINCLUS MEXICANUS ARDESIACUS Salvin, American Dipper, Mirlo Acuático Americano

FIGURE 6

Cinclus ardesiacus Salvin, Ibis, vol. 3, no. IX, January 1867, p. 121, pl. 2. (Cordillera de Tolé, inland from Tolé, Chiriquí, Panamá.)

Medium size; heavy body, short tail; adult gray, immature with undersurface white to grayish white.

Description.—Length 165-180 mm. Adult (sexes alike), crown and sides of head dull brownish slate, shading on hindneck to the slate gray of the upper surface, this including the scapulars; wings and tail

blackish slate, margined with dull slaty; carpal edge of wing white; underwing coverts slate gray; a small white spot on upper and lower eyelids; chin and throat pale brownish gray; rest of undersurface light gray, slightly darker on flanks and undertail coverts, the latter tipped lightly with white.

Immature, above faintly lighter gray; crown grayer; primaries, secondaries, and greater and middle wing coverts tipped lightly with grayish white; undersurface white, except undertail coverts, which are gray.

Measurements.—Males (10 from Chiriquí and Costa Rica) wing 84.7-88.0 (86.3), tail 42.9-46.9 (44.9), culmen from base 20.5-22.2 (21.4, average of 8), tarsus 31.1-32.9 (32.0) mm.

FIGURE 6.—American Dipper, Mirlo Acuático Americano, *Cinclus mexicanus ardesiacus*.

Females (10 from Chiriquí and Costa Rica), wing 78.8-82.1 (80.7), tail 37.0-44.8 (40.2), culmen from base 20.2-21.4 (20.8, average of 9), tarsus 30.2-31.6 (31.0) mm.

Resident. Recorded in small numbers along mountain streams. On the Pacific slope it is found from above Santa Fé, Veraguas (Eisenmann) and in Chiriquí, from the Cordillera de Tolé west to the Río

Caldera, near Boquete, and the upper Río Chiriquí Viejo, beyond El Volcán, from 1200 to 1700 m (reported by Brown, but perhaps uncertainly, to 2200 m).

In July 1965, Dr. C. R. Schneider (a chemist) believes he saw a dipper on the Cana River near Cana, Darién (over 900 m) (Ridgely 1976, p. 265). If any dipper does occur in Darién it may be either this species or *C. leucocephalus* of the Andes.

The Panamá race is better known in Costa Rica, where it is found on the Caribbean slope of the central highlands as well as on the Pacific side of the mountains. In Panamá it has not yet been recorded on the Atlantic drainage. It was described originally from 2 females—one adult, the other in immature dress—sent by Arcé to Salvin, from the mountains inland from Tolé. The type locality, a short distance west of the boundary with the Province of Veraguas, is the most easterly confirmed report for the dipper in Panamá. The sex of the 2 specimens which I examined in the British Museum (Natural History) is marked as female on the original labels.

Another specimen in the British Museum, dated 1873, received from Boucard with the locality indicated only as "Panamá," may have come from the same source. These were the only specimens known until Brown collected a series of 11, near Boquete, and above on the slopes of the volcano, between February and April, 1901 (Bangs, Proc. New England Zool. Club, 1902, p. 51). The Mönniche collection in the Field Museum has 3 specimens, 2 from Bajo Mono, and 1 from the Río Caldera, the localities being at about 1580 and 1650 m. In the Smithsonian collections there is an adult female taken near Cerro Punta, Chiriquí, March 9, 1962, by Dr. C. L. Hayward. I recorded dippers occasionally, singly or in pairs, along the upper Río Chiriquí Viejo from near the bridge west of El Volcán to the upper courses below Cerro Punta. They were not observed on the narrower channels above the village. Always they were wary, ranging along swift water in rocky channels. No specimens were collected, since it would not have been possible to retrieve them from the fairly deep, swiftly flowing water. Their habits and low calls were like those of the slightly darker race of the mountain streams of western United States.

In March 1955, Glen Lewis told me that a pair came regularly along the river canyon beside his house below Cerro Punta. They had a nest concealed between two stones on the bank opposite his house, where it was inaccessible as there was no crossing. It appeared to be bulky, made of mosslike material. Eisenmann and Ridgely (*in litt.*) report nesting in the same general locality in 1969, 1972, and 1979.

M. A. Carriker, Jr. (Ann. Carnegie Mus., vol. VI, 1910, p. 752), in his account of this species in Costa Rica, says of it that he found a pair on a river "high in the mountains above Ujarras de Terraba, where the stream came tumbling and foaming down through a deep gorge. Their discovery was caused by first finding the nest as I was climbing up a precipitous wall of rock beside a waterfall. It was a rather flat, cup-shaped structure, built almost entirely of moss and placed on a narrow shelf of rock on the brink of the falls. It contained one partially incubated egg which was blown, but later misplaced and lost. . . . In color it was plain dull white, of the usual shape and size of the Water Ouzel of the United States."

Family TROGLODYTIDAE: Wrens, Cucaracheros

Wrens are widespread in Panamá, where they are found at all elevations. Twenty-two species, all permanent residents, are known from the Republic. They favor thick undergrowth and the lower levels in forests, where they feed on insects and other arthropods. The House Wren is common around human settlements.

The family has a wide vocal repertoire; some members are among the finest singers in Panamá, and an increasing number are known to sing antiphonally. Song is now being used as a taxonomic character; it has proved useful in determining the relationships of some variable and widely dispersed Neotropical species, such as *Microcerculus marginatus*.

Most wrens build domed nests with an entrance at one side; a few species nest in cavities. When not actually breeding, individuals of certain species roost communally, often in a "dormitory" nest built for this purpose, or in a natural cavity.

[Although now usually placed in the Mimidae, new evidence indicates that the monotypic genus *Donacobius* should be included in the Troglodytidae. The species was at one time referred to as the "Wren-Thrasher" and was considered to be a wrenlike thrasher or a thrasher-like wren (Fuertes, Bird-Lore, vol. 13, 1913, p. 342), but its wrenlike attributes have of late been overlooked. *Donacobius* is considerably larger than most wrens, but is scarcely, if any, larger than the larger species of *Campylorhynchus*, and immatures, as well as the Bolivian race, *D. a. albivittatus*, which have a white superciliary stripe, bear a striking resemblance to *Campylorhynchus griseus*. The males and females of *Donacobius* duet, which is a wrenlike trait. Olson and D. W.

Steadman examined skeletons of *Donacobius* and found a number of wrenlike characters, although in some other respects the osteology appeared to be intermediate between wrens and mimids. Mary H. Clench (pers. comm.) has found that *Donacobius* has the distinctive and unique pteryolosis of the Troglodytidae. It appears that on the basis of its specialized characters, *Donacobius* is clearly referable to the Troglodytidae, and it remains to be determined whether its other characters are merely primitive within the 10-primaried oscines or are indeed indicative of a derivation of the Troglodytidae from the Mimidae. S. L. O.]

KEY TO SPECIES OF TROGLODYTIDAE

1. Throat solid black..... 2
Throat brown, white, buffy or streaked..... 3
2. Black extending to breast.
Black-throated Wren, *Thryothorus atrogularis*. p. 94
Black limited to throat; breast chestnut.
Sooty-headed Wren, *Thryothorus spadix*. p. 95
3. Throat white or buffy..... 4
Throat brown or black and white..... 15
4. Head and underparts pure white.
White-headed Wren, *Campylorhynchus albobrunneus brachypterus*. p. 60
Crown dark..... 5
5. Crown black..... 6
Crown brown..... 7
6. Total length more than 200 mm.
Black-capped Donacobius, *Donacobius atricapillus*. p. 57
Total length less than 160 mm..... 7
7. Crown entirely black or washed with brown, total length 92-105 mm, tail very short.
White-breasted Wood-Wren, *Henicorhina leucosticta*. p. 110
Crown entirely black, total length 126-156 mm; tail longer, of normal proportions.
Bay Wren, *Thryothorus nigricapillus*. p. 85
8. Back streaked black and white.
Sedge Wren, *Cistothorus platensis lucidus*. p. 66
Back unstreaked..... 8
9. Undersurface partly or entirely barred black and white..... 9
Undersurface not barred..... 10
10. Undersurface with band of solid black, abdomen barred black and white.
Black-bellied Wren, *Thryothorus fasciatoventris*. p. 96
Side of head and undersurface entirely barred black and white.
Riverside Wren, *Thryothorus semibadius*. p. 92
11. Breast definitely gray; tail very short.
Whistler Wren, *Microcerculus marginatus lusciniæ*. p. 121
Breast whitish or washed with light brown..... 12
12. Superciliary prominent, white..... 13

- Superciliary indistinct..... 15
13. Smaller, total length 95-100 mm.
 Timberline Wren, *Troglodytes browni browni*. p. 108
- Larger, total length 125-155 mm..... 14
14. Uppersurface bright rufous; side of head barred.
 Rufous-and-white Wren, *Thryothorus rufalbus castanonotus*. p. 78
- Uppersurface, crown especially, grayish brown; side of head, below postocular
 stripe, white. Plain Wren, *Thryothorus modestus*. p. 72
15. Superciliary indistinct, total length 108-115 mm.
 House Wren, *Troglodytes aedon*. p. 101
- Superciliary indistinct, total length 120-135 mm.
 Buff-breasted Wren, *Thryothorus leucotis*. p. 68
16. Throat brown..... 17
- Throat black and white..... 18
17. Throat and breast rich chestnut; rest of body dark brown.
 Song Wren, *Cyphorhinus aradus*. p. 117
- Throat pale cinnamon, fading to buff on breast.
 Mountain Wren, *Troglodytes solstitialis*. p. 105
18. Back barred black and white.
 Band-backed Wren, *Campylorhynchus zonatus costaricensis*. p. 64
- Back solid brown..... 19
19. Back bright chestnut; breast gray; tail very short.
 Gray-breasted Wood-Wren, *Henicorhina leucophrys*. p. 114
- Back duller brown, breast not gray; tail of normal proportions..... 20
20. Breast streaked black and white.
 Stripe-breasted Wren, *Thryothorus thoracicus*. p. 81
- Breast unstreaked..... 21
21. Breast tawny-rufous.
 Rufous-breasted Wren, *Thryothorus rutilus hyperythrus*. p. 99
- Breast gray-brown.
 Stripe-throated Wren, *Thryothorus leucopogon griseus*. p. 83

DONACOBIOUS ATRICAPILLUS BRACHYPTERUS Madarász,
Black-capped Donacobius, Paralauta de Agua

FIGURE 7

Donacobius brachypterus Madarász, Orn. Monatsb. vol. 21, Feb. 1913, p. 22. (Ara-
 taca, Magdalena, Colombia.)

Medium size; slender body, buff on lower surface, dark above, with
 crown black; long white-tipped tail.

Description.—Length 210-235 mm. Adult (sexes alike), crown,
 side of head and hindneck black; back and greater wing coverts some-
 what dull brown; rump and upper tail coverts brownish buff; wings
 dull black, edged with dull brown; a white spot across base of primaries;
 tail black, tipped broadly with white, except on the central pair; entire

undersurface pale buff, somewhat whiter on the throat; lower sides and flanks barred narrowly with dull black; axillars and anterior underwing coverts dusky.

A female of the nominate subspecies that I collected on the Río Paraguay in northern Paraguay, September 30, 1920, had the bill black except for an elongate line of dull bluish gray around the base of the gonys; iris yellow; tarsus and toes fuscous; concealed bare skin on side of neck orange yellow.

Measurements.—Males, (6 from Darién), wing 80.0-84.7 (83.0), tail 96.2-100.9 (98.9), culmen from base 24.9-28.5 (26.2), tarsus 32.0-34.6 (33.4) mm.

FIGURE 7.—Black-capped Donacobius, Paralauta de Agua, *Donacobius atricapillus brachypterus*.

Females (2 from Darién), wing 79.5-80.3 (79.9), tail 94.5-94.7 (94.6), culmen from base (one only) 23.2, tarsus 30.8-32.0 (31.4) mm.

Resident. Recorded in Panamá from El Real, Darién (specimens in the American Museum of Natural History include 6 males and 1 female collected by Anthony and Richardson, January 1 to 8, 1915; male and female taken December 13, 1928).

This species ranges in suitable lowland habitat from eastern Panamá, northwestern Colombia, and most of South America, chiefly east of the

Andes, to northeastern Argentina. The Panamá race is recorded from Darién and northern Colombia to the Santa Marta region.

On April 1, 1967, Eisenmann and H. Loftin found a small colony of three or more pairs near El Real, Darién, in a dry *Montrichardia* marsh with scattered bushes. Pairs displayed on leafless bushes, perched a few inches apart. In one pair watched at close range, the upper individual gave a *whirrr* or *chirrr* and spread the tail slightly as it moved from side to side; the lower bird sitting on a different twig answered with a louder, more musical, semiwhistled *kweéa*, *kweéa*, *kweéa*, also moving its tail. Eisenmann and Loftin did not notice the bare yellow skin, although they watched this pair perform three times at close range, once using a different perch, but in each case with the louder voiced bird sitting lower.

On April 10, 1968, P. Schwartz took Eisenmann to a swampy pond in northern Venezuela, near the coast, where there was a small colony in a region of damp second-growth woodland. The birds perched on bushes in or near the pond. Both members of a pair perched on the same bush and vocalized antiphonally while wagging partly spread tails and sometimes exposing the bare orange-yellow neck skin. The semi-whistled call was noted as *wó-ee* (or *hoó-ee*), *wó-ee*, *wó-ee* and the harsh call as a wheezing or buzzy *wúzee*, *wúzee*, *wúzee*. The differences in syllabification made in the field a year apart may or may not indicate a difference in vocalizations heard from 2 subspecies.

Donacobius inhabits dense growths of grasses and rushes growing in open fresh-water swamps. While I have worked at El Real several times, I have not found it. The marshy areas bordering the lower Río Pirre are suitable habitat.

Fuertes (Bird-Lore, vol. 15, 1913, p. 342) described the song of male *Donacobius* as a loud, whistled note like that of our Cardinal, with the female accompanying him with a low grunting call. He described and figured in both sexes an inflatable sac of bright yellow skin on the side of the throat "which when the bird sings, puffs out to the size of a cherry."

Skutch (Condor, vol. 70, 1968, pp. 74-75) in Venezuela, described the nest as a deep cup built around tall grass stems. The eggs "appeared to be uniform light, reddish brown. Closer scrutiny revealed that they were mottled rather than uniformly colored, but so densely as to cover the whole surface with slightly varying shades of reddish brown." The "three eggs measured 25.5 by 16.5, 24.7 by 16.8, and 24.4 by 16.3 mm." The young at hatching were without down.

Because of its uncertain taxonomy (it differs from the Mimidae,

among which it was formerly placed, by various morphological characters and in long incubation and nestling period), Skutch suggests replacing the inappropriate English name "Mockingthrush" by *Dona-cobius*.

CAMPYLORHYNCHUS ALBOBRUNNEUS (Lawrence), White-headed Wren, Cucarachero Cabeciblanco

FIGURE 8

A large, long-tailed wren; head and undersurface white; above dark blackish brown. Juvenile birds may have indistinct lines of pale gray in the crown.

Description.—Length 180-200 mm. Adult (sexes alike), head, hind-neck, and undersurface (except as noted) plain white; underwing coverts, tibiae and undertail coverts spotted with dusky (in varying amount in the two races recognized here); rest of upper surface sooty brown.

Immature (in juvenile plumage), crown and side of head slightly to heavily lined with dull grayish brown; tibia and undertail coverts spotted in varying amount with dusky; tail in some tipped narrowly and irregularly with white; duller, more brownish black above, with the upper back lined and spotted lightly with white; flanks, abdomen, and undertail coverts faintly to definitely washed with pale buffy brown. (This pattern of markings is followed by a plumage closely similar to that of the adult.)

In recent reviews these wrens of Panamá and northwestern Colombia are listed as geographic races of the species *turdinus*, widely distributed in northern South America. The assignment has come through a peculiar population of wrens found in Nariño in far southwestern Colombia, described by Meyer de Schauensee as *Campylorhamphus albobrunneus aenigmaticus* (Notulae Naturae, no. 209, Acad. Nat. Sci., Philadelphia, April 16, 1948). In the original description it is suggested only that the new form might indicate "a hybrid between *C. albobrunneus* and *C. turdinus*, but this possibility seems doubtful as the latter . . . is unknown west of the Andes. . . . neither species has been taken. . . . in Nariño." J. Haffer (Veröff. Zool. Staatssamml. München II, 1967, pp. 143-144) suggests that it is more probable that *aenigmaticus* is the result of hybridization between *C. a. harterti* and *C. zonatus brevirostris* of northwestern Ecuador. Meyer de Schauensee (The Species of Birds of South America, 1966, p. 401) mentions both hybrid possibilities. Until there is clearer understanding it is preferable to consider *albobrunneus*, with its subspecies, *harterti*, as a sepa-

rate species from *C. turdinus* and its races, all of which differ in adult stage in variable patterns of dark markings on the head and undersurface.

A record by Salvin and Godman (Biol. Centr. Amer., Aves, vol. 1, 1880, p. 63) under the name "*albibrunneus*" from "Veraguas (Arcé)" quoted by other authors, is in error, as the species is not known from that area.

FIGURE 8.—White-headed Wren, Cucarachero Cabeciblanco, *Campylorhynchus albobrunneus*.

This handsome wren is an arboreal forest inhabitant that ranges also in trees and thickets bordering open lands. It is gregarious, so that usually 3 or 4 are found in company, ranging from near the ground to the median level, often 16 or 20 m up, or occasionally higher, in the trees. Usually they move under cover among the leaves, or through masses of creepers, where their presence is made known by their croaking, grating calls, though the birds themselves remain hidden. At times the notes are joined in a sequence that may be considered a song. When

alarmed near the ground they move into higher branches with much fluttering of wings, resorting to flight only for distances of a few feet.

When not disturbed the little parties may appear in small open areas on dry ground beneath thickets or low trees, where they dust in loose soil. Often, as one fluttered thus, a companion stood over it, apparently pecking at small parasites that appeared among the feathers of the crown. They may also be seen creeping into small openings among the exposed roots of fallen trees, such activities accounting for the soiled appearance often noted in the white feather areas. Less often, a small flock of as many as half a dozen flies across open trails, or between expanses of open pasture, moving quickly with rapidly tilting flight. At rest in branches they sometimes crowd closely against their companions. Where not disturbed, they rest on open perches, uttering their croaking calls, with fluttering wings and rapidly vibrating tails.

In February, in the nesting season, I have seen groups of 3 flying openly among the top branches of tall trees in pursuit of one another, often crowding together, apparently in a form of territorial display.

The nest and eggs are not known.

CAMPYLORHYNCHUS ALBOBRUNNEUS ALBOBRUNNEUS
(Lawrence)

Heleodytes albo-brunneus Lawrence, Ibis, Ser. 1, vol. 4, January 1862, p. 10. (Near the line of the Panama Railroad, near the summit of the Atlantic slope.)

Characters.—Tibia paler, varying from white to light grayish brown; undertail coverts white, lightly spotted or barred with dull brown; immature with crown less heavily marked; where streaking is present, the lines averaging narrower, less distinct, and more grayish brown.

Measurements.—Males (10 from northern Coclé, Canal Zone, eastern Colón and Darién), wing 80.2-87.2 (83.4), tail 76.0-80.5 (78.3), culmen from base 21.3-25.7 (23.6), tarsus 24.3-26.7 (25.4) mm.

Females (10 from northern Coclé, eastern Colón, and Darién), wing 72.2-81.1 (78.0), tail 71.3-78.1 (75.6), culmen from base 21.1-24.3 (23.5), tarsus 24.3-26.3 (25.00) mm.

Resident. On the Pacific side, in the central valleys of the Río Bayano, Río Mamóní, and of the Río Tuira (El Real, mouth of the Río Paya, and the old village site at the base of Cerro Tacarcuna); Cana; Jaqué; on the Caribbean slope from northern Coclé, and the Canal Zone to eastern Colón. Although formerly recorded widely from the Chagres Valley of the Canal Zone, in recent years it has been observed

in the zone only in the very humid forested northwestern area along the Achiote Road.

This species is locally fairly common, but comes to attention mainly from its calls, as usually the birds move about under cover of leaves.

A female, taken by E. A. Goldman at 850 m near Cana, May 22, 1912, had the stomach filled with insect remains that included chrysomelid and tenebrionid beetles, orthoptera, and ants. Three males collected by Strauch (Bull. Brit. Orn. Club., 1977, p. 64) in the Province of Panamá and Canal Zone weighed 32.7, 34.0, and 34.3 g.

Eisenmann (*in litt.*) found a group of 3 or 4 on the Achiote Road on March 23, 1967, in shady, canopied, damp second growth ranging in the foliated trees from 5 to 20 m and giving harsh notes like *churk* or *kurk*. An unseen bird uttered a harsh song ending with semimusical *kaw* notes. At Altos de Majé above Río Bayano, eastern Province of Panamá, Eisenmann found 3 wrens on the ground, dust bathing in the forest; while dust bathing they were at times in physical contact.

CAMPYLORHYNCHUS ALBOBRUNNEUS HARTERTI (Berlepsch)

Heleodytes harterti Berlepsch, Ornith., vol. XIV, February 1907, p. 347. (San José, Río Dagua, Valle, Colombia.)

Characters.—Feathered area of the lower leg (the tibia) with the markings definitely darker; undertail coverts duller white, heavily spotted and barred with dull grayish brown; immature, with brownish gray lines and feather borders on the crown and side of head more abundant, so that this area is darker.

Measurements.—Males (10 from eastern San Blas, and adjacent Colombia, in Chocó and Antioquia), wing 81.5-88.2 (85.3), tail 75.2-82.1 (79.5), culmen from base 22.5-27.4 (24.8), tarsus 25.5-28.1 (26.6) mm.

Females (9 from eastern San Blas and adjacent Colombia, in Chocó and Antioquia), wing 76.0-82.5 (78.7), tail 72.7-82.5 (77.6), culmen from base 21.9-24.4 (23.3), tarsus 23.7-27.0 (24.7) mm.

Resident. On the Caribbean slope, in eastern San Blas (Puerto Obaldía). The first record of this darker form was by Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 358) of a female collected by von Wedel at Puerto Obaldía (date not listed). In the Museum of the University of Cincinnati there are 2 others, male and female, taken by Wedel at this locality August 28, 1931.

It is possible that this race is found along much of the coast of San Blas, though recorded at present only at the eastern end. It is common

in Chocó, in adjacent Colombia, on both Atlantic and Pacific sides. Near the Pacific coast of Panamá at Jaqué, along the Río Jaqué near the Colombian boundary, and to a lesser extent on Cerro Pirre, *harteri* intergrades with nominate *albobrunneus*, occasional specimens being closely similar in the markings on the lower leg. A specimen, not determined as to race, was taken in February 1971 at Cerro Quía (300 m), Darién; it is now the Gorgas Memorial Collection.

CAMPYLORHYNCHUS ZONATUS COSTARICENSIS Berlepsch;
Band-backed Wren, Cucarachero Listado

FIGURE 9

Campylorhynchus zonatus costaricensis Berlepsch, Auk, vol. 5, no. 4, October 1888, p. 449. (Costa Rica.)

Heleodytes zonatus panamensis Griscom, Amer. Mus. Nov. no. 280, September 10, 1927, p. 12. (Santa Fé, Veraguas.)

Fairly large; with long tail, heavily spotted breast, and upper surface black, banded with white.

Description.—Length 160-170 mm. Adult (sexes alike), crown pale brownish gray, spotted with black; upper surface black; hindneck streaked widely with white; back, wings, and tail banded broadly with white, the lines varied with buff, especially on the rump and tail; chin to upper breast white, becoming tawny-ochraceous on sides, lower breast, abdomen, and undertail coverts; foreneck and breast heavily spotted with black, these spots continued sparingly on sides and undertail coverts.

Juvenile, crown dull, slightly brownish, with a broad white superciliary stripe, and a black line behind the eye; upper surface black; wings and tail dull black, spotted and barred strongly with pale brown, the markings paler to nearly white on the primaries; edge of wing white; throat and upper breast, dull white, shaded lightly with buff; lower breast, sides, underwing coverts and undertail coverts cinnamon-brown.

Measurements.—Males (10 from Bocas del Toro and Veraguas), wing 68.0-72.2 (71.6), tail 67.1-71.4 (68.5), culmen from base 20.9-25.5 (23.2), tarsus 22.8-25.7 (23.8) mm.

Females (10 from Bocas del Toro and Costa Rica), wing 66.2-71.5 (68.1), tail 62.5-67.3 (64.9), culmen from base 19.8-21.9 (20.7), tarsus 20.7-23.6 (22.4) mm.

Resident. Found locally in Bocas del Toro (Almirante, Cricamola, upper Río Changuena, and Veraguas (Santa Fé).

The bird watcher familiar with the desert areas of southwestern United States and Mexico should easily recognize this species as a "cactus wren" from its colors and plumage pattern, but may be uncertain when he sees the birds ranging in tangles of vines, tropical shrubbery, and low-growing palms in fairly dense, humid jungle. Often they are found in small bands of half a dozen that move about

FIGURE 9.—Band-backed Wren, Cucarachero Listado, *Campylorhynchus zonatus costaricensis*.

with the usual curious jumble of croaking, rattling calls, differing mainly from their northern cousins in the darker pattern of their markings.

Skutch (Pacific Coast Avifauna, no. 34, 1960, pp. 186-201) gives a detailed account of their activities in Costa Rica and elsewhere in the

American tropics. It is common for several, usually a family group, to live in company in forest. They feed actively in company through the day, and at evening take shelter also in company in a covered nest, specially built for such use near the tips of slender branches in forest trees. In the breeding season other nests are constructed, perhaps by the male alone, or by both members of the pair, the structure being generally similar to that used for sleeping. The eggs, three to five in number, vary from plain white to a pattern of faint markings of brown, which may form a wreath about the larger end. Measurements range from 20.6-23.8 by 15.1-16.2 mm.

When grown, the family may continue to sleep in company. The companionship continues when the parents prepare a second nesting, as the grown young of the first brood may assist in care and feeding the second family.

In Panamá this species has been known mainly in the Chiriquí Lagoon area, ranging inland, as indicated by a female taken by Galindo, prepared by Hinds, to over 700 m above the upper Río Changuena in Bocas del Toro. While in Panamá mainly a bird of the Caribbean slope, it crosses the Divide in the humid forested area still found above and north of Santa Fé, Veraguas. The species occurs in humid country northward to Mexico, and, with an interrupted range, is credited to northern Colombia and northwestern Ecuador.

Griscom described a race based on slightly smaller size in 5 male specimens collected by Benson, March 4 and 6, 1925, at 670 m elevation, near Santa Fé, Veraguas. The measurements are as follows (average in parentheses): wing 65.7-72.2 (69.7), tail 66.9-73 (70.0), culmen from base 20.9-25.5 (22.6), tarsus 23.1-24.5 (23.6) mm. A slight difference is noted, but so small that it has been considered of doubtful significance and has not been recognized as sufficient basis to warrant a separate race (see Hellmayr, Cat. Birds Amer., pt. 7, 1934, p. 140).

CISTOTHORUS PLATENSIS LUCIDUS Ridgway: Sedge Wren,
Saltapared de Ciénaga

Cistothorus polyglottus lucidus Ridgway, Proc. Biol. Soc. Washington, vol. 16, November 30, 1903, p. 169. (Boquete, Chiriquí.)

Very small; streak in front of eye; throat, foreneck, and breast mainly white; back, wings, and tail light brown with dull black barring.

Description.—Length 95-105 mm. Adult male, crown and hindneck

dark hair brown, streaked narrowly, especially on the crown, with whitish, the markings darker laterally, changing to blackish; back dull black, streaked with white; scapulars, lower back and upper tail coverts light brown, barred with black; rump more rufescent; tail dull black, tipped indistinctly with brownish white, barred on outer webs with brown; wings dusky, with outer webs barred with light brown, except at tips; sides of head brownish white, streaked lightly and narrowly with dull black; a narrow superciliary line dull white; throat, upper foreneck, lower breast and upper abdomen white; sides, flanks, tibia, and undertail coverts light brown; underwing coverts white.

Adult female, back duller black; light markings of crown and back reduced in extent.

Immature, above browner without pale markings on upper surface, or, if present, much reduced.

Iris yellow; bill brown to blackish, sometimes yellow or whitish below; tarsi yellow to whitish or brown (labels on 7 Chiriquí specimens in the American Museum of Natural History).

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 43.2-50.0 (45.7), tail 36.7-46.7 (45.7, average of 8), culmen from base 12.0-13.0 (12.5), tarsus 16.6-18.7 (17.6) mm.

Females (10 from Chiriquí and Costa Rica), wing 43.5-46.0 (44.6), tail 36.4-45.0 (39.5), culmen from base 11.3-13.6 (12.8), tarsus 17.3-19.4 (17.9) mm.

Resident. Recorded in small marshy savannas near Boquete and Bugaba, western Chiriquí, but judging by habitat in Costa Rica, may also inhabit dry grassy fields near montane ponds.

The species is known as yet in Panamá only through a few specimens. One, in the Smithsonian, received from Salvin, collected by Enrique Arcé, is marked only as from "Veraguas," which at that time may have included Chiriquí. Salvin (*Proc. Zool. Soc. London*, 1870, p. 182) mentions one from Bugaba (a lowland locality), Chiriquí, collected by Arcé. Salvin and Godman (*Biol. Centr. Amer. Aves*, vol. 1, 1888, pp. 106-107) wrote that of "Chiriquí examples we have now seen several." In the bird collections in the British Museum there are 4, labeled "Chiriquí" without other data. A male in the Museum of Comparative Zoology was taken by W. W. Brown 1500 m above Boquete, April 25, 1901.

The American Museum of Natural History has 8 specimens from western Chiriquí, almost all collected in 1904 and 1905 by H. J. Watson. Six are labeled Boquete, at 2000, 3500, and 4000 ft., December 6, 21,

1904, and March 7 and October 5, 15, 1905. Two are labeled "Volcan Chiriquí" 9000 ft. October 14, 16, 1904.

This species has not been reported from Panamá since the specimens mentioned above were collected. It may well be endangered.

In Costa Rica the bird has been collected frequently, but with little information concerning its habits. Carriker (Ann. Carnegie Mus., vol. 6, 1919 p. 772) noted that it was "found in only a few places in Costa Rica, but is abundant wherever it occurs. It makes its home in the grassy marshes which are found in the vicinity of La Estrella and Azahar de Cartago at an altitude of about 5000 feet. It has all the habits of the Marsh Wrens of North America."

The eggs of related races of the species *platensis* are described as white without markings (Meise, W., in Schönwetter, Handb. Ool., pt. 19, 1971, pp. 330-331, plate 4, fig. 8).

Slud (Bull. Amer. Museum Nat. Hist., 1964, no. 128, p. 282) describes the call of this race in Costa Rica as a grasshopperlike *tzrrr* and the song as a *chyip-chyip-chyip-chyip-chyip*, sometimes with a gurgling quality.

It may well be that the complex of populations included in the species *platensis* should be divided into two or more species. Some of the South American forms are, by voice at least, very distinct. Tropical populations of this species are often known as the Grass Wren.

**THRYOTHORUS LEUCOTIS Lafresnaye: Buff-breasted Wren,
Cucarachero Pechi-Amarillejo**

Thryothorus leucotis Lafresnaye, Rev. Zool., vol. 8, September 1845, p. 338. ("Colombia aut Mexico" = Honda, Río Magdalena, Colombia, designated by Hellmayr, Cat. Birds Amer., pt. VII, 1934, p. 165.)

Rather small; upper surface definitely brown, brighter on rump and upper tail coverts; wings and tail russet, heavily barred with black; below ochraceous-buff to tawny-brown, darker on sides and undertail coverts; throat white. Similar in general to *Thryothorus modestus* but distinguished by heavy, much more distinct black bars on wings, and usually more contrast between white throat and buffy breast.

Description.—Length 120-135 mm. Adult (sexes alike), crown dull brown changing to a deeper shade on back and scapulars, and becoming brighter on rump and upper tail coverts; wings, including coverts, russet brown, barred narrowly but distinctly with black; tail russet, barred heavily with black; a white line over eye from base of bill back along side of crown; a dull brown line back of eye; side of head

below this, and the upper throat, white, with cheeks in some narrowly streaked or spotted with gray; white of throat changing to ochraceous-buff on foreneck and breast, deepening on sides, flanks, and undertail coverts to tawny brown; edge of wing, scapulars, and underwing coverts white.

Immature, colors somewhat duller, with the bars on wings and tail less distinct.

In the Canal Zone and adjacent parts of the Provinces of Panamá and Colón the Buff-breasted Wren may be found in the same woodlands as the paler-colored Plain Wren, *Thryothorus modestus*, but avoids drier areas, being usually found near streams, or swampy or damp woods. It is present eastward on both slopes through Darién and San Blas to Colombia, with a local race in the Perlas group on Isla del Rey and adjacent islands. Beyond the Isthmus of Panamá, in tropical South America, the species ranges widely with several races in the lowlands of Colombia south to Brazil and Peru.

THRYOTHORUS LEUCOTIS GALBRAITHII Lawrence

Thryothorus Galbraithii Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, June 1861, p. 320. (Atlantic side on line of R.R. = Lion Hill, Panama Railroad, Canal Zone.)

Characters.—Dull brown dorsal surface, with tone more olive than rufescent, as is *T. l. conditus*.

Male and female, taken at La Jagua, eastern Province of Panamá, March 22, 1961, had the iris wood brown; maxilla fuscous-black, except on the cutting edge, which, with the mandible, was pale dull neutral gray; tarsus and toes dusky neutral gray.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, San Blas, and Darién), wing 62.0-65.4 (63.6), tail 41.0-44.3 (42.8), culmen from base 18.5-20.6 (19.7), tarsus 23.2-24.9 (24.0) mm.

Females (10 from eastern Province of Panamá, San Blas, and Darién), wing 58.0-60.9 (59.6), tail 37.6-41.1 (39.3), culmen from base 17.0-19.6 (18.0), tarsus 22.3-24.3 (23.5) mm.

Resident. Locally common from the Canal Zone east on the Pacific side through the eastern Province of Panamá to Darién (at mouth of Río Tuquesa, on the Río Chucunaque, and at El Real and Marragantí on the Río Tuira; Cerro Sapo); on the Caribbean slope from the northern Canal Zone east through eastern Colón and San Blas (Mandinga,

Permé). Not definitely recorded west of the Canal Zone, although present on the Achiote Road. No longer present on Barro Colorado Island (Willis and Eisenmann, *Smiths. Cont. Zool.*, no. 291, 1979, p. 24).

These wrens range usually in pairs in thickets, masses of vines, and other low growth, commonly near water. The song, heard regularly, is a loud, clear repetition of a phrase that may vary slightly. Occasionally two birds may join, with the calls of one following quickly after the other. Often one may answer another, even at some distance, their notes suggesting those of *Thryothorus nigricollis* but higher in pitch, in a repetition of three notes that vary in cadence in different individuals. Their songs at times may suggest those of the Bay Wren. Frequently I have heard them scolding with low calls, *chit-it*, *chip wit*. Songs noted by Eisenmann in Panamá City and in Darién were loud, ringing, and rich, very different from those of *T. modestus*, syllabized a *choreéwee* repeated over and over, then varied with phrases like *cho-weéoo* and *choreéchee*, *wheeooreé tickwheéoo-wichew* (the *tick* soft); also *chwee-chweéoo* and variations like *chwee-chweéeee*. Its calls include a rather soft *trrrrup* varied to a sharper *whrrrrp*, and a *churr*; none of its calls resemble the very loud rattle of *T. modestus*. When not alarmed they may move actively through low growth, peering about, like titmice swinging over to examine the lower surface of limbs and twigs.

Arbib and Loetscher in 1934 (*Auk*, 1935, p. 327) recorded these wrens as "breeding during July and August" in or near the Canal Zone, but give no other statement as to their nesting. Skutch (*Condor*, 1968, pp. 70-71) describes nesting of an allied subspecies in Venezuela. He found a dormitory as well as a breeding nest, the latter roughly globular with an entrance on the side. The occupant was a nestling of the parasitic Shiny Cowbird. In Venezuela this wren often occurs on dry hill-sides far from water.

Stomachs that I examined have been filled with fragments of insects, including remains of caterpillars, and with these, bits of spiders and a pseudoscorpion. Males weighed by Burton (*Bull. Brit. Orn. Club*, 1975, p. 85) range from 18.0 to 23.0 g, females from 16.0 to 19.5 g.

Lawrence named this race for John R. Galbraith, "an intelligent and skillful young taxidermist" from New York, who collected with McLeannan along the line of the Railroad in Panamá during the winter of 1860-61, contributing various notes on habits and other items of interest.

THRYOTHORUS LEUCOTIS CONDITUS (Bangs)

Thryophilus galbraithi conditus Bangs, Proc. New England Zool. Club, vol. 4, March 16, 1903, p. 3. ("San Miguel Island, Gulf of Panama" = Isla del Rey, Archipiélago de Las Perlas, Panamá.)

Characters.—Similar in general to *T.l. galbraithii* but darker brown on the dorsal surface, sides, lower abdomen, and undertail coverts; slightly larger.

Measurements.—Males (10 from Islas del Rey and Cañas), wing 64.1-70.8 (67.0), tail 41.7-46.0 (44.0), culmen from base 19.1-21.2 (20.3), tarsus 23.4-25.3 (24.5) mm.

Females (10 from Islas del Rey and Cañas), wing 60.2-66.5 (63.3), tail 39.0-44.2 (41.6), culmen from base 18.2-20.8 (20.1), tarsus 23.4-25.0 (24.2) mm.

Resident. Found on Islas Rey, Viveros, Puercos, and Cañas, Archipiélago de las Perlas.

This subspecies, marked by its definitely darker coloration, especially on the back, was described from 8 specimens collected by W. W. Brown, Jr., near the town of San Miguel, on Isla del Rey in April and May, 1900. On first examination of the collection, Bangs (Auk, vol. XVIII, January, 1901, p. 30) listed them as "*Thryophilus galbraithi*," noting only that they were "almost imperceptibly more reddish on the back than mainland birds." Later, in more careful comparison, he formally named the race. The distinction was verified through a second series of 10 specimens collected by Brown on another visit in February and March, 1904 (Thayer, J. E., and Bangs, O., Bull. Mus. Comp. Zool., vol. 46, 1905, p. 154). H. Rendahl (Ark. f. Zool., vol. 13, no. 4, 1920, p. 43), in a report on a collection of birds made in the Pearl Islands in 1882 by Carl Bovallius, listed 4 males taken (April 8 to 11) on Isla Viveros, adjacent to Rey on the northwest.

From January 21 to 23, 1960, I found these wrens common on Isla Cañas, adjacent to Isla del Rey on the east, and collected a series of 3 males and 4 females.

As our launch lay at anchor in a sheltered bay on the south side of the island on the evening of January 21, I heard an occasional song that I attributed to this bird. And the following morning we found them common through the rather low open forest, as well as in denser growth adjacent to a mangrove swamp. The clear, ringing song, heard constantly, was a rapid repetition of a single phrase. The birds were common also, but more wary, on the eastern side of Isla del Rey, at

Ensenada below Punta de Peña Tiburón, January 24; at Manzanillo, above Punta Gorda, farther south, June 25; and along the Río Cacique at the west side of the large bay on the southern side of Rey on January 27.

Eisenmann heard a wren, evidently of this genus, singing near a stream on Saboga Island in the Perlas on July 9, 1964. He did not see the bird. Though unreported from this island, no other *Thryothorus* is known from this archipelago.

THRYOTHORUS MODESTUS Cabanis; Plain Wren, Cucarachero Sencillo

Thryothorus modestus Cabanis, Journ. f. Orn., vol. 8, "Nov. 1860" (published May 30, 1861), p. 409. (San José, Costa Rica.)

Rather small; upper surface from crown to back of tail grayish brown. Similar in general to *Thryothorus leucotis*, but with dark bar-rings on wings much less prominent. In nominate *modestus* and *elutus*, distinctly buff on sides, undertail coverts, rump, and wings; one very grayish race (*zeledoni*).

Description.—Length 125-135 mm (*elutus*), 145-150 mm (*zeledoni*). Adult (sexes alike), crown and hindneck dark, slightly brownish gray, becoming olive-brown on back, scapulars, wing, and rump; upper tail coverts faintly paler; tail russet or grayish brown, barred heavily with dull black; secondaries and outer webs of inner primaries dull rufous or grayish brown, barred with black to dusky; primaries otherwise dull black; a broad white line above eye; lores and space around eye white, with a dull black spot in front of eye, extending in a narrow line behind; throat white; breast and upper abdomen white or shaded gray, tinged with cinnamon-buff on sides; flanks and undertail coverts cinnamon or buffy olive; underwing coverts white.

Immature, somewhat duller, with markings on side of head less distinct.

The Plain Wren occurs from Chiapas, Mexico, through Central America to central Panamá. The nominate race, *modestus*, is found from central Mexico south through much of Costa Rica, replaced in Panamá by the subspecies *elutus* (which ranges north into the extreme southeastern end of Costa Rica). Zeledon's Wren, *zeledoni*, described beyond, is a Caribbean form with a range on the Caribbean slope from northern Bocas del Toro north in eastern Costa Rica to southeastern Nicaragua; currently regarded as a geographic race of *T. modestus*, it is included (with reservations) under that species.

THRYOTHORUS MODESTUS ZELEDONI (Ridgway)

Thryophilus zeledoni (Lawrence Ms.) Ridgway, Proc. U.S. Nat. Mus., vol. 1, 1878, p. 252. (Pacuare, Limón, Costa Rica.)

Characters.—Similar to *Thryothorus modestus elutus* (Bangs), but larger and decidedly darker; dorsal surface, sides, flanks, and undertail coverts gray (without definite reddish brown markings); bill and feet larger, stronger.

Kennard recorded a female taken at Almirante as having the maxilla black; mandible yellow; iris gray-brown; tarsus dark olive.

Measurements.—Males (10 from Bocas del Toro, Costa Rica, and Nicaragua), wing 62.3-65.0 (63.5), tail 49.4-53.9 (51.5), culmen from base 19.5-22.5 (21.1), tarsus 24.8-26.6 (25.8) mm.

Females (9 from Bocas del Toro and Costa Rica), wing 60.0-63.3 (61.7), tail 48.5-51.5 (48.6), culmen from base 17.4-21.5 (19.9), tarsus 24.2-25.8 (25.0, average of 8) mm.

Resident. Recorded in the lowlands of western Bocas del Toro, from Almirante, Isla Colón in Almirante Bay, and Zegla on the Río Changuinola to the Costa Rican boundary on the lower Río Sixaola; not abundant.

This wren was described originally by Ridgway as a distinct species, from its larger size and darker coloration compared to *Thryothorus modestus*, and was so treated by Salvin and Godman in 1880, Sharpe in 1881, Carriker in 1910, Kennard and Peters in 1931. Hellmayr, however, (Cat. Birds Amer., pt. VII, 1937, pp. 170-171), from examination of 4 specimens from Matina, Limón, and La Iberia Farm on the base of Volcán de Turrialba, Costa Rica, placed it as a race of *Thryothorus modestus* with the statement that though "well characterized by much larger feet and bill, much duller and less brownish upper parts with brownish instead of rufescent wings and tail, and much less fulvous flanks and undertail coverts . . . is clearly conspecific with *T. modestus* . . . though intergradation, especially in dimensions, is far from being complete." Hellmayr's action has been followed, mainly uncritically, since.

Carriker (Ann. Carnegie Mus., vol. 6, no. 4, 1910, p. 755), in writing of Costa Rica, said of *zeledoni* that he first encountered it "along the Sicsola [=Sixaola] River, where they frequented wild-cane brakes and a high tangled grass found only along the river bank, known as 'gamilote.'" He never saw it in forest. His locality was along the present northeastern end of the boundary with Panamá.

Early reports in Panamá were by Griscom (Amer. Mus., Nov. no. 293, 1928, p. 1) of 1 collected near Almirante by Benson, and by Kennard and Peters (Proc. Boston Soc. Nat. Hist., vol. 38, no. 10, 1928, p. 459) of 1, taken also at Almirante, by Kennard, on March 16, 1926. Peters later (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 330) recorded a female from this locality collected by Hasso von Wedel, August 10, 1927. A male and female in the Havemeyer Collection at the Peabody Museum were taken there by Austin Smith, April 19 and 23, 1927.

Eisenmann (Condor, 1957, p. 256), who observed these birds at Changuinola in 1956, with reference to Hellmayr, described the song as loud and ringing and wrote, "... those that I heard from *zeledoni* were different from any I have noted from *elutus*, but they showed some resemblance." Slud (Amer. Mus. Nat. Hist., Bull. 128, 1964, p. 285) who described the notes in detail, concluded that "the songs of *modestus* and *zeledoni* sound identical to me except that *zeledoni* gives . . . an uncharacteristic deliberate *swir*, *swirrst*, the last note rising, so to speak, in an overhanging curve. Also *zeledoni* has a harder, heavier call note." He considered that birds from the Terraba Valley, on the Pacific slope in the southwest, showed approach to *zeledoni* in bill size and grayness. Dr. Thomas Howell, who has seen the bird in Nicaragua, informs me (*in litt.*) that to him the song and calls suggested those of *T. modestus*.

My own personal knowledge of *zeledoni* has come from encounters near Changuinola in western Bocas del Toro, where I collected 1 February 13, 1958, and saw others briefly February 28, but did not hear the calls or song. Museum specimens have increased, so that from the 4 listed by Hellmayr in his discussion on relationship, I have measurements of 7 males and 5 females (including Ridgway's type), and have examined several others in which the sex has not been marked. All have shown the larger size and the darker, distinctly gray coloration on which Ridgway described the bird as a distinct species, with no integration to the smaller size and brighter colors of *T. modestus elutus* with which it has been supposed to hybridize. From my examination of specimens it has seemed to me that *zeledoni* is a distinct species. However, because of my slight personal knowledge of the bird in life it is listed here as a geographic race, with the suggestion that it be studied further when there is suitable opportunity.

The range of *zeledoni*, from the published record in Panamá, is restricted to the Caribbean lowlands, inland only to the interior foothills. In Costa Rica, it ranges only on the Caribbean coastal plain (being replaced by nominate *modestus* at about 600 m, *fide* Slud,

1964, *op. cit.*), continuing to southeastern Nicaragua, at Los Sábalos where the river of that name joins the Río San Juan, at San Juan del Norte (formerly Greytown) at the mouth of this river.

The eggs of *T. m. zeledoni* have not as yet been described. A nest collected at Almirante June 4, 1962, by Pedro Galindo is an elliptical ball of long slender plant fibers (apparently aerial rootlets, mixed with fine grass stems and a lesser amount of broad-bladed grass) measuring 120×160 mm. The entrance hole in the end was underneath so that it was sheltered. Another nest, slightly smaller, with dimensions 110×120 mm, found on the same date, was more loosely compacted of shorter, coarser materials, including rootlets and grass. It also had the entrance hole sheltered beneath, at one end. Both nests were empty.

THRYOTHORUS MODESTUS ELUTUS (Bangs)

Thryophilus modestus elutus Bangs, Proc. New England Zool. Club, vol. 3, January 30, 1902, p. 51. (Lion Hill Station, Panama Railroad, Canal Zone.)

Characters.—Smaller; rump and upper tail coverts russet, tail dull russet; upper abdomen and tibia white, changing to gray on upper sides; lower sides, flanks, and undertail coverts buffy cinnamon.

A male at El Copé, Coclé, February 24, 1962, had the iris reddish brown; maxilla black; nasal operculum mandible, tarsus, toes, and claws dark neutral gray. Posterior area of the inside of the mouth, including the thickened base of the tongue, black, shading anteriorly to neutral gray on inner surface of bill. The slender tip of the tongue was transparent, without color. In another male, at Puerto Armuelles, Chiriquí, March 10, 1966, the iris was orange-brown; tip of mandible dark neutral gray; cutting edge of maxilla and base of mandible light neutral gray; rest of maxilla black; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from Chiriquí, Veraguas, Los Santos, Herrera, Coclé, and Canal Zone), wing 58.1-60.9 (59.2), tail 45.6-51.2 (48.2), culmen from base 18.1-18.9 (18.1), tarsus 23.0-24.8 (23.8) mm.

Females (10 from Chiriquí, Veraguas, Los Santos, Coclé, and Canal Zone), wing 53.4-56.7 (55.2), tail 42.0-49.5 (44.2), culmen from base 17.1-18.9 (18.1), tarsus 21.6-23.0 (22.6) mm.

Resident. Common in the Tropical Zone of the Pacific slope; from western Chiriquí (to over 1500 m above El Volcán including Cerro Punta; above Boquete) and the Burica Peninsula at Puerto Armuelles, east through southern Veraguas, the Azuero Peninsula to Punta Mala,

the western and eastern sections of the Province of Panamá, the lower Bayano Valley (Chepo, San Antonio); in the northern Canal Zone also on the Caribbean slope, including the lower and middle Chagres Valley (Juan Mina, Lion Hill, Gatún, Fort San Lorenzo) and the Río Boquerón above Madden Lake (Peluca Hydrographic Station) and the Province of Colón east to Portobelo. It follows clearings into the mountains (reaching 1860 m at Cerro Punta) of Chiriquí (Río Chiriquí, Fortuna Dam site), Veraguas (Santa Fé, Chitra), Panamá (Cerro Campana, Cerro Azul-Cerro Jefe area).

From the lowlands of western Chiriquí the subspecies *elutus* ranges for a short distance into southern Costa Rica through the Golfo Dulce area to the lower valley of the Río Terraba (specimens in collections of the Western Foundation of Vertebrate Zoology). When found in the same general area as the more secretive Buff-breasted Wren (*Thryothorus leucotis galbraithii*) the Plain Wren may be identified by its paler colors and less heavily barred wings.

These wrens are found in thickets, brushy pastures, and low cover in other open areas, including suburban gardens, hedgerows, and weed-grown fields, outside the heavy forests. Here they forage in pairs, and at the proper season, in family groups. While usually encountered low down, they also explore the branches of trees above the thickets, especially when these have tangles of vines that provide cover. In such locations they move about with much low chatter, often concealed among the leaves, hiding carefully at any alarm. Neglected orange and grapefruit groves, where the trees have many epiphytes, are often attractive to them.

In Eisenmann's opinion, *elutus* is, after the House Wren, the most numerous wren in open, extensively deforested areas of Panamá, chiefly in the Pacific lowlands, but also very common in the Boquete district, Chiriquí, and the cleared areas of the Caribbean watershed in the Canal Zone. The highest bird he has found was seen singing in a field at Cerro Punta, Chiriquí, at 1860 m on December 11, 1962. While unrecorded in Darién, where replaced by the essentially South American *T. leucotis*, both species occur sympatrically in the Canal Zone and in open or cleared areas of eastern Province of Panamá.

The song, heard constantly, is a series of whistled notes, ending with one or two in harsher tone, from which country residents in Costa Rica call them "chinchirigui" (varied by some to "richichí"). When heard near at hand this is found to be a combination of three or more whistled sounds followed by a harsher call, the first given by the male,

the second immediately following by the female. They also have the rattling notes common to related wrens. Skutch (Pacific Coast Avif., no. 34, 1960, p. 125) describes a varied series of musical sounds that he attributed to immature birds.

Eisenmann considers the songs, although musical and varied, to lack the richness and sweetness, and often the loudness of those given in central Panamá by other wrens of the genus *Thryothorus*. Most songs include the *chéénchirigweé* phrase that gives the species its vernacular name in Costa Rica. Sometimes the last note slides down at the end, or the phrase may be changed to *weereewéé*; these phrases are often introduced by other notes, or the phrase may be replaced by a more musical *cheechoóee* or *cheeweeetweet* or variants. A very distinctive call is a loud, rapid *tsiptsip-tsrrrrrr*, sometimes just *tsirrrrrrr*, suggesting the sound produced by the whirling wooden rattle often used in New Year's Eve celebrations. At El Valle, Coclé, on August 30, 1951, he observed a pair duetting: one delivered a phrase of usually four notes and the other added two, over and over (see also Worth, Bird-Lore, 1939, p. 282 on antiphonal singing in Chiriquí by birds perched a few inches from each other).

Blake (Condor, vol. 58, 1956, p. 387) recorded a nest and eggs, collected by T. Mönniche near Boquete, May 10, 1932, as the usual rounded ball "loosely woven of dried grass" with a lining of finer material and chicken feathers. The two partly incubated eggs were "dull white, unmarked, and measure 21.5×14.3 and 22.3×14.2 mm." The field journal of G. Ralph Meyer for July 7, 1941, records a nest in the Canal Zone built in a croton hedge along the front of the military quarters. This contained three white eggs which seemed very large for the size of the bird. As they were well incubated they were not collected.

Six nests in the collection of the Western Foundation of Vertebrate Zoology, collected by Andrews Williams and Mrs. Elsie Fiala from March 21 to June 30, 1971, in the Río Terraba-Golfo Dulce area in Costa Rica, were alike in rounded form, with the entrance at one side. Each held two eggs. One, on April 10, 1971 (parent wren flushed from the nest), with the entrance on the side near the top, held one egg of the wren and one of the parasitic Striped Cuckoo, *Tapera naevia excellens*.

Skutch (Pac. Coast Avif., no. 34, 1960, pp. 123-129) describes behavior and nesting, chiefly in Costa Rica, pointing out that in addition to the globular breeding nest, this species builds a domed dormitory nest of much looser construction with a larger side entrance, used by the male while the female sleeps in the breeding nest.

THRYOTHORUS RUFALBUS CASTANONOTUS (Ridgway):
Rufous-and-white Wren, Cucarachero Rojizo

Thryophilus rufalbus castanonotus Ridgway, Proc. Boston Soc. Nat. Hist., vol. XXIII, March, 1888, p. 386. ("Nicaragua to the highlands of Columbia" = Angostura, Cartago, Venezuela.)

Medium size: above chestnut-brown, a prominent white line above the eye; undersurface white, except for brownish flanks.

Description.—Length 135-155 mm. Adult (sexes alike), upper surface pale to deep chestnut (lighter on crown); wings narrowly, tail more broadly, barred with black; a distinct white superciliary line, margined narrowly above by black; line on side of head from the eye to neck rufous-brown; rest of side of head white, streaked with black, with lower side of head white, bordered below by a narrow black line; undersurface white, changing to grayish brown on sides, browner, becoming darker on flanks; underwing coverts spotted with black; undertail coverts white, barred heavily with black, the dark bars edged narrowly with rusty brown.

Immature, duller, darker brown above, especially on crown and hind-neck; duller white on lower surface, with breast lined distinctly with dusky; undertail coverts pale rusty brown, barred lightly with black.

An adult male, collected at Chiva Chiva, Canal Zone, March 19, 1961, had the iris dark brown; cutting edge of maxilla and mandible dull whitish; rest of maxilla fuscous-black; base of gonys and anterior half of mandible (except cutting edge) pale neutral gray; tarsus, toes, and claws brownish gray. Another male at Las Palmitas, Los Santos, January 24, 1962, had the iris dark reddish brown; maxilla and tip of mandible black; rest of mandible light neutral gray; tarsus, toes, and claws light mouse brown.

Measurements.—Males (10 from Chiriquí, Veraguas, Los Santos, Herrera, Coclé, Province of Panamá, and Canal Zone), wing 67.2-72.1 (69.3), tail 48.2-54.7 (52.1), culmen from base 19.7-23.6 (21.3), tarsus 24.2-25.7 (25.0) mm.

Females (10 from the same localities as the males), wing 61.2-67.8 (64.3), tail 46.2-51.5 (48.4), culmen from base 19.5-21.5 (19.7), tarsus 23.8-25.0 (24.5) mm.

Resident. Widely distributed on the Pacific slope in the lowlands, where it is locally common in thickets and deciduous woodland, from western Chiriquí to the Río Bayano Valley, following clearings into the highlands, and on the Caribbean side of the Canal Zone (especially middle Chagres Basin and adjacent Colón Province, but rather rare near

the Caribbean coast. In Chiriquí, from Quebrada Santo Domingo (west of Concepción and Alanje) east through David to San Felix; Veraguas, including Remedios, Cerro Flores, Chitra, Santa Fé, Calové-vora, and Santiago as well as the western side of the Azuero Peninsula (Paracoté, Mariato River); Los Santos (to Punta Mala); Herrera; southern Coclé; western Province of Panamá (Playa Coronado, Cerro Campana), and the eastern section to La Jagua, Chepo, San Antonio, and the lower Bayano Valley. In the Canal Zone found mainly on the Pacific side near Panamá City and Chiva Chiva; Goldman, in 1912 secured 1 at Tavernilla, now submerged in Gatún Lake near Barro Colorado Island. Major General Meyer found it near Summit. In mountain areas it is recorded to 750 m near El Valle, Coclé, and to 1000 m on Cerro Hoya, Los Santos, and to 1500 m at Boquete (Quiel).

These birds are found in pairs, usually on or near the ground in thickets of fairly open areas. Often they appear less timid than most other species as they range in brush-filled gullies or low thickets in open areas, or in the denser ground cover in gallery forest. They seem adaptable, and are able to exist in second growth when this follows clearing of the original forest. As they move about under cover of vines and low shrubbery, their presence may be known from the songs of the males. These begin with a rolling repetition of a loud note that changes to a trill, the two mingling with varying cadence in pleasing combination. On the whole, they sound less emphatic in utterance than the songs of others of the genus found in Panamá. Songs attributed to the females, heard alternately with those of males, are softer, less emphatic in tone. They often respond to whistled imitations, and also are attracted by squeaking sounds.

The field notes of Major General G. Ralph Meyer for July 30, 1941, describe a nest, found near the Gamboa Road junction, as bulky, made of grass, hanging in the fork of a "bull thorn" or bullhorn acacia (*Acacia costaricensis* and allies). The tubular entrance was almost at a right angle to the axis of the main nest, which lay along the trunk of the tree. The whole was about 300 mm long by 125 mm wide, with the tubular entrance about 50 mm in diameter. Other nests were present in the same kind of small tree, infested with fierce small ants (*Pseudomyrma*) that live symbiotically on these plants. Meyer recorded that this wren was host to the parasitic Striped Cuckoo, *Tapera naevia excellens*. (See Wetmore, Smithsonian Misc. Coll., vol. 150, Part 2, 1968, p. 135). Meyer described the three eggs found in the nest as colored greenish white, with measurements as follows: 21.6×15.7 , 22.2×15.2 , and 22.3×15.7 mm.

Two males collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 27.1 and 27.7 g.

Although primarily a lowland species, Eisenmann (*in litt.*) saw it at about 1500 m in the Boquete area at Quiel in a coffee plantation (February 27, 1960) and on the Camino a la Estrellon (July 19, 1964, seen singing). Ridgely netted and released 1 on March 3, 1976, at approximately 1350 m in central Chiriquí on the upper Río Chiriquí (Fortuna Dam site) at the edge of a clearing in humid forest, a surprising location.

The song, while variable, is usually very distinctive and unlike that of any other wrens because of the low pitch of many notes, which, to Eisenmann's ear, gives a "hooting" quality, although Hartshorne states they are pure, musical tones, mostly on the diatonic scale. The most characteristic phrase consists usually of four (more or less) "hooting" notes often followed by an emphatic higher note: *hoo-hoo-hoo whit*; sometimes the higher last note slides down or is followed, or replaced by, a trill. Sometimes the initial notes (*lee, lee, looo*) suggest the first three notes of the bugle call "taps." Mrs. Cora C. Alderton, who lived at Gamboa, Canal Zone, had a nesting pair in her garden in 1957-58 and gave Eisenmann, in musical notation, fifteen major variations and a larger number of minor ones of songs heard, and said she had heard more than fifty variations. Among the "trilling" variations is one somewhat resembling a subdued bugle call, mentioned by Sturgis (Field Book of Birds of the Canal Zone, 1928, p. 358). The song has been highly praised also by Chapman (My Tropical Air Castle, 1929, p. 358) and others. In addition to the songs, Eisenmann has heard a loud, rattling chatter and a dry *thrrrrrp*.

Mrs. Alderton showed Eisenmann a nest in her garden in Gamboa that was "saddle bag-shaped," with a wide entrance tube, on the stem of a frond of a small ornamental palm. It was begun on April 3, 1958, but destroyed by *Thraupis* tanagers. Another nest was begun in the same palm on April 11; straws for the lining were brought in on April 27. Incubation apparently began in early May. D. E. Harrower (thesis at Cornell University) reports "breeding season from at least April to September"; he found an active nest on July 17 at Pedro Miguel, Canal Zone, in a thorny acacia 2-3 m from the ground. F. O. Chapelle noted a pair building near Ft. Clayton on April 20, 1955; this nest, also in bullhorn acacia, was almost finished on April 23. S. F. Ambrose found a nest being built in a bullhorn acacia on July 4, 1964, at Santa Clara, Coclé, on the Pacific Coast.

A bird banded by H. Loftin at Curundu, Canal Zone, on December 7, 1963, was recaptured there on March 5 and April 30, 1966, and on September 20, 1967.

THRYOTHORUS THORACICUS Salvin: Stripe-breasted Wren,
Cucarachero Pechirayado

Thryothorus thoracicus Salvin, Proc. Zool. Soc. London, 1864, p. 580. (Tucurrique, Costa Rica.)

Rather small; dull brown above; foreneck and breast white, heavily streaked with black.

Description.—Length 106-122 mm. Adult (sexes alike), above brown, varying from a dull grayish brown hue on forecrown to russet-brown on rump and upper tail coverts; in some individuals, very faintly and indistinctly barred narrowly with black; wings and tail somewhat lighter brown, heavily barred with black; side of head and of upper neck dull brownish black streaked with white; a white superciliary line; foreneck and breast white, lined broadly with black, these markings reduced in extent on abdomen; sides grayish olive, changing to rusty brown on flanks; undertail coverts brown, barred with black; underwing coverts white, barred and lined with grayish brown.

Immature, undersurface lighter, somewhat duller brown with black lines greatly reduced in extent, less definite.

Measurements.—Males (10 from Veraguas and Costa Rica), wing 55.0-62.5 (59.0), tail 37.1-40.4 (38.1), culmen from base 18.1-20.0 (19.0, average of 9), tarsus 20.6-22.3 (21.6) mm.

Females (10 from Veraguas, Bocas del Toro, Costa Rica, and Nicaragua), wing 55.8-62.1 (58.1), tail 34.4-39.8 (36.8), culmen from base 17.3-18.9 (18.2), tarsus 19.3-22.0 (20.7) mm.

Resident. Rare; known on the basis of specimens on the Caribbean slope of Panamá, from western Bocas del Toro (recorded from Zegla, Río Changuena), to the border with Veraguas (Río Calovévora, American Museum of Natural History) and from Cascajal, northern Coclé. There are sight records from the Canal Zone (Gatún Dam, Achioté Road) (Ridgely, 1976, p. 267).

The first authentic published record for the Republic is a male labeled "Almirante," forwarded by Hasso von Wedel, dated May 16, 1927. (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 330). It is of interest to note that Austin Smith, in the final days of a trip to Panamá in 1927, worked briefly in Bocas del Toro. Among his specimens, preserved in the Havemeyer Collection in the Peabody Museum in New Haven, are

2 males of this wren from Zegla, Río Teribe, collected May 16, 1927. The locality was a small village located near the mouth of the Río Teribe, where that stream enters the Río Changuinola, about 4 km above the bridge on the railroad, north of Almirante. It appears that Wedel, cited above, either accompanied Smith or acquired one of his specimens.

Our collections also include 2 skins of *T. thoracicus*, collected September 8 and 14, 1961, by Pedro Galindo at a camp at 750 m elevation on the Río Changuena, a tributary of the Río Changuinola farther inland. There is no other report from the well-known Almirante area.

Another record for the Caribbean slope is an adult dated March 3, 1889, marked Cascajal, Coclé, collected by the missionaries H. F. Heyde and Ernesto Lux. The locality is on the Río Cascajal on the Caribbean slope in northwestern Coclé.

In the American Museum of Natural History are 9 specimens labeled from Guaval, Río Calovévora, Veraguas (266-500 m), taken by R. R. Benson between August 1-September 19, 1926. This river forms the boundary between Bocas del Toro and Veraguas. One specimen from September 4 is a full-grown bird in juvenal plumage.

E. O. Willis (Eisenmann, *in litt.*) reports seeing a pair in September 1963 in the northwestern Canal Zone near the Caribbean coast on the road to Río Medio, following army ants. He writes that the vocalization consisted mainly of single, similar notes somewhat resembling a Nightingale Wren but repeated more rapidly and sometimes varied with notes of other pitches of a more *Thryothorus* quality. Pujals also reports having once seen this species along the Achioté Road of the northwestern Canal Zone, and later on February 14, 1947, near Río Indio village in western Colón.

A record by Salvin (Proc. Zool. Soc. London, 1867, p. 134) reports 3 specimens received from Arcé, erroneously as from "Santiago de Veragua," far down in the Pacific lowlands of Veraguas. This error was repeated by Salvin and Godman (in Biol. Centr.-Amer., Aves, vol. 1, 1880, p. 86). The bird is known in Panamá almost exclusively from the Caribbean slope, and so may have been taken in the Calovévora area on the northern Caribbean slope of the mountains, accessible by a well-known trail from Arcé's permanent location at Santa Fé. On March 18, 1974, Skutch and Eisenmann (*in litt.*) heard the distinctive call of this species in the humid forest on Santa Fé, on the Pacific slope. Evidently the bird does cross the Divide in at least this location.

Arcé, in the early days of his work in Panamá, seems not to have labeled some of his specimens carefully. Salvin, with the lack of detail

in geographic data available, then seems also not to have understood clearly his collector's location. In some instances he seems to have interpreted the shipping point, in the present case Santiago, for the collector's location, far distant in the mountains.

This wren has been studied in detail by Skutch on the humid tropical Caribbean slope of Costa Rica (Publ. Nuttall Orn. Club, no. 10, 1972, pp. 159-163). The song consists of two types, the first being a distinctive series of slowly repeated whistled notes, almost like those of a pygmy-owl, heard usually at dawn and the second is a medley of sounds more usual in the family, highly varied and often antiphonal in utterance by paired male and female. The ball-shaped nest has two sections, an outer part with a broad opening downward, with a passage to the inner chamber that holds the eggs. These, laid in April—in one case three in number, in another, two—are plain white without markings. The young at hatching are without down.

Carriker (Ann. Carnegie Mus., vol. VI, 1910, p. 759) found a nest at Jiménez, Costa Rica, May 9, 1905, with three immaculate white eggs, so heavily incubated that only one was preserved. This measured 19.5 × 14 mm.

My only personal acquaintance with this species came in November 1940 on the Caribbean slope of the Continental Divide on Cerro Santa María in northern Costa Rica. Here its clear songs were heard regularly, usually about deadfalls in heavy forest.

THRYOTHORUS LEUCOPOGON GRISESCENS (Griscom):

Stripe-throated Wren, Cucarachero Garganta Rayada

Thryophilus leucopogon griseus Griscom, Bull. Mus. Comp. Zool., vol. 72, January 1932, p. 359. (Permé, San Blas, Panama.)

Rather small; dull brown; side of head black, streaked with white; throat dull white, streaked indistinctly with dusky; rest of undersurface plain, without markings, undertail coverts more rufescent.

Description.—Length 115-125 mm. Upper surface, including scapulars, dark grayish brown, very faintly and indistinctly banded with black; wings and tail light chestnut-brown banded narrowly with black; middle and lesser wing coverts slightly paler than back, banded narrowly with dull black; lores centrally dull black, above white, this color extending back as a line over eye and auricular area, bordered above by a narrow black line that, as a small black spot, breaks the white at the center of the upper eyelid; side of head black lined with white with a black line along lower jaw; throat dull white, with dusky; undersurface dull tawny brown, slightly paler in the center of the abdomen, more

rufescent on the undertail coverts and duller on the sides; axillars and underwing coverts dull white, mixed indistinctly with dusky. Young birds have the throat buffy with the dark lines very indistinct.

A male taken at Armila, San Blas, February 26, 1963, had the iris auburn, narrow cutting edge of maxilla dull white; rest of maxilla black; mandible dark neutral gray on sides, neutral gray on lower surface; tarsus and toes fuscous-brown; claws dark neutral gray. Another male at this locality, March 2, 1963, had the iris orange; tarsus and toes brownish neutral gray.

Measurements.—Males (10 from San Blas and Darién) wing 55.4–58.0 (56.7), tail 34.3–39.7 (37.1), culmen from base 17.5–19.3 (18.5), tarsus 18.0–21.7 (20.4) mm.

Females (6 from eastern Province of Panamá, San Blas, and Darién), wing 51.6–56.2 (53.1), tail 34.4–36.2 (35.3, average of 4), culmen from base 17.3–19.3 (17.9, average of 5), tarsus 18.6–20.2 (19.3) mm.

Resident. Found locally in eastern Panamá; on the Caribbean slope in eastern San Blas from Permé and Armila to the Colombian boundary at Puerto Obaldía; on the Pacific side, from Cerro Chucantí, at the head of Río Majé, in extreme eastern Province of Panamá, and Darién (recorded at Tapalisa, Cituro, Pucro, and at the base of Cerro Quía (Río Mono) in the upper Tuira Valley, and near Cana, on Cerro Pirre; near Jaqué and on the upper Río Jaqué). Outside of Panamá, this species is found in western Colombia and northwestern Ecuador.

These wrens range more in the open than most of their relatives. While they may be found low down, in dense growth near the ground, they also are regularly seen higher, among vines and branches in forest areas. The only one seen on Cerro Chucantí associated with a group of small ant-wrens in the lower branches of open forest. One near Armila hunted through the higher limbs in a cacao plantation, and another on the Río Pucro was in open cover near a trail leading through a forest. On the Río Jaqué, 1 searched through a mass of vines 10 m above the ground, and at Jaqué I found 1 in the undergrowth in heavy forest. At other localities I saw them regularly in fairly open areas at heights of 15 to 18 m.

At Armila, on March 2, 1963, a pair was busily building a nest in fairly open forest at the border of a quebrada. The structure was an untidy ball, irregular in form, placed near the end of small branches with no attempt at concealment.

Hellmayr (Cat. Birds Amer., pt. 7, 1934, p. 176), with a rather small series, listed the *Thryothorus leucopogon* group as a geographic race of the widely separated *T. thoracicus*, a treatment that has been ac-

cepted by other recent students. With the considerable series now available it is clearly evident that *thoracicus* is uniformly and heavily streaked with black and white over throat and breast. In *T. leucopogon* the marking is confined wholly to the upper throat, with foreneck and breast immaculate. The two styles of marking are clear cut in their differences, with no intergradation.

THRYOTHORUS NIGRICAPILLUS Sclater: Bay Wren,
Cucarachero Cabecinegro

FIGURE 10

Thryothorus nigricapillus P.L. Slater, Proc. Zool. Soc. London, pt. 28, May 1860, p. 84. (Nanegal, 4000 feet elevation, Ecuador.)

Medium size; crown and hindneck black, rest of upper surface chestnut-brown, with wings and tail barred black; throat white, rest of undersurface chestnut or barred.

FIGURE 10.—Bay Wren, Cucarachero Cabecinegro, *Thryothorus nigricapillus*.

Description.—Length 126-156 mm. Crown and hindneck black in sharp contrast to chestnut-brown of back and upper tail coverts; wings and tail somewhat lighter brown, heavily barred with black; throat, line over the eye, lores, auricular region, and side of jaw white; a narrow black line below along the side of the jaw. The pattern of color on the upper surface in all of the races is as described above. The under-surface differs widely in the subspecies, from plain chestnut-brown in *costaricensis* and *odicus*, to white, barred narrowly with black on the undersurface, in the eastern race *schottii* (in which there are two dark bars on each feather).

The range of this species, as here conceived, extends along the Caribbean slope of Nicaragua, Costa Rica, and Panamá (both slopes from Veraguas eastward), western Colombia, and northwestern Ecuador. (See Wetmore, Smiths. Misc. Coll., vol. 139, no. 2, 1959, pp. 14-17 for taxonomic review).

The call note in all is a somewhat guttural *chur-r-rk*. Song utterances are varied, but all agree in their ringing quality and cadence. The usual variants that may be heard from one male in the course of a few minutes I have written as follows: commonly, *chit-i-sit chit-i-sit*, repeated rapidly a dozen times, then perhaps varied to *sweety-it sweety-it*. This may change to *sweety-tu sweety-tu*, or *sweet-weet-weet sweet-weet-weet*. The changes form quite a repertoire, but in final analysis all are rather similar. Males sing alone, but antiphonal duetting by a pair is more common.

THRYOTHORUS NIGRICAPILLUS COSTARICENSIS (Sharpe)

Thryophilus costaricensis Sharpe, Cat. Birds Brit. Mus., vol. 6, 1881, p. 217. (Costa Rica = Valley of the Río San Carlos, Alajuela, Costa Rica.)

Characters.—Ear coverts, side of jaw, throat, and upper foreneck white; rest of undersurface auburn to hazel; some with sides barred indistinctly with black.

Measurements.—Males (10 from Bocas del Toro), wing 66.5-71.5 (69.6), tail 51.1-56.8 (54.4), culmen from base 20.4-22.4 (21.3), tarsus 24.6-26.9 (25.7) mm.

Females (10 from Bocas del Toro), wing 62.5-67.2 (65.2), tail 46.3-51.3 (49.2), culmen from base 19.7-21.8 (20.7), tarsus 24.1-27.2 (25.2) mm.

Resident. Common in the lowlands of Bocas del Toro, from the Río Sixaola to the seaward side of the base of the Valiente Peninsula (Cocoplum).

This common lowland wren, found in thickets in swampy, low-lying areas on the shores of Almirante Bay, is known mainly by its songs and chattering, and scolding notes, since the birds remain hidden in dense cover. They were observed regularly in pairs.

Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 761) reports finding many nests in the Caribbean lowlands of Costa Rica, including the Río Sicsola [= Sixaola], the boundary with Panamá in Bocas del Toro. The nest is an elbow-sloped structure usually hung in an upright crotch of some small tree or shrub from 1.6 to 5 m above the ground, generally about 25 cm long and 8 to 13 cm in diameter at the larger end. All Carriker found were built of weed stems, grass, rootlets, and skeletonized leaves, and lined with soft skeletonized leaves. Two nests, each with three fresh eggs on May 9 and 11, apparently contained the full complement. The eggs were "pure white, sparingly speckled over the whole surface (more thickly about the large end) with cinnamon-brown." One set measured 23×16 , 25×16.5 , and 24×17 mm.

The type of this race, named by Sharpe, in the British Museum, is listed in the volume on type specimens (Warren and Harrison, vol. 2, Passerines, 1971, p. 132), as "Costa Rica. Collected by and purchased of A. Boucard." The collector (Proc. Zool. Soc. London, 1878, p. 51), who listed the bird under the name "*Thryophilus castaneus*, Lawr.," said of it "Several specimens from San Carlos; killed in February." He described the locality (*cit. supra*, p. 38) as on Río San Carlos, a tributary of Río San Juan on the Caribbean slope. I have, therefore, designated this area as the type locality (Wetmore, Smiths. Misc. Coll., vol. 139, no. 2, 1959, p. 19).

THRYOTHORUS NIGRICAPILLUS ODICUS Wetmore

Thryothorus nigricapillus odicus Wetmore, Smiths. Misc. Coll., vol. 139, no. 2, July 8, 1959, p. 14. (Isla Escudo de Veraguas, off the base of the Valiente Peninsula, Bocas del Toro, Panamá.)

Character.—Similar to *Thryothorus n. costaricensis*, of the adjacent mainland, but definitely larger; bill longer, heavier; brown of back and undersurface definitely paler, ochraceous-tawny.

Measurements.—Males (5 specimens), wing 75.2-79.2 (77.0), tail 58.6-62.3 (60.2), culmen from base 21.8-24.2 (23.2), tarsus 28.4-31.8 (29.7) mm.

Females (6 specimens), wing 70.2-72.8 (71.6), tail 54.5-58.8 (56.8), culmen from base 21.0-22.3 (21.5), tarsus 26.1-28.7 (27.2) mm.

Resident. Found only on Isla Escudo de Veraguas, Bocas del Toro.

When I visited the island, this wren, most common of the resident land birds, lived in pairs scattered through the undergrowth. In this island home, with no human neighbors, the birds were tame and easily observed. Though most often encountered in low tangles where vines were matted and cover was dense, they ranged also into open areas through the thickets, occasionally even overhead into the higher branches of the forest trees. The song, heard constantly, resembled that of the mainland race, but was slightly higher in tone and somewhat less varied in repertoire. Regularly the birds came fearlessly near at hand, even within a distance of 2 m.

A nest nearly ready for occupancy, with both male and female bringing material to it, was a rounded ball placed at the end of a slender leafy branch, suspended 2 m above the ground. It was 200 mm or so in diameter, made of palm leaves and other fibers, all slender, that projected as a rough fringe over the surface. The entrance was low down on one side.

C. O. Handley, Jr., who recorded the wren as abundant, March 20-24, 1962, preserved 2 specimens in alcohol.

It should be emphasized that this wren is distinctly and obviously larger than its relative on the mainland, as are the Gould's Manakin and the hummingbird *Amazilia handleyi* resident on Escudo de Veraguas.

THRYPOTHORUS NIGRICAPILLUS CASTANEUS Lawrence

Thryothorus castaneus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, June 1861, p. 321. (Atlantic slope near the Panama Railroad = Lion Hill, Canal Zone.)

Characters.—Similar to *T. n. costaricensis*, but paler brown above and below; white of the throat usually more extensive, in some reaching the upper breast; often more heavily barred with black on sides, with the barring extending across the lower breast and abdomen.

A female from the Caribbean slope at the head of Río Guabal, Coclé, taken February 26, 1962, had the iris light mouse brown; maxilla black (except the cutting edge); base of mandibular rami dull buffy brown; cutting edge of maxilla and rest of mandible greenish neutral gray; tarsus and toes fuscous-black.

A fully grown immature male collected at Gamboa, January 13, 1960, had the iris light brown; maxilla and a streak on the side of the mandible near the tip dull black, the latter changing distally to neutral gray, with the base of the mandible and the gape dull honey yellow; tarsus and toes dull neutral gray.

Measurements.—Males (14 from the Caribbean slope of Coclé, western Colón, and northern Canal Zone), wing 66.2-70.7 (68.9), tail 49.4-53.7 (51.7), culmen from base 20.3-22.0 (21.0), tarsus 24.9-27.5 (25.8) mm.

Females (17 from Coclé, western Colón, and northern Canal Zone), wing 63.1-67.0 (64.8), tail 46.3-53.4 (49.2), culmen from base 19.3-21.9 (20.2), tarsus 23.4-25.7 (24.7) mm.

Resident. Locally common on the Caribbean slope from the valley of the Río Calovévora, northwestern Veraguas, through northern Veraguas and northern Coclé (reaching the Pacific slope in these provinces) to the northern Canal Zone (including the middle Chagres Valley), and reaching the Pacific slope in the southwestern section.

In March 1951, I found this wren on the border of the Pacific slope near El Valle, Coclé, at 750 m elevation on the base of Cerro La India Dormida (male and female collected March 29), and at 600 m at the head of the Río Mata Ahogada (female March 30, male March 31). Their presence in this area may be explained by more humid local conditions in contrast to the drier norm of the rest of the valley, indicated by abundant growth of green grass, herbaceous vegetation and vines, with occasional areas of new second-growth brush. The actual head of the Río Mata Ahogada, which flows into the Pacific, is immediately adjacent to the headwaters of the Río Indio of the Atlantic drainage, the two being separated only by a low, rounded ridge of slight elevation. In fieldwork the following year I found this race of the wren common inland along the valley of the Río Indio. In this locality the bird was known to the country people as "El Guerrero." The species crosses the Continental Divide also in Veraguas at Santa Fé, where it has recently been observed by Ridgely and where in 1925 Benson took a specimen (AMNH). Eisenmann has also observed it in the fairly humid canopied second-growth forest on the southwestern section of the Canal Zone east of Chorrera. An early report by Salvin (Proc. Zool. Soc. London, 1867, p. 134) of a specimen of *castaneus* labeled "Santiago de Veraguas" on the much drier Pacific section of the Isthmus is an error as the bird does not occur in that area. Salvin and Godman repeat this locality (Biol. Centr.-Amer. Birds, vol. 1, pt. 4, 1880, p. 88) and later authors have also done so.

Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 271), described a nest found by Jewel in the Canal Zone, July 28, 1912, as "a loosely built elbow-shaped affair, made almost entirely of a round-stemmed grass and lined with finer stems of the same, a few coarser stems and reddish-brown vine tendrils on the outside. Loosely placed

in vines, four feet up, by a stream; contained one fresh egg measuring .90×.59 in." (Equivalent to 2.3×1.5 cm.) The color of the egg is not given.

The notes of E. A. Goldman describe a nest of this species under construction near Gatún, Canal Zone, on February 2, 1911. It was located about 3.6 m above the ground in dense forest. D. E. Harrower (1936 thesis at Cornell University) indicated that the breeding season in the Canal Zone ran from late April into August. The season may be longer, however, since on November 21, 1957, F. O. Chapelle and G. Goldstein found a pair completing a nest near Gatún; an abandoned nest was nearby (*in litt.* to Eisenmann).

THRYOTHORUS NIGRICAPILLUS SCHOTTII (Baird)

Thryophilus schottii Baird, Rev. Amer. Birds Mus. Smithsonian Institution, vol. 1, August 1864, p. 123 (in Key), and September 1864, p. 133. (Río Truandó, Chocó, Colombia.)

Thryophilus nigricapillus connectens Chapman, Bull. Amer. Mus. Nat. Hist., vol. 31, July 23, 1912, p. 157. (Cocál, 5000 ft. elevation, Cauca, Colombia.)

Characters.—Lower surface white, becoming buff on lower abdomen, flanks and undertail coverts, heavily barred with black, in typical form this marking extending from the upper foreneck to the undertail coverts, in some also over the throat; buff on undersurface darker, restricted to flanks, lower abdomen, and undertail coverts.

A male, taken at Puerto Obaldía, San Blas, March 1, 1963, had the iris mouse brown; maxilla black; tip of mandible dull pale olive-green, blackish on sides, changing at center to light orange-yellow; gape honey yellow; tarsus and toes fuscous-black; claws dark neutral gray. An immature female at Pucro, Darién, February 5, 1964, was similar in color of iris; maxilla, except cutting edge, fuscous-black; tip of mandible dull greenish yellow, changing on side to pale neutral gray; cutting edge of maxilla, gape, and basal two-thirds of mandible honey yellow; tarsus and toes fuscous-black; claws fuscous.

Measurements.—Males (10 from Darién), wing 64.0-66.9 (65.7), tail 48.0-52.3 (49.7), culmen from base 19.5-22.1 (20.9), tarsus 24.3-26.8 (25.1).

Females (10 from Darién), wing 58.2-64.3 (61.9), tail 43.2-49.5 (46.5), culmen from base 18.6-20.3 (19.6), tarsus 22.3-24.3 (23.4) mm.

Resident. Common, widely spread through Darién in the upper valley of the Río Tuira, from the Río Cupe, the Río Paya, and the Río Pucro to the base of Cerro Tacarcuna; on Cerro Pirre at Cana; on the Río Sambú; along the Pacific Coast from Bahía Piñas to Jaqué, and the

Río Jaqué, inland to the Río Imamadó; on the Caribbean coast of San Blas inland at Armila and Puerto Obaldía.

In adjacent Colombia this race ranges widely from Acandí and the Chocó southward.

Stomachs examined were filled with broken bits of a wide variety of insects, and occasionally of a spider, often a fairly large one. One had swallowed a small grass seed, apparently a chance occurrence. Six collected by Burton (Bull. Brit. Orn. Club, 1975, p. 85) ranged in weight from 17.7 to 23.8 g, averaging 20.9 g.

THRYOTHORUS NIGRICAPILLUS REDITUS (Griscom)

Thryophilus nigricapillus reditus Griscom, Bull. Mus. Comp. Zool., vol. 72, January 1932, p. 358. (Permé, San Blas, Panamá.)

Characters.—Similar to *T. n. castaneus* but somewhat lighter colored; white of breast more extensive; sides and abdomen more extensively barred with black.

A fully grown immature female at the Peluca Hydrographic Station back of Madden Lake, March 7, 1961, had tarsus and toes black, the inner lining of the mouth honey yellow (including the tongue, except for a spot of black on the base). An adult female collected near the Peluca Hydrographic Station, March 10, 1961, had the tongue black except for the tip and two pointed lateral projections at the base, which were yellow.

Measurements.—Males (14 from Cerro Azul, Chimán, Charco del Toro, and Cerro Chucantí, in eastern Province of Panamá, and Mandinga and Permé, San Blas), wing 67.0-70.5 (68.1), tail 47.5-54.3 (51.8), culmen from base 19.3-21.9 (20.9), tarsus 24.0-26.5 (25.5) mm.

Females (11 from Cerro Bruja, eastern Colón, Cerro Azul, Chimán, Charco del Toro, Cerro Chucantí in eastern Province of Panamá; and Mandinga, San Blas), wing 63.2-67.7 (65.4), tail 45.0-51.4 (48.5), culmen from base 19.0-21.5 (20.1), tarsus 23.1-26.3 (24.7) mm.

Resident. On the Caribbean side from eastern Colón (Portobelo, Cerro Bruja), through San Blas, from Mandinga to Permé.

A nest seen March 9, 1961, near the Candelaria Hydrographic Station was built at the end of a dead branch projecting a few meters in the open among the leaves of fairly dense undergrowth on the bank of Río Pequení. It was an untidy ball of yellowish white fibers as large as a coconut. An adult was flushed from the nest, which held 2 nestlings with the feather growth barely beginning.

Three collected by Goldman May 25 to 30, 1911, had the stomachs filled with fragments of beetles, other miscellaneous insects including earwigs, egg cases of roaches, and spiders.

This population of the wren is definitely an intergrade toward the next form, *schottii*, of eastern Panamá and Colombia. Transition between *castaneus* of the Caribbean slope of western Panamá east through the northern Canal Zone at the western end of its range is fairly abrupt. Specimens from near Colón, and northern Canal Zone, are definitely *castaneus*. Those from Portobelo, 30 km east, are *reditus*. At the eastern end the type locality at Permé is barely within the range as birds from Armila and Puerto Obaldía, between 15 and 20 km east, are placed with *schottii*.

THRYOTHORUS SEMIBADIUS Salvin: Riverside Wren,
Cucarachero Castaño Cabecimoreno

Thryothorus semibadius Salvin, Proc. Zool. Soc. London, November 1870, p. 181.
(Bugaba, Chiriquí, Panama.)

Rather small; crown rufous-brown, like back (not black as in *nigricapillus*); rest of undersurface barred narrowly with black and white (with 3 black bars on each feather).

Description.—Length 120-135 mm. Adult (sexes alike), crown, back, scapulars, and upper tail coverts chestnut-brown; wings somewhat brownish black, spotted and barred narrowly with light brown on the exposed outer webs, the bars extending across both webs on the innermost feathers; lesser coverts black, spotted with white; tail dull black, barred and dotted with brownish buff; side of head black, edged widely with white, especially on the lores, superciliary line, and cheeks, which are largely white; throat white; rest of undersurface, including the underwing coverts, white, barred narrowly but heavily with black, the white changing to brownish buff on flanks, lower abdomen, and undertail coverts; bend of wing white.

Juvenile, somewhat duller brown above.

A male, collected at Corotú, near the coast, northeast of Puerto Armuelles, Chiriquí, February 9, 1966, had the iris light reddish brown; cutting edge of maxilla and entire mandible neutral gray; rest of maxilla black; basal area of inside of mouth black, with anterior half of inner surface of maxilla and mandible neutral gray; tarsus, toes, and claws neutral gray, with the inner surface of tarsus somewhat paler.

Measurements.—Males (10 from Chiriquí), wing 60.1-66.6 (63.3) tail 44.6-50.6 (46.4), culmen from base 19.1-20.6 (19.8), tarsus 22.4-25.4 (23.5) mm.

Females (10 from Chiriquí and Costa Rica), wing 60.5-64.7 (62.4), tail 41.7-47.5 (44.8), culmen from base 19.2-20.8 (19.8), tarsus 22.4-24.5 (23.2) mm.

Resident. From present information, found locally in the lowlands on the Pacific slope of northwestern Chiriquí from the lower Burica Peninsula near Puerto Armuelles, to the northern base of the mountains below and above Concepción (Bugaba, Divalá, Buenavista). *Thryothorus semibadius* is a bird of limited distribution, found in Panamá in southwestern Chiriquí from the lowlands of the Burica Peninsula near Puerto Armuelles to the base of the mountain area above Concepción.

My first view of this bird in life came in early March 1960, when a few were noted in thickets near the Río Escárrea, at Buena Vista. In February and early March 1966, they were fairly common near Puerto Armuelles from the upper Río San Bartolo, to the Río Corotú near the coast. Like other species of the genus, they ranged in pairs on or near the ground in open thickets and in undergrowth in forest, usually near water. Ridgely (*in litt.*) found two pairs in mangroves foraging on the roots and in adjacent thickets, at Estero Rico, Chiriquí. Attention is drawn to them by their low, chattering calls, and less commonly by song, similar to that heard from various races of *Thryothorus nigricapillus*, but slightly higher pitched in sound. Pairs sing regularly in antiphonal concert in which the leader, that I assumed to be the male, is followed immediately by a lesser voice that I supposed is the female. This sequence was clearly demonstrated when I moved quietly along a woodland trail, with members of a pair a few feet away, one on the right, the other on the left. With the onset of the full dry season at the end of February, they sing less often. Because of this silence they are seldom noticed in the dense cover that was their shelter.

In southwestern Costa Rica, Skutch (Pac. Coast Avif. no. 34, 1960, pp. 130-137) found it common in the valley of El General, often in family groups of 3 or 4 birds. Throughout the year they slept in specially built nests in trees or bushes, usually near streams, sometimes 2 or 3 birds together, possibly a female with grown young, as he believed that the mated pairs separated after nesting. The nests made in the breeding season were near rapidly flowing streams. They were rounded structures approximately 125×150 mm with an entrance chamber and an inner compartment. The clutch was two, the eggs being "white with fine, faint speckles of pale brown that are most numerous in a wreath or cap on the thick end." Three eggs measured 20.6-22.2 by 15.1-15.9 mm. The nesting season in Costa Rica extended from late De-

cember to September. Skutch found that grown young accompanied their parents for several months. On April 20-21, 1968, C. Leck and S. Hilty netted birds near the road to El Volcán at ca. 1140 m (confirmed by color slide). Eisenmann saw a pair engaged in antiphonal singing at Buena Vista (690 m) in a thicket of a boggy area on March 4, 1960. It ranges to the west in southwestern Costa Rica from the lowlands to about 900 m elevation.

The close relationship of *T. semibadius* to the diverse forms of *Thryothorus nigricapillus* is clearly evident, but the former differs definitely and completely from them in always having the crown chestnut-brown like the back, and also in the narrow bars on the lower surface which are produced by three black bands on each feather, instead of two bands as in the races of *nigricapillus* that have this marking. (For other brief comment see Wetmore, Smiths. Misc. Coll., vol. 139, no. 2, 1959, p. 17). Hellmayr (Cat. Birds Amer., Field Mus. Nat. Hist., pt. 7, 1934, p. 180) listed *semibadius* as a subspecies of *nigricapillus*, a treatment accepted also by Paynter (Check-List Birds World, vol. 9, 1960, p. 407), but one that does not seem justified, as there is no indication whatever of an approach in the markings described above that separate the two.

THRYOTHORUS ATROGULARIS Salvin. Black-throated Wren,
Cucarachero Gargantinegro

Thryothorus atrogularis Salvin, Proc. Zool. Soc. London, February 1865, p. 580.
(Tucurrique, Costa Rica.)

Medium size; deep chestnut-brown; side of head, throat, and upper breast black.

Description.—Length 145-160 mm. Adult (sexes alike); upper surface, from forehead to upper tail coverts, including scapulars and outer webs of wings, chestnut-brown; concealed webs of wings dusky; upper tail coverts barred lightly with black; tail black, with indefinite, partly concealed brownish bars; side of head to auricular region, chin, foreneck, and upper breast black; superciliary, auricular, and nasal area spotted and lined lightly with white.

Immature, without black on forepart of body, side of head, and undertail coverts.

Bill dull black; iris brown, tarsus black. In juvenile, mandible except tip yellowish.

Measurements.—Males (10 from Bocas del Toro), wing 65.0-68.6 (66.8), tail 51.4-54.7 (53.2), culmen from base 19.5-22.0 (20.8), tarsus 21.5-25.5 (24.4) mm.

Females (10 from Bocas del Toro, Costa Rica, and Nicaragua), wing 60.0-63.7 (62.2), tail 45.6-50.5 (48.0), culmen from base 19.0-20.9 (19.8), tarsus 22.9-24.5 (23.6) mm.

Resident. Fairly common locally in the lowlands of western Bocas del Toro near Almirante Bay; ranging inland to 730 m on the Río Changuena.

Near Almirante this handsome wren ranges in tangles of low brush bordered with stands of coarse grasses. Galindo recorded it inland on the lower Río Changuena, where 1 was taken September 8, 1961. In February and March 1958, they lived locally on the higher ground, beyond the borders of cultivation, inland from the wet coastal swamps. Attention is drawn to them by their clear musical songs. These are a series of modulated notes followed by ringing trills that suggest those of *Thryothorus fasciatoventris albigularis*. In addition to the song, they have the usual rattling, chattering notes. The birds ranged low, constantly under cover, as is usual in the genus.

The species, here at the lower end of its range, is found north in Costa Rica and Nicaragua, through the lowlands of the Caribbean slope. The nest and eggs appear to be still unknown.

Salvin (in Salvin and Godman, Biol. Centr. Amer., Aves, vol. 1, 1880, p. 91, pl. 6, fig. 4) in his final account of this bird changed the spelling of the species name to *atrigrularis*, citing the original spelling, *atrogrularis*, in his heading.

**THRYOTHORUS SPADIX (Bangs) Sooty-headed Wren,
Cucarachero Cabeza Fuliginosa**

Pheugopedius spadix Bangs, Proc. Biol. Soc. Washington, vol. 23, May 4, 1910, p. 74. (Naranjito, Río Dagua, Colombia.)

Pheugopedius spadix xerampelinus Griscom, Bull. Mus. Comp. Zool., vol. 69, no. 8, April 1929, p. 182. (Cana, Darién.)

Medium size; throat and side of head black, the latter area streaked with white; chest and back chestnut-brown.

Description.—Length 140-155 mm. Adult (sexes alike), throat and side of head black; a superciliary line and streaks on the cheeks white; crown and upper hindneck blackish brown; rest of upper surface, including wings, chestnut-brown; tail black, barred widely with chestnut-brown; upper breast dull chestnut-brown; sides, tibia, and undertail coverts dull brown, the latter barred with black like the tail; lower breast and abdomen dull buff spotted indistinctly with black; undersurface of wings buffy white.

Immature, head, including cheeks and throat, dull brown.

Measurements.—Males (10 from Darién, Panamá; Antioquia and Bolívar, Colombia), wing 64.2-66.9 (65.1), tail 55.1-58.2 (56.9), culmen from base 19.0-20.4 (19.5), tarsus 22.0-25.1 (23.7) mm.

Females (10 from Darién, Panamá; Antioquia and Bolívar, Colombia), wing 58.2-61.8 (59.0), tail 50.3-54.6 (52.4), culmen from base 17.8-20.4 (18.8), tarsus 20.7-22.8 (21.7) mm.

Resident. Found locally in the Subtropical and upper Tropical Zone of Darién on Cerro Pirre, Cerro Tacarcuna, and Cerro Quía (780 m). The population of Panamá, named by Griscom, is found to be the same as that of western Colombia.

Goldman recorded 1, taken at 1200 m above Cana, as ranging in undergrowth along a ridge. The stomachs of 2 that he collected in late May and early June were filled with fragments of beetles, hemiptera, ants, gryllids, a caterpillar, and spiders. Ridgely (*in litt.*) observed a pair foraging in undergrowth at the edge of forest with a mixed flock on the slopes of Cerro Quía, Darién, at 540 m, rather lower than most other Panamá records. The birds were silent as they moved through quite open lower undergrowth. In western Colombia, Hilty (Wilson Bull., 1974, pp. 479-481) recorded it quite regularly at swarms of the small army ant *Labidus praedator*. There is no record at present of the nest and eggs.

In a considerable series of specimens examined there is no indication of intergradation between *T. spadix* and *Thryothorus atrogularis*, the two groups differing completely in details of the color pattern, notably in the crown and upper breast. Hellmayr (Cat. Birds Amer., part 7, 1934, p. 183) from limited material listed *spadix* as a geographic race of *atrogularis*, an arrangement followed also by Paynter (in Check-list Birds World, vol. 9, 1960, pp. 399-400). The series of both groups now available shows no indication of conspecific relationship. Geographically the two groups are widely separated.

S. West (*in litt.* to Eisenmann, October 1973) reports seeing a wren on Cerro Azul, eastern Province of Panamá, with a black throat, but he failed to determine to which of these species it belonged.

THRYOTHORUS FASCIATOVENTRIS Lafresnaye: Black-bellied Wren,
Cucarachero Vientrenegro

Medium size; foreneck and throat pure white, rest of undersurface black, partly barred white, upper surface reddish brown.

Description.—Length 135-150 mm. Adult (sexes alike), foreneck and upper breast pure white, rest of undersurface black, banded narrowly with buff or with white on lower breast, abdomen and undertail

coverts; central area very faintly lined with the paler markings, or plain black; above reddish brown; side of head dull black; a narrow white line over loreal area and eye.

Immature, mandible yellow; side of head faintly dusky; light line over eye indistinct; foreneck grayish white to gray; rest of undersurface grayish brown to brown, with cross bars faintly indicated or absent.

These are among the more common wrens of forested regions in lowland areas, found usually in heavy cover in the denser stands of woodland. Two subspecies are recognized in the Republic. The species ranges from southwestern Costa Rica to Colombia, the nominate race being described from central Colombia.

THRYOTHORUS FASCIATOVENTRIS MELANOGASTER Sharpe

Thryothorus melanogaster Sharpe, Cat. Birds Brit. Mus., vol. 6, "1881" (1882), p. 230, pl. 14, fig. 2. (Bugaba, Chiriquí, Panamá.)

Characters.—Slightly darker, more chestnut-brown on upper surface, and on feathered area of tibia; undersurface with black of breast more extensive; averaging slightly larger.

An adult male, taken at Puerto Armuelles, Chiriquí, February 1, 1966, had the iris reddish brown; maxilla black; mandible dark bluish gray; inner side of tarsus and sides of toes and claws dull neutral gray; outer side and front of tarsus, and tops of the toes dull black.

Measurements.—Males (10 from Panamá and Costa Rica), wing 65.6-69.6 (66.1), tail 53.2-58.3 (56.7), culmen from base 20.5-23.8 (22.2), tarsus 23.1-26.2 (24.5) mm.

Females (9 from Panamá and Costa Rica), wing 61.5-66.0 (63.9), tail 50.5-55.2 (52.7), culmen from base 19.0-21.9 (20.0, average of 8), tarsus 22.5-24.9 (23.5) mm.

Resident. Found locally in forested areas (not abundant) in the lowlands of western Chiriquí; recorded from west of David near Divalá, and Bugaba, below Concepción south to Aguacatón, the upper Río San Bartolo and Puerto Armuelles; locally lower on the peninsula to Punta Balsa, near Punta Burica.

As these wrens are primarily inhabitants of thickets in the denser cover of forests, they must now be reduced considerably in number owing to the extensive clearing in the area from which they are known. This western race was known early through specimens collected by Arcé, mainly in the Bugaba area (recorded by Salvin, Proc. Zool. Soc. London, 1870, pp. 180-181). In the British Museum (Natural His-

tory) there are 3 marked with this locality. Several others are labeled Chiriquí or "Veragua" without other locality. Griscom's listing of "Veraguas" in the range probably is due to these specimens, as the bird has not been recorded otherwise in that province (Griscom, Bull. Mus. Comp. Zool., vol. 78, 1935, p. 358, where the range for Panamá is cited as "Chiriquí and Veraguas"). Ridgway (U.S. Natl. Mus. Bull. 50, pt. 3, 1903, p. 532) did mention one locality, Chitra, included in the modern Province of Veraguas, but provides no literature basis for this locality and there is no specimen in the Smithsonian so labeled.

Slud in Costa Rica (Bull. Amer. Mus. Nat. Hist., no. 128, 1964, p. 289) characterizes this form as a "nonforest-inhabiting wren" of the densest stream-bordering thickets and wild, tangled brushy growth along wooded borders in the humid tropical belt. Its song, "in its slow pace and rich dark quality, mellow as that of an oriole," differs from that of other wrens.

THRYOTHORUS FASCIATOVENTRIS ALBIGULARIS (Sclater)

Cyphorhinus albigularis P.L. Sclater, Proc. Zool. Soc. London, vol. 23, June 26, 1855, p. 76, pl. 88. (Isthmus of Panamá.)

Characters.—Slightly lighter brown on upper surface and tibia; black of lower parts somewhat less extensive; averaging smaller.

A male, taken February 6, 1962, at Cañita, near the Río Bayano (above El Llano), eastern Province of Panamá, had the iris bright reddish brown; maxilla black, mandible neutral gray; inside of mouth neutral gray, except the tongue which had the distal half translucent so that color from beneath appeared through it; inner face of tarsus dark neutral gray; rest of tarsus with toes and claws fuscous-black. Another male, collected March 12, 1963, at Armila, eastern San Blas, also had the iris reddish brown; maxilla and tip of mandible black; rest of mandible neutral gray; tarsus, toes, and claws dusky neutral gray. A third of the same sex, collected by R. S. Crossin at Gamboa, August 9, 1969, was similar.

Measurements.—Males (10 from Coclé, Canal Zone, and San Blas), wing 63.1-70.1 (66.5), tail 49.2-57.1 (53.0), culmen from base 20.0-22.2 (20.7), tarsus 23.2-25.9 (24.5) mm.

Females (10 from Coclé, Colón, Canal Zone, San Blas, and Darién), wing 59.7-63.6 (61.3), tail 45.0-50.2 (47.2), culmen from base 19.0-21.0 (19.8), tarsus 20.1-24.7 (23.0) mm.

Resident. Locally fairly common in forested areas, from the Río Indio and its tributaries in western Colón, and the Caribbean slope of

northern Coclé, east on both Pacific and Caribbean slopes in the Canal Zone (including Barro Colorado Island where, however, it was last recorded August 22, 1964 [Willis and Eisenmann, *Smiths. Cont. Zool.* 291, 1979, p. 24]), through the eastern Province of Panamá, including the valley of Río Bayano (El Llano, Cañita, Chimán, the Río Majé (Charco del Toro), and the Tuira Valley (El Real, Pucro); and on the Caribbean side through San Blas (Mandinga, Bahía Caledonia, Permé, Armila) to the Colombian boundary of northeastern Chocó.

These forest inhabitants, found usually in pairs, at the proper season with grown young, range near the ground in low undergrowth, often in masses of creepers, low tangles of vines, and dense growths of *Heliconia* in abandoned banana plantations. Occasionally they were with Song Wrens as near companions. The clear, whistled call, *weety-o-weet*, repeated constantly, usually is heard from birds so well concealed in creepers or other cover, from the ground to fairly high in the trees, that there may be many minutes without even a glimpse of movement in the dense cover that they frequent. Only occasionally will one approach almost within arm's reach, where they utter low calls of a different nature and then retreat to more distant cover.

The song consists of clear hollow whistles, often including or ending with a characteristic *weet-o-weet*. It is quite different in its more varied, constantly changing repertoire, from the rapidly repeated phrases of *Thryothorus nigricapillus* and *T. leucotis* that often range near it in the same forests.

In stomach examinations the food was found to be the usual variety of small insects and spiders, all finely ground.

In a pair collected by Burton (*Bull. Brit. Orn. Club.*, 1975, p. 85) in the Province of Panamá the male weighed 28 g and the female 21.4 g. Strauch (*Bull. Brit. Orn. Club.*, 1977, p. 64) took a female in the same province that weighed 20.7 g.

One banded at Curundu, Canal Zone, on December 7, 1963, was recaptured on September 18, 1967 (Loftin *in litt.* to Eisenmann).

THRYOTHORUS RUTILUS HYPERYTHRUS Salvin and Godman:
Rufous-breasted Wren, Ruiseñor del Monte

Thryothorus hyperythrus Salvin and Godman, *Biol. Centr.-Amer.*, vol. 1, April 1880, p. 91. (Paraiso station, Panama Railroad, Canal Zone.)

Small; throat and side of head black, spotted heavily with white; undersurface rufous-brown; tail black, barred widely with white.

Description.—Length 115-130 mm. Adult (sexes alike), crown

russet-brown, becoming lighter on hind neck; back, including scapulars and upper tail coverts, olive-brown; wings somewhat brighter brown; tail grayish brown, barred heavily with black, the outer margins of the paler bands often white; side of head, including lores and throat, black, streaked and spotted narrowly with white; undersurface, including sides and legs, tawny-brown, somewhat paler centrally; undertail coverts black, barred with dull grayish white; underwing coverts, including edge of wing, white.

Adult males, collected at El Copé, Coclé, February 25, 1963, and El Volcán, Chiriquí, March 22, 1965, had the iris light reddish brown; maxilla and tip of mandible black; rest of mandible somewhat bluish neutral gray; tarsus, toes, and claws dark, bluish neutral gray; inside of mouth black, this color covering the thickened base of the tongue, but not the thin, transparent tip.

Measurements.—Males (10 from Chiriquí, Veraguas, and Canal Zone), wing 56.9-60.4 (58.0), tail 47.2-52.1 (48.8), culmen from base 17.3-18.6 (17.9), tarsus 20.3-23.7 (21.4) mm.

Females (10 from Chiriquí, Veraguas, Coclé, Los Santos, and Province of Panamá), wing 50.6-54.7 (53.6), tail 40.4-46.5 (43.7), culmen from base 16.6-18.0 (17.3), tarsus 19.1-20.5 (19.8) mm.

Resident. Common locally on the Pacific slope from western Chiriquí to the lower Río Bayano in eastern Province of Panamá (not found in Darién), including the Azuero Peninsula, and the southern Canal Zone; found through the lowlands; ranging upward in hill country at El Valle, Coclé, and Cerro Campana, Panamá to about 1000 m and in Chiriquí to 1600 m (Bajo Mono, Velo) on the Pacific slope of Volcán de Chiriquí; recorded occasionally on the Caribbean slope in the Canal Zone, especially in the middle Chagres Valley, and at Portobelo, Colón.

Salvin (Proc. Zool. Soc. London, 1870, p. 181) under the name *rutilus* listed this bird from "Calovévora," and this locality was included also in the original description by Salvin and Godman (p. 91), which would indicate a locality on the Caribbean slope of Veraguas.

These are shy birds, widely distributed but not abundant, found in pairs along the borders of forest, ranging near the ground, and also through tangled vines massed in the lower branches of trees. Their tendency to forage higher in low trees makes them somewhat easier to see than most wrens. Their presence is usually first made known by their constant songs as they creep about under dense cover of leaves. Their notes are clear and emphatic, in tone more suggestive of a finch or a wood warbler of the *Oporornis-Seiurus* group than of a wren. On one occasion, with a companion I followed 1 slowly for sometime

through its calls, until finally it settled in an area of dense brush. Here after watching for 15 minutes, we finally saw it clearly enough to identify it. At Soná, Veraguas, in 1953 this wren was called "ruiseñor del monte."

Stomachs of birds collected for specimens were filled with fragments of small spiders and a variety of insects, among which were beetles, cockroaches, bugs, caterpillars, and ants. One, in addition, held a small seed.

Two males collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 15.3 and 15.7 g.

In Costa Rica, Skutch (Pac. Coast Avif. no. 34, 1960, pp. 116-122) describes the song and habits in detail. Through the song, given at times antiphonally by mated pairs, contact is maintained between individuals. He found them building flimsy, covered nests for sleeping, which they seemed to occupy alone. In nesting season, pairs built globular nests of leaves with an opening in the side. The eggs, two or three, were "white with a heavy wreath of brown spots around the thickest part, and a sprinkling of the same over the remaining surface. Those of one set measured 18.3×13.9 , 18.3×13.9 , and 17.9×13.5 millimeters." The young have no down at hatching.

The subspecies *hyperythrus* ranges from southwestern Costa Rica through central Panamá, chiefly on the Pacific slope, to the Río Bayano basin.

The species *T. rutilus*, as here used, includes other subspecies chiefly in hill country and other cleared areas of Colombia, Venezuela, Trinidad, and Tobago. Some authors include in this species the *T. maculipectus* group of southeastern Mexico to Costa Rica, and the rather similar-looking *T. sclateri* of Ecuador and Peru (Hellmayr, Cat. Birds Amer., pt. 7, 1934, pp. 201-209). Others combine the *sclateri* group in *T. rutilus* but keep *T. maculipectus* separate (Paynter, 1960, Checklist Birds World, vol. 9, pp. 405-407) or separate *T. rutilus* but combine the *sclateri* group with the very distant *T. maculipectus* (Meyer de Schauensee, 1966, The Species of Birds of South America, pp. 404-405; Howell, Condor, 1957, p. 98). If the species concept of *T. rutilus* is enlarged, the name Speckled Wren is applicable (Eisenmann, *in litt.*)

TROGLODYTES AEDON Vieillot: House Wren, Cucarachero Común

Troglodytes aëdon Vieillot, 1808?, Hist. Nat. Ois. Amer., Sept., vol. 2, p. 52, pl. 107. (No definite locality mentioned = New York City.)

Small; short tailed; dark grayish brown, without striking head markings; whitish underneath.

Description.—Length 108-115 mm. Adult (sexes alike), brown above, with crown slightly grayer; an indistinct superciliary line and another back of eye, dull buff; upper tail coverts and rump more rufescent, the rump with small, concealed white spots and barred narrowly with black; wing coverts, secondaries, outer webs of primaries, and tail dark brown, barred narrowly with dull black; undersurface dull white centrally, with sides and flanks brown; undertail coverts dull white, mixed with reddish brown and barred with black; scapulars and underwing coverts white to pale buff; spotted in some very lightly with gray.

Immature, like adult but without superciliary line; breast and sides barred indistinctly and narrowly with dusky.

The House Wren in Panamá is a common bird not only in rural areas, but in suburbs and city buildings, where open, warm-weather house construction in eaves and corners or holes in brick work often allows it entry so that the bird may seem a part of the human family. As a friendly neighbor, from its cheerful song, it is popularly known as the "ruiseñor," the standard Spanish name for the European Nightingale.

The species as here treated ranges from Canada and the United States through the West Indies, Middle America, and South America to Tierra del Fuego and the Falkland Islands. Panamá birds belong to the *T. musculus* complex, found from southern Mexico southward originally described from Brazil, and often treated as a separate species with the name Southern House Wren.

TROGLODYTES AEDON INQUIETUS Baird

Troglodytes inquietus Baird, Rev. Amer. Birds, vol. 1, September 1864, pp. 138 (in key), 143. (Panama Railroad = Atlantic slope, Panama Railroad, Canal Zone, Panamá.)

Characters.—Undersurface extensively dull white, with grayish brown on sides and flanks.

A male at Aguadulce, Coclé, January 19, 1963, had the iris brown; cutting edge of maxilla and base of mandible flesh color; rest of maxilla fuscous-black, rest of mandible dark neutral gray; gape honey yellow; tarsus, toes, and claws grayish brown. Another male at El Volcán, Chiriquí, March 9, 1965, had the iris rather dull reddish brown; base of mandible pale brownish white; rest of bill black; tarsus and toes dark fuscous; claws dusky neutral gray. In a female, on Isla Cébaco, Veraguas, March 27, 1962, the iris was light, warm brown; maxilla and tip of mandible fuscous-black; base of mandible light brownish white; gape dull honey yellow; tarsus brownish gray; toes and claws fuscous.

Measurements.—Males (10 from Los Santos, Herrera, Coclé, Province of Panamá, Canal Zone, and Colón), wing 51.2-54.2 (52.7), tail 34.4-37.8 (36.2), culmen from base 15.7-17.8 (16.8), tarsus 18.5-19.8 (19.3) mm.

Females (10 from Herrera, Canal Zone, and Darién), wing 51.1-54.4 (52.1), tail 34.0-38.0 (35.4), culmen from base 15.4-17.5 (16.0), tarsus 18.2-19.5 (18.9) mm.

Resident. Found locally in the Tropical Zone throughout the Republic, varying locally in abundance; found on Islas Gobernadora and Cébaco, Veraguas, and in the Archipiélago de las Perlas, where reported from Islas Rey, San José, Pedro Gonzalez, Trapiche, Santelmo, and Bayoneta). To 2400 m in Chiriquí (trail between Cerro Punta and Boquete, Eisenmann, July 13, 1970); 600 m on Cerro Pirre, Darién.

The House Wren is widely distributed in areas of thickets and fringe shrubbery, found in densely forested regions only where clearings have been made. Normally the birds are in pairs, or for brief periods, in family groups. They come into cities and towns, and about country homes are regular attendants, searching corners, thatched roofs where present, and any other concealing cover for their insect food. As they move about, males sing constantly their rapid, bubbling songs, joined regularly by the wheezy notes of the females. Nests of soft vegetable fibers, often with a feather lining, are hidden in cavities, usually with narrowed entrances so that eggs and young are completely hidden. Construction is by both members of the pair, incubation by the female alone, but she is fed regularly by the male, who also aids in care of the young. In the breeding season from March to July (sometimes later) three broods in rapid succession are usual, with young of the first family frequently aiding in bringing food to those that follow.

The eggs are white, marked rather heavily with pale to dark brown; usually there are 3 or 4, rarely 5 to a set. They range in size from 16.7-19.4×12.7-13.9 mm, with an average of 17.8×13.4 mm.

Males sing more or less regularly through the year except when molting, with young males beginning rambling songs when 2 months old or less. Full details on this species in Central America are given by Skutch (Condor, 1953, pp. 124-149; Naturalist in Costa Rica, 1971, pp. 22-24).

Adult birds of this subspecies are fairly uniform in color throughout the Isthmus, those from the base of the Burica Peninsula being similar to those of eastern Panamá. The only variation noted is in 1 male collected in the uplands of northwestern Chiriquí within 15 km of the Costa Rican boundary. This bird is intermediate between *T.a. intermedius* and the Panamanian *inquietus*, the entire upper surface and the

sides being dark like *intermedius* but with the central undersurface nearly clear white as in *inquietus*. The wrens, not common in this area, should be examined from within a kilometer or so of the boundary, as they may prove to be the subspecies *intermedius*. Griscom ascribed birds from extreme northwestern Panamá in Bocas del Toro (Almirante, Chiriquito) to *intermedius*, but they are here included in *inquietus*.

Birds weighed by Burton (Bull. Brit. Orn. Club, 1975, p. 85) and Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed from 14.0 to 15.7 g.

Nests with eggs or young have been reported in Panamá in every month from January through October, according to Eisenmann, but egg laying may occasionally occur in the other two months. On February 5, 1960, he saw a stub-tailed fledgling accompanying its parent.

The bubbling, presumably territorial, song strongly resembles that of *T. a. aedon* of eastern United States, but there is another musical vocalization commonly given even during the months November to February, when the bubbling song is infrequently heard. Eisenmann has never heard nominate *aedon* give a call resembling it. The vocalization is a loud, clear, rapidly repeated *chwee-chwee-chwee* and so on, all on one pitch, sometimes more like *chew-chew-chew*. Occasionally, the same bird will shift from this vocalization to the irregular, much more varied bubbling song. Eisenmann has also heard in Panamá scolding and chattering like *churkat* and *churr-cheéchee*.

On Barro Colorado Island this species, when present, comes to pick off window screens or the pavements insects that were killed when attracted to lights. Eisenmann has seen House Wrens walking, as well as hopping, on the ground without any clumsiness.

Although recorded from Bocas del Toro, it is, or was, apparently rather rare there, for on three trips to the Almirante Bay area (the last in 1965) Eisenmann failed to observe it.

TROGLODYTES AEDON CARYCHROUS Wetmore

Troglodytes aedon carychrous Wetmore, Smiths. Misc. Coll., vol. 134, no. 9, July 8, 1957, p. 76. (Isla Coiba, Panamá.)

Characters.—Similar to *T. a. inquietus* but much brighter brown throughout; upper surface definitely deeper brown; underneath with sides and flanks darker brown, this color in some covering the entire surface. Others are whiter on throat and center of breast.

In its definitely brighter coloration this bird of Coiba is distinct from

the race *inquietus* of Panamá, somewhat less so from *intermedius* found in Costa Rica. Three juveniles taken January 26, 1956, as they were about to leave the nest, differ from those of similar age of *inquietus*.

Measurements.—Males (11 from Isla Coiba), wing 51.4-53.5 (52.2), tail 34.0-37.1 (35.5), culmen from base 16.9-19.1 (17.8), tarsus 18.6-20.5 (19.4) mm.

Females (2 from Isla Coiba), 49.0-50.1 (49.5), tail 31.5-33.2 (32.3), culmen from base 17.3-17.4 (17.3), tarsus 19.4-19.9 (19.6) mm.

Resident. Coiba Island, prior to modern development, was heavily forested almost throughout; in 1976 it was still 75 percent forested (Ridgely *in litt.*) The House Wren perforce was definitely a forest inhabitant, far more so than in other areas of Panamá, except in part in the Pearl Islands. In Coiba, it was common in the lower growths near the beaches and the swampy woodlands bordering the mangroves in those areas. But also I found it regularly in undergrowth through the high interior forests. There the birds were seen in the main around fallen trees or where undergrowth was covered with masses of vines. Only occasionally did they appear to range higher in the trees. In these locations they remained under cover, while around the main buildings of the penal colony they were less timid. In their usual activities their songs, heard daily, were a constant pleasure. Ridgely (*in litt.*) finds the song of this race richer and more melodic than that of mainland forms.

TROGLODYTES SOLSTITIALIS Sclater: Mountain Wren,
Cucarachero de Sierra

Troglodytes solstitialis P.L. Sclater, Proc. Zool. Soc. London, vol. 26, 1858, p. 550.
(Matos and Pinipí, near Riobamba, Ecuador.)

Small; smaller than *Troglodytes aedon*, with side of head and superciliary line definitely brighter brown.

Description.—Length 92-100 mm. Dull reddish brown above, and in the line behind the eye; wings and tail narrowly barred with black; undersurface centrally white; sides and flanks buffy brown; undertail coverts buffy brown, barred narrowly with dusky.

Two forms are recognized in the higher mountain areas of Panamá, one in Chiriquí, the other in Darién. Few specimens have been collected.

The Mountain Wrens from Costa Rica and Panamá are sometimes given species rank as *T. ochraceus*, Ochraceus Wren. Here they are treated as subspecies of the South American *T. solstitialis* group found in the high Santa Marta mountains of Colombia and the Andes to

Venezuela, Ecuador, Peru, Bolivia, and northwestern Argentina. Paynter (Check-List of Birds of the World, vol. 9, 1960, pp. 427-429) also includes the *T. rufociliatus* group of southern Mexico (Chiapas), Guatemala, Honduras, and El Salvador in *T. solstitialis*.

TROGLODYTES SOLSTITIALIS LIGEA Bangs

Troglodytes solstitialis ligea Bangs, Proc. New England Zool. Club, vol. 4, March 19, 1908, p. 29. (Volcán de Chiriquí, 1220 m above Boquete, Chiriquí.)

Troglodytes ochraceus remotus Griscom, Amer. Mus. Nov. 141, 1924, p. 5. (Cerro Flores, alt. 6000 ft., Chiriquí.)

Characters.—Brighter, more reddish brown on dorsal surface, in the superciliary line on side of head, and on the flanks; slightly larger than *T. s. festinus*.

An adult female, taken on Silla de Cerro Pando, beyond El Volcán, Chiriquí, March 13, 1954, had the maxilla dark neutral gray, except the cutting edge which was marguerite yellow for the basal third, shading anteriorly to mouse brown; basal area of cutting edge in mandible also marguerite yellow; mandibular rami light yellowish, with a line of neutral gray at tip and along the side; iris brown; tarsus and toes mouse brown.

Measurements.—Males (10 from Chiriquí), wing 47.1-49.9 (48.6), tail 28.6-36.2 (29.6), culmen from base 14.5-16.2 (15.2, average of 9), tarsus 16.5-18.0 (17.4) mm.

Females (8 from Chiriquí), wing 43.6-48.6 (45.1), tail 27.3-33.1 (28.8), culmen from base 14.6-15.5 (15.0), tarsus 16.0-17.9 (16.8) mm.

Resident. Upper levels of Volcán de Chiriquí, 900 to 2500 m, western Chiriquí.

This small wren, compact and rotund in form, is a forest species, secretive in habit. I found them near and on the ground, in dense tangles, rarely amid fallen tree trunks in small, recently made clearings. Once only, in dense forest, did I see one range 15 m above the ground in a mass of tangled vines near the top of a dead stub. Those seen were silent.

In the Mönniche collection, Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 547) recorded a small series taken on the slopes of the volcano above Boquete, between 1580 and 2500 m elevation.

Griscom described *remotus* from a single female taken in the mountains back of Remedios, Chiriquí. Some form of this species (*ochraceus* group) definitely occurs in the mountains of eastern Chiriquí (Río Chiriquí, 600-1140 m, near the Fortuna Dam site, where between Feb-

ruary 26 and March 5, 1976, Ridgely found it common at all elevations), Veraguas (above Santa Fé along Cerro Tute ridge, 1050 m, January 5, 1974), and probably even in western Province of Panamá (at the very top of Cerro Campana, ca. 1000 m, seen by N. G. Smith on September 7, 1968).

Eisenmann has frequently seen it in humid montane forest from the lake near El Volcán, ca. 1200 m, to well above Cerro Punta, close to 2400 m, and also on the Boquete side above Finca Lérída. They generally glean over vines and similar epiphytic vegetation on forest trees, usually in pairs, creeping vertically along hanging lianas, but occasionally even up tree trunks. Ridgely (*in litt.*) notes that this species is a rather frequent member of mixed flocks including warblers and tanagers.

Eisenmann noted a semi-musical trilled *tswee-tswee seeerrrrr*, also a *seeerrrrrr* alone, lasting about one second, sometimes drier as *whirrrrrr*, and a short, nonmusical *srr* or *srrrrr* or *trrrr*, which is perhaps the call.

On April 26, 1961, on Martyn's Finca in the still forested, but logged over area, Eisenmann saw pairs actively singing and displaying. One bird landed on a vertical trunk and sang with shivering wings; another carried nesting material. Still another pair had a nest or were building in a hollow of a fallen trunk or nearby, for they would not leave the vicinity even on close approach.

Skutch (Pac. Coast. Avif., 34, 1960, pp. 166-167) describes behavior and nesting in Costa Rica (*ochraceus*), and states nests are placed in cavities on broken ends of decaying branches or trees and that nesting must begin by April. He found another pair building in late May. Nests of *solstitialis* in Ecuador were in different sites.

TROGLODYTES SOLSTITIALIS FESTINUS Nelson

Troglodytes festinus Nelson, Smiths. Misc. Coll., vol. 60, no. 3, September 24 (September 27), 1912, p. 22. (Cerro Pirre, 1580 m, Darién.)

Characters.—Similar to *T. s. ligea*, but slightly smaller; somewhat darker on upper surface and on sides and flanks.

Measurements.—Males (3 from Darién), wing 43.9-44.5 (44.1), tail 27.2-30.4 (29.1), culmen from base 14.9-16.5 (15.7), tarsus 17.1-17.3 (17.2) mm.

Female (1 from Darién), wing 39.4, tail 28.0, culmen from base 12.6, tarsus 16.0 mm.

Resident. Recorded from the upper levels of the mountains of eastern Darién; Cerro Pirre, 1580 m at the head of Río Limón; and Cerro

Malí, at 1460 m (6 km west of the summit), on the base of Tacarcuna.

The birds of the Darién mountains differ only slightly from those of Chiriquí in size, and in darker coloration on the upper surface and sides.

The race *festinus* was described from a single adult male, collected by E. A. Goldman in the forest near the head of Río Limón. It is still the only specimen known from Cerro Pirre. From June 4 to 9, 1963, Galindo secured 2 males and a female in the forest adjacent to his camp near the summit of Cerro Malí, on the side of Cerro Tacarcuna.

The 3 birds from the Tacarcuna massif are slightly darker on the back and crown of the head than the single male from Pirre; with more material they may prove to be subspecifically distinct. From the few now available it is noted that the slight differences seen are, in the main, equivalent to the individual variation noted in an extensive series of the race *ligea* from Chiriquí.

TROGLODYTES BROWNI BROWNI Bangs: Timberline Wren,
Cucarachero de Volcán

Troglodytes browni Bangs, Proc. New England Zool. Club, vol. 3, January 30, 1902, p. 53. (3000 m elevation, Volcán de Chiriquí.)

Small, short-tailed; reddish brown above, paler on flanks and undertail coverts; with a prominent white superciliary, and a brown line (in color like the crown) through the eye.

Description.—Length 95-100 mm. Adult (sexes alike), above somewhat dull reddish brown, slightly darker on crown, brighter on rump; a prominent white superciliary line, and a brown line (like crown) through eye; wings and tail dusky, barred with reddish brown; lesser wing coverts flecked with white; outer primaries edged with white; sides of neck dull white edged with dusky brown; undersurface chin to abdomen, dull white edged faintly with dusky; flanks and undertail coverts dull russet-brown, the undercoverts flecked with white; edge of wing and underwing coverts dull white.

Immature, superciliary dull white; feathers of undersurface margined with dusky; white markings on primaries more extensive.

Measurements.—Males (8 from Chiriquí), wing 48.8-53.1 (51.3), tail 28.9-33.2 (31.5), culmen from base 14.1-16.0 (15.0), tarsus 21.9-25.7 (23.6) mm.

Females (8 from Chiriquí), wing 47.6-54.1 (50.3), tail 28.4-32.2 (30.3), culmen from base 14.0-16.1 (14.8, average of 7), tarsus 21.8-24.0 (22.4) mm.

Resident. Common near timberline across the summit of Volcán de

Chiriquí. It is found also on the highest mountain peaks of Costa Rica. This wren was described by Bangs from a series of 11 specimens collected by W. W. Brown, Jr., in May and June, 1901. The collector found this species "wholly confined to the cane brakes on top of the Volcán de Chiriquí . . . It lived much after the manner of a marsh wren, and its song and notes were wholly unlike those of any wren" known to him. In the American Museum of Natural History there are 2 females collected by H. J. Watson, October 1 and 4, 1904. On the labels the collector noted colors of the soft parts as follows: "Iris violet, feet brown, bill black." From the Mönniche collection Blake recorded 2 females July 8 (year not indicated) from the summit of the volcano above Copete, and 2 males and 2 females July 12, at about 4200 m elevation.

Little is recorded of these birds. Worth, in a brief note (Bird-Lore, vol. 41, 1939, p. 282), wrote that they live in bamboo thickets, and that the song "is unlike that of any House Wren I have heard. It is not a finished entity, like a House Wren's performance, but only a cyclically repeated phrase without musical beginning or end; it could . . . be as short or prolonged as desired. The scolding note . . . however, bears some resemblance to the House Wren's complaining, but it lacks the to-and-fro rasping quality of the House Wren, being a single utterance of uniform timbre."

In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 291) found closely allied races inhabiting "the bushy scrub and impenetrable canelike bamboos that border the high-altitude forests, at breaks and above the limit of trees. Though usually met singly or in twos, a number of individuals may be scattered over an area. This stub-tailed, white-winged little wren is active in the dense low cover; it may be silent but it is not shy. The behavior and the thickety habitat are typical of a wren. Its patterned song is thin, not very clear, rather measured, wrenlike." C. Hartshorne, regarding the song at Cerro de la Muerte, Costa Rica (3,090 m), says (*in litt.* to Eisenmann) it is as long or longer than that of the Winter Wren, but not quite as loud or as musical. It "consists of two slightly contrasting phrases, repeated fast over and over, something like 'bussell-bissell, bussell-bissell,' etc. for as many as ten or more seconds. This is a crude description except for the idea of the slight contrast and the numerous quick repetitions."

The nest and eggs are not known.

Oberholser (Proc. U. S. Nat. Mus., vol. 27, 1904, p. 198) proposed for it the separate genus *Thryorchilus* on the basis that it has only 10 rectrices instead of the 12 found in *Troglodytes*.

**HENICORHINA LEUCOSTICTA (Cabanis): White-breasted Wood-Wren,
Cucarachero Pechiblanco**

FIGURE 11

Cyphorhinus leucostictus Cabanis, Arch. Naturg., Jahrg. 13 Bd. 1, Heft 2, 1847, p. 206. (Guiana and Mexico (Papantla) = British Guiana; designated by Berlepsch and Hartert, Nov. Zool., vol. IX, April 1902, p. 5.)

Small; tail short; foreneck and breast white; side of head black, varied with white lines; a white line over eye.

Description.—Length 92-105 mm. Back, wings, and tail chestnut-brown; crown dark, varying from grayish brown to black; throat to upper abdomen pure white, without markings; flanks tawny.

FIGURE 11.—White-breasted Wood-wren, Cucarachero Pechiblanco, *Henicorhina leucosticta*.

Juvenile, throat white; foreneck and breast dull gray; colors and markings otherwise as in adult.

A forest inhabitant, widely distributed. This common species of the lowland forests may be recognized by the pure white of the foreneck and breast. The two subspecies accepted here from Panamá are closely similar in size, differing in depth of color in the darker markings of the crown.

The species ranges from eastern Mexico, Belize, the Caribbean slope of Central America (extending to the Pacific slope in Costa Rica and Panamá), through Colombia, Ecuador, and Peru, southern Venezuela, the Guianas, and the upper Río Negro region of northern Brazil.

HENICORHINA LEUCOSTICTA PITTIERI Cherrie

Henicorhina Pittieri Cherrie, Anal. Inst. Fis.-Geogr. Mus. Nac. Costa Rica, vol. IV, 1891 (1893), p. 134. (Boruca, Puntarenas, Costa Rica.)

Henicorhina prosthaleuca tropaea Bangs and Peters, Bull. Mus. Comp. Zool., vol. lxxvii, no. 15, January 1927, p. 480. (La Vijagua, Alajuela, Costa Rica.)

Characters.—Closely similar to *H. l. darienensis*, but with crown median area washed with rufescent brown (variable in depth of color).

A male collected at the head of the Río Guabal, on the Caribbean slope of Coclé, February 28, 1961, had the iris dark mouse brown; bill black; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from the Pacific slope, from southwestern Costa Rica, and western Chiriquí, eastward through the Canal Zone), wing 52.5-58.6 (55.0), tail 23.0-29.1 (26.5), culmen from base 17.0-18.9 (17.8), tarsus 22.5-24.7 (23.6) mm.

Females (10 from western Costa Rica, Chiriquí, and Bocas del Toro to the Canal Zone, and Chepo, eastern Province of Panamá), wing 50.2-53.9 (52.1), tail 23.0-27.0 (25.5), culmen from base 15.6-17.7 (16.6), tarsus 21.6-25.5 (22.6) mm.

Resident. Common in forests to 1300 m, less so to 1900 m; on Pacific and Atlantic slopes from the Costa Rican boundary through western Chiriquí and western Bocas del Toro (Almirante, Cricamola, to 750 m above Río Changuena). Found also on the Caribbean slope of Coclé (upper Río Coclé del Norte, Río Calovévora), and western Colón (on the Río Indio); on the Pacific side, Veraguas (Chitra, Santa Fé), Coclé (El Valle), on Cerro Campana, western Province of Panamá and the Cerro Azul-Cerro Jefe area, the hills north of Chepo (Zanja Limón), eastern Province of Panamá. In the Canal Zone it is found in woodlands at Fort Clayton, Madden Forest Preserve, Pipeline Road area, and along the Achioté Road. Birds collected by Ridgely and Galindo in the lowlands and hills above the Río Bayano and its tributaries have not been subspecifically identified.

Northward in Central America, this form ranges on the Caribbean slope through forest areas in Costa Rica, Nicaragua, Honduras, and Guatemala. With the series of specimens now available the supposed subspecies *tropaea* named by Bangs and Peters from La Vijagua in the Caribbean drainage of northern Costa Rica, with a range extending east to Bocas del Toro and northward to Guatemala, is not separable from *pittieri*.

On the mountain slopes in western Chiriquí I found these wrens common in pairs in undergrowth through the forest. As they moved about in dense cover, usually near the ground, they were recorded mainly

from their clear ringing songs, and their chattering calls. In higher elevations they often frequented bracken and other tangled growth on steep slopes in treeless pasturelands. Brown collected it in the Boquete district at about 1800 m, but it is rare at such high elevations. In the lowlands of Panamá it favors damp, canopied forest, especially in hilly areas and about ravines.

The song is a loud, beautifully rich series of whistles, usually rather short, mostly of three or four phrases, repeated many times and then varied. The most characteristic song is *churry-churry-cheer* (interpreted mnemonically by F. O. Chapelle as "pretty-pretty-bird"), and variations; Eisenmann has also heard *whee-tew-tew* and *choóweeco-chooweréh chwee-tew-tew*. One vocalization suggested a slightly aberrant song of the Green Shrike-Vireo syllabized as *teea-teea-teeo*. Calls include a peculiar *bweeer* or *beeer*, which reminded Ridgely of a note of the Swainson's Thrush. E. S. Morton has made a tape recording (Cornell Laboratory of Ornithology) of a hoarse, throaty, rather frog-like *hreer* or *hreéyee* (syllabized by Eisenmann from the recording). Usually the bird sings from a concealed position, very low in a tangle or thicket, but occasionally in the dense vegetation of a tree.

This species is not infrequently attracted to army-ant swarms, and may also forage below wandering bands of antbirds. The small tail is often carried cocked up.

Skutch (Pac. Coast Avif. no. 34, 1960, pp. 140-143) records that they build a rather flimsy nest for sleeping, a rounded ball of partly weathered leaves, with an opening at one end, placed in forest undergrowth elevated 1 or 2 m, sometimes more, above the ground. Adults may be accompanied by a single young bird, but otherwise sleep alone. Nesting structures for eggs and young were more substantial. The eggs, two in number, were clear white, with measurements of 14.3-15.1 × 20.6-23.0.

In another account of nest and eggs (identified as those of this race but listed under the synonym *tropaea*), Huber (Proc. Acad. Nat. Sci. Philadelphia, vol. 84, 1932, p. 238), on May 19, 1922, in forest back of the Eden mine, northeastern Nicaragua, near the headwaters of the Río Bambana, flushed one of these wrens "from a nest containing two fresh eggs. The nest, about eighteen inches above the ground, was placed in a crevice in a fallen log. This old moss-covered log lay close to a trail in the heavy forest and the jar from my weight . . . flushed the bird. The nest, a carefully made, bulky, globular-shaped affair composed of fern stems, plant fibers, and moss, is lined with fine grasses. The entrance is from the side. The outside diameters are 190×130 mm.

The eggs are white with a very few light brown specks. They measure 20.0×14.5 , 20.1×14.1 mm."

The race *pittieri* was named by Cherrie in honor of Professor Henri Pittier, resident at that time in San José, Costa Rica, and active in natural history studies in that country.

A male taken by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) at Cerro Campana weighed 16.1 g.

Morton (in Temple, Endangered Birds, 1978, pp. 379-384) describes a reintroduction of this species to Barro Colorado Island, from which it had disappeared before 1960.

HENICORHINA LEUCOSTICTA DARIENENSIS Hellmayr

Henicorhina leucosticta darienensis Hellmayr, Anz. Ornith. Ges. Bayern, Bd. I, no. 4, March 1921, p. 25. ("Tacarcuna östliches Panama" = former Tacarcuna Village site, west base of Cerro Malí, 600 m elevation, Cerro Tacarcuna, Darién.)

Characters.—Crown and upper hindneck plain deep black; brown of back, wings, flanks, and undertail coverts somewhat lighter and brighter.

Measurements.—Males (10 from San Blas, eastern Province of Panamá, and Darién), wing 53.4-55.5 (54.4), tail 22.5-25.5 (24.3), culmen from base 16.8-18.6 (17.6), tarsus 21.3-24.7 (22.4) mm.

Females (10 from eastern Province of Panamá, San Blas, and Darién), wing 50.0-53.4 (51.6), tail 21.2-24.0 (23.0), culmen from base 15.6-16.5 (15.9), tarsus 19.3-22.3 (21.1) mm.

Resident. Common in forested areas from western Comarca de San Blas (Mandinga) and Chimán (hill country on Río Chimán), eastern Province of Panamá, east to the Colombian boundary, on both Caribbean and Pacific slopes; in Darién from near sea level to 1000 m on Cerro Pirre, 1450 m on Cerro Tacarcuna, and 930 (the summit) of Cerro Quía. This race also occurs in adjacent northwestern Colombia, on both slopes, to the Sinú Valley and the Baudo Mountains.

While widely distributed in forest areas, in general this subspecies is less abundant than the race *pittieri* of western Panamá. A male from the Río Chimán at the mouth of Río Corotú is typical of this race in black color of the crown. Found as usual in pairs, they were especially common on the upper Río Jaqué in Darién, and elsewhere in the interior. None were recorded near the coast at Jaqué. Like the other subspecies these are birds of the forest, living in the shelter of dark shadows.

The food, from examination of stomach contents, includes the usual variety of small insects—ants, small beetles, caterpillars, earwigs, roaches and their eggs, and small spiders. One collected by Burton (Bull. Brit. Orn. Club, 1975, p. 85) at Cerro Pirre weighed 15.2 g.

**HENICORHINA LEUCOPHRYS (Tschudi): Gray-breasted Wood-Wren,
Cucarachero Pechigrís**

Small, with short tail, similar to *Henicorhina leucosticta*, but breast gray and tail longer.

Description.—Length 103-115 m. Back, wings, and tail chestnut-brown; crown sooty black; side of head black, lined prominently with white, with a long white superciliary line; tail dull brown, barred more or less with black; wings like back, indistinctly barred with black; anterior undersurface gray, with throat grayish white, plain in the nominate race, lined heavily with gray in subspecies *collina*; flanks and undertail coverts reddish brown.

Juvenile, darker above with the crown dull black; a prominent white superciliary; side of head dull black, with the white markings, compared to the White-breasted Wood-Wren, somewhat reduced; throat for a limited area dull white; foreneck and upper breast dark gray; rest of undersurface dull brownish black.

A forest inhabitant, widely distributed in highland areas. Common on wooded slopes, only in the mountains. Two subspecies are found on the Isthmus, one in the west, the other, less common, from Cerro Azul eastward.

The species ranges from the highlands and mountain slopes of eastern Mexico, through Central America to Colombia, Venezuela, and in the Andes (chiefly at subtropical altitudes) of Ecuador and Peru to Bolivia.

HENICORHINA LEUCOPHRYS COLLINA Bangs

Henicorhina collina Bangs, Proc. New England Zool. Club, vol. 3, Jan. 30, 1902, p. 55. (Boquete, Chiriquí, 1800 m alt.)

Characters.—Throat dull grayish white, heavily streaked with dark gray; otherwise like *H. l. leucophrys*.

Measurements.—Males (10 from Chiriquí and Veraguas), wing 54.6-59.2 (57.0), tail 30.5-34.3 (32.0), culmen from base 17.1-19.0 (18.1), tarsus 24.2-25.6 (25.0) mm.

Females (10 from Chiriquí), wing 52.3-55.6 (53.6), tail 27.1-29.0

(27.9), culmen from base 16.0-17.5 (16.5), tarsus 22.5-25.0 (23.9) mm.

Resident. Common on the Pacific slope of the central mountain range in Chiriquí and Veraguas, from near the Costa Rican boundary to Cerro Campana, western Province of Panamá, ranging from 900 to 2900 m. Recorded also from the upper levels of the Caribbean side of the Divide. Found at 900 m elevation on Cerro Campana, western Province of Panamá. Beyond Panamá this race occurs only in the highlands of Costa Rica.

This species is widely distributed over the mountain slopes, mainly forest, but also where steep open slopes are grown heavily with bracken. The main distribution is on the Pacific drainage, but Blake (Field: Zool., vol. 36, no. 5, 1958, p. 547) records specimens from the Holcomb Trail above Boquete on the Caribbean side of the high divide in Bocas del Toro. It ranges eastward along the Pacific slopes to near Santa Fé and Chitra, Veraguas, an area in which it also doubtless crosses the Divide, as it is recorded from Calovévora. Ridgely (*in litt.*) found it very common in late February and early March 1976 in forest undergrowth at the Fortuna Dam site in central Chiriquí (900-1500 m), where no *H. leucosticta* were present. In one day he netted 13 individuals.

It is found in pairs, their presence known by the steady songs of the males, in which the females regularly join. An intruder may be greeted with a harsh scolding note, repeated quickly several times. While these birds remain in areas where they have cover, often they seem more confident than some other forest wrens as they may be seen without too great difficulty.

Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 762) described a nest found on Irazú, Costa Rica, April 17, 1902, that held two plain white eggs without markings. These measured 21.5×15 and 22×15 mm. Skutch, in a detailed account (Pac. Coast Avif., no. 34, 1960, pp. 146-154), records that the pair sleep together in rounded, covered nests with the entrance underneath. Adults may be accompanied in the nest by their young for a period after these are grown. Skutch describes the two eggs in a set as plain white with measurements of both in one nest as 22.2×15.5 mm.

A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) at Cerro Campana weighed 18.7 g.

This species is very common in the highlands of western Chiriquí, especially above 1500 m on both the east and west slopes of the volcanic

massif, and is often seen or heard in this area along roadside thickets and hedgerows separating open fields, at a distance from surviving forest. In this highland region, Eisenmann found it the commonest wren, having adjusted to clearing and cultivation, and calling attention to itself by persistent singing, even through it skulks in vegetation, generally from a few centimeters to 1 or 1.3 m from the ground. Notably abundant in the Cerro Punta area, now largely devoted to vegetable crops, it frequents the shrubbery at field boundaries (as well as forest borders and interiors). In this region it occurs below El Volcán at least down to 1110 m along the highway, and about the Volcán lakes. It occurs also at the summit of the trail to Boquete, and seems to be everywhere in the outskirts of Boquete, even in the rather scantily vegetated El Salto. On Cerro Campana, where sympatric with *H. leucosticta*, it is much less numerous than that species and is confined to humid forest about the summit.

This species less frequently carries its relatively longer tail cocked up than does the White-breasted Wood-Wren, and its rufescent lower underparts are conspicuous in the field.

The song, although musical and loud, is not of as rich or mellow a quality as that of its congener, but usually consists of many more syllables, and lasts longer before it is repeated. One bird seen by Eisenmann on September 20, 1958, gave three different songs, all loud, rollicking whistles of similar timbre. He noted the following songs: *too-tee-oo-weét*, *weétee*, *weétoo*, also *weeloo-weéchee*, *too-loo-wheew*, and *cheerooecheé-cheeweécheerooweéchee*, with variants of each, and all repeated over and over. On September 21, he saw a bird give a very different, sweet, soft, almost formless, warbled song—a subsong, perhaps by an immature individual. A rattling chatter *tit-tit-t-t-treet*, sometimes shortened to *tit-teerrrt* was often heard by Eisenmann (tape recorded by E. S. Morton, Cornell Laboratory of Ornithology).

H. Loftin reports that 1 banded at Cerro Punta March 26, 1967, was recaptured March 27, and April 28, 1968, and March 1, 1970.

HENICORHINA LEUCOPHRYS LEUCOPHRYS (Tschudi)

Troglodytes leucophrys Tschudi, Arch. Naturg., 10 Jahrgang, bd. 1, 1844, p. 282. (Peru.)

Characters.—Throat dull grayish white, very faintly, or not at all, lined with darker gray; crown slightly more brownish black; under-surface somewhat lighter grayish white.

A female, taken on Cerro Malí, Darién, February 24, 1964, had the

iris reddish brown; basal area of mandible dark neutral gray; rest of bill black; tarsus and toes fuscous-black; claws fuscous-brown.

Measurements.—Males (10 from Cerro Azul and the Tacarcuna massif, Panamá, and western Antioquia, Colombia), wing 54.4-60.0 (56.6), tail 26.7-30.5 (28.8), culmen from base 15.7-19.6 (17.9), tarsus 23.7-25.1 (24.8) mm.

Females (10 from Darién, and from Antioquia and Cauca, western Colombia), wing 50.8-55.1 (52.5), tail 25.1-27.8 (25.8), culmen from base 15.8-17.4 (16.7), tarsus 22.0-23.8 (22.8) mm.

Resident. Found locally on Cerro Azul, eastern Province of Panamá; fairly common on Cerro Tacarcuna and on Cerro Pirre, Darién. Elsewhere, it occurs on the slopes of the Andes of Colombia, Ecuador, and Peru.

The Gray-breasted Wood-Wren, less abundant than the white-breasted species, is found in mountain forests, possibly more commonly than the few records available indicate. On Cerro Azul (March 29, 1955) I found 1 specimen at 850 m elevation, in the more humid forest on the high slopes where the damp winds from the north and east swept across the summit. One had been taken here earlier on March 25, 1911, by E. A. Goldman. The bird may be more common there than these reports indicate. Ridgely (*in litt.*) notes that he and others have found it on Cerro Azul in recent years.

In the extensive forests on Cerro Tacarcuna, Darién, this species was fairly common. In February and March 1964, I collected 1 at the lower level camp, and others higher up, near the summit, at 1400 m. On Cerro Pirre, Goldman, from March to early June, found them more common, as he prepared 8 for specimens, taken at 5000 m near the head of Río Limón.

The population found in the mountains of eastern Panamá is identified as the nominate subspecies *leucophrys*, with its type locality in Peru, in accordance with the detailed studies of Hellmayr (Journ. fur Ornith., 1903, p. 531, and Cat. Birds Amer., pt. 7, 1937, pp. 262-264).

CYPHORHINUS ARADUS (Hermann); Song Wren, Cucarachero Cantor

Myrm[ornis] arada Herman, Tab. Aff. Anim, 1783, p. 211 (note r).

Medium size; bill strong, compressed from side to side, with slightly raised base above nostrils; throat, upper breast, and side of head chestnut; upper surface very dark brown; wings and tail heavily barred with black.

Description.—Length 115-130 mm. Upper surface deep brown to

blackish brown; wings and tail heavily barred with black; sides, foreneck, and upper breast chestnut; rest of undersurface dull grayish brown; undertail coverts in one race chestnut. Rarely, an aberrant individual may have the foreneck and upper breast partly or entirely pure white.

These widely distributed wrens average slightly larger in body than other forest wrens, and also have heavier bills. Perhaps on account of this slightly stronger form, they seem somewhat more aggressive than related species, and so are seen more easily. They are also more terrestrial than any other wren besides *Microcerculus*.

The species ranges chiefly in the humid lowlands, along the Caribbean slopes of southern Honduras, Nicaragua, Costa Rica, and Panamá, reaching the Pacific slope in humid hill country of northwestern Costa Rica and of western Province of Panamá (Cerro Campana) and locally extending over the Pacific slope in the lowlands of eastern Panamá. It is also found in Colombia on both slopes and widely in Amazonia. Populations from Panamá northward, western Colombia, and the Pacific slope of Ecuador are often separated, as *C. phaeocephalus*, from the *C. aradus* group found east of the Andes (Hellmayr, Cat. Birds, Am., pt. 7, 1934, p. 292).

CYPHORHINUS ARADUS INFUSCATUS Zimmer

Cyphorhinus lawrencii infuscatus Zimmer, Amer. Mus. Nov., no. 573, Oct. 11, 1932, p. 3. (Carrillo, Costa Rica.)

Characters.—Darker throughout than the race *lawrencii*, found elsewhere throughout Panamá; dorsal surface blackish brown throughout, with the forecrown in some blacker; chestnut-brown on side of head, foreneck and upper breast distinctly darker; rest of undersurface, including the under surface of the wings, darker.

Measurements.—Males (10 from Bocas del Toro and Costa Rica), wing 61.6-65.7 (63.7), tail 29.2-33.2 (30.8), culmen from base 19.4-21.6 (20.2), tarsus 23.3-25.2 (24.3) mm.

Females (10 from Bocas del Toro and Costa Rica), wing 56.5-62.2 (60.6), tail 26.0-29.8 (27.8), culmen from base 18.2-22.0 (19.7), tarsus 22.2-24.2 (23.6) mm.

Resident. Fairly common in damp woodland in western Bocas del Toro, from the valley of the Río Sixaola to near Almirante (mouth of the Western River); and inland above the head of the Río Changuena to 730 m.

This race has been found especially in the forests bordering Bahía

Almirante, behind the mangrove swamps, and over the higher slopes of the hills. Elsewhere, this race is reported only from Costa Rica. The birds range in pairs or in small groups generally near or on the ground, and sometimes into the trees. In general habits they resemble the race *lawrencii*, widely distributed through central and eastern Panamá.

On the Caribbean slope of Costa Rica, Skutch found the globular nests, with tubular entrances, in woodland in the crotch of a sapling from one to several meters above the forest floor. In February one held two eggs "which were white, with brown speckles forming a wreath about the thick end." This species also builds dormitory nests in which members of a band sleep; they are of the same shape as breeding nests.

The vocalizations of this population are essentially like those of *lawrencii*, combining guttural phrases and throaty chatter and clucks with musical whistles.

A male taken at Almirante by D. Hicks (Gorgas Memorial Laboratory Collection) October 3, 1964, weighed 24.3 g.

CYPHORHINUS ARADUS LAWRENCII Lawrence

Cyphorhinus Lawrencii, "sp. nov. Sci. M.S.," Lawrence, Ann. Lyc. Nat. Hist., New York, vol. 8, May 1863, p. 5. (Atlantic slope, line of Panama Railroad, Canal Zone, Panamá.)

Characters.—Paler in color above and on the lower surface; somewhat lighter brown on crown and back; lighter underneath in chestnut-brown of foreneck and upper breast, and lighter, more brownish gray on rest of undersurface.

In an adult male, collected at Juan Mina, Canal Zone, January 12, 1961, the iris was wood brown; bill wholly black; tarsus, toes, and claws fuscous. In another male, at Armila, San Blas, February 21, 1963, the iris was dark brown; bill black; tarsus, toes, and claws dark olive-brown.

Measurements.—Males (10 from Colón, Province of Panamá, and Canal Zone), wing 61.7-66.8 (64.0), tail 27.4-34.1 (30.2), culmen from base 19.2-22.2 (20.4), tarsus 23.1-24.8 (24.1) mm.

Females (10 from Colón, Province of Panamá, and Canal Zone), wing 58.8-64.1 (61.2), tail 25.3-29.7 (27.1), culmen from base 18.7-21.0 (19.8), tarsus 21.0-25.5 (23.4) mm.

R. S. Crossin recorded the weight of an adult male taken August 9, 1968, near Gamboa, as 27.4 g. One weighed by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) was 24.6 g.

Resident. Fairly common, on the Caribbean side from the valley of

the Río Indio in northern Coclé and western Colón, through the northern Canal Zone, base of Cerro Bruja, and eastern Colón, eastward on the Caribbean slope to the Colombian boundary, and on the Pacific slope in humid hill country from Cerro Campana, western Province of Panamá, and in eastern Province of Panamá from Cerro Azul and Chepo, the Río Bayano Basin to the lower Río Sambu, Cerro Pirre, and the base of Cerro Tacarcuna, Darién. In the Canal Zone, while widespread in canopied woodland of the Chagres Basin and the Caribbean coastal area, it is also common nearer the Pacific in the Madden Forest Preserve (F. O. Chapelle, Eisenmann, et al.).

These attractive wrens range regularly in pairs and also frequently in small groups of half a dozen or more individuals. They are birds of the forest, both original and second growth (*rastrojo*), ranging mainly over the ground, but also above it in low undergrowth. Their rapid, harsh-toned calls, mixed with whistled notes, as well as their loud songs, draw attention. Usually they may appear briefly on low perches, or in small open spaces. The groups regularly include families of adults and young. This species is sometimes seen about army-ant swarms.

On Barro Colorado Island in March, Skutch (Auk, 1940, p. 300) found them sleeping in rounded ball-shaped nests in family groups of adults and their grown young. A nest recorded by Jewel, May 7, 1911, near Gatún, Canal Zone, was "found in low wet forest two feet from the ground . . . consisted of a long tube or tunnel with the nest proper at the far end built of sticks, twigs and dead leaves, lined with grasses. Eggs, two . . . white, very finely and sparingly speckled with brown, one almost immaculate." (Stone, Proc. Acad. Nat. Sci. Philadelphia vol. 70, 1918, p. 272.) The eggs measured 16.5×23.3 and 16.5×22.6 mm. Major-General G. R. Meyer found two nests September 1, 1941, in the Forest Reserve, Canal Zone. These were bulky and gourd-shaped, suspended in the fork of low saplings 125 mm above the ground and made of fine grasses lined with the skeletons of dried leaves. One contained two eggs that measured 16.5×24.6 and 16.7×24.1 mm. Three eggs in the other nest ranged from 16.2 - 16.5×23.2 - 24.6 mm. J. E. Ambrose, on April 6, 1961, found a nest being constructed at Gatún, 2.3 m above the ground in a sapling.

The first report of this wren in Panamá was by George N. Lawrence (Ann. Lyc. Nat. Hist. New York, vol. 7, 1861, p. 293), who recorded a specimen received in the first collection made by James McLeannan, under the name "*Cyphornis cantans* (Gm.)." In the reference for the account of this wren Lawrence explained that when he found that the identification as *cantans* was in error, he sent the specimen to Mr.

Sclater, "who decided that it was undescribed, and complimented me by conferring my name upon it."

A common call is a harsh, guttural *cutta, cutta, cutta*. This vocalization is often intermixed with clear, sweet whistles in its song, which D. Harrower syllabized as "*percutta wheet, per-cutta whoot, per-cutta wheet, per-cutta woot; per-cutta-cuttle wheet whoot; per-cutta whoot whoot*" (Eisenmann, Smiths. Misc. Coll. 117, no. 5, 1952, p. 47). Another version heard on Barro Colorado Island is *ong cutta cutta, whong cutta glut, WHOO HEE*, etc. (Willis and Eisenmann, Smiths. Cont. Zool. no. 291, 1979, p. 25). Still another common vocalization is a sweet, rhythmic, slow, whistled, repeated *tock, tee*, sometimes preceded or followed by the nonmusical *cutta* notes (Eisenmann). F. O. Chapelle (*in litt.* to Eisenmann) reported a three-note song without any *cuttas*, "which exactly matches the 'do' and 'fa' of Guido's scale"; three variations were *Do-do-fa; fa-do-Do*; and *do-Do-do*, the capitalized *Do* being an octave higher than the uncapitalized.

During admittedly short stays in northern Venezuela where Eisenmann saw or heard (vocalizations identified by P. Schwartz) populations belonging to the true *C. aradus* group, he never heard either the *cutta* or the *tock, tee* vocalizations so characteristic in Panamá.

Morton (in Temple, Endangered Birds, Univ. of Wisconsin Press, 1977, pp. 379-384) has reintroduced 7 birds of this species to Barro Colorado, where it had disappeared between 1960 and 1970. Two of these pairs nested successfully within 5 months of their release.

**MICROCERCULUS MARGINATUS LUSCINIA (Salvin): Whistler Wren,
Cucarachero Ruiseñor**

Microcerculus luscini Salvin, Proc. Zool. Soc. London, 1866, p. 69. (Santa Fé, Veragua.)

Microcerculus acentetus Bangs, Proc. New England Zool. Club, vol. 3, Jan. 30, 1902, p. 56 (1524 m, Boquete, Chiriquí.)

Small, wrenlike in body form, but with long bill and long legs, and unusually short tail on which the tip barely projects beyond the wings.

Description.—Length 98-110 mm. Upper surface plain deep brown, somewhat duller on the crown and hindneck where the feathers are edged very narrowly with dusky; wings and tail dull blackish brown, the coverts edged narrowly with deep brown, with a small spot of dull buff on the tip; side of head brownish gray, becoming grayish white on chin and upper throat; upper sides and breast brownish gray; feathers of lower breast and abdomen paler brownish gray, with centrally blackish, more or less V-shaped markings, and edged rather widely with dull

grayish white, producing the effect of dark lower underparts with pale and variable indistinct scalloped pattern.

Immature, with pattern of markings of undersurface less distinct.

Iris varying from dull mouse brown to reddish brown; bill, with maxilla and distal third of mandible dull black; gape and lower half of mandibular rami dull marguerite yellow in some; in others, bill dark neutral gray; tarsus, toes, and claws dull neutral gray.

Measurements.—Males (10 from Panamá), wing 55.8-59.1 (57.7), tail 17.9-20.7 (19.5), culmen from base 19.1-21.7 (20.1), tarsus 20.4-23.5 (20.5) mm.

Females (9 from Panamá, with 1 from Costa Rica), wing 51.2-57.0 (54.1), tail 17.4-21.9 (19.5), culmen 18.0-21.7 (19.8, average of 9), tarsus 21.2-23.8 (22.2) mm.

Resident. Recorded in forested areas throughout the Republic from Chiriquí to San Blas and Darién.

F. G. Stiles (Wilson Bull. 1983, vol. 95, p. 169) argues persuasively that *M. philomela*, ranging from southern Mexico to central Costa Rica, is a species distinct from *luscini*a of southern Costa Rica and Panamá (and the South American populations treated as races of *M. marginatus*), readily separable by color in adults as well as by voice, as characterized by Slud. Adults of *luscini*a can be distinguished from *philomela* by grayish white throat and more mottled underparts. Stiles suggests that until more is known of the relationship of *luscini*a to the South American populations, and especially to the white-breasted *M. marginatus* (type from "Bogotá," Colombia, presumably western Amazonia) the population of southern Costa Rica and Panamá be tentatively treated as a species, *M. luscini*a, to be called Pale-throated Wren. Eisenmann points out that the thin, whistled vocalization of *luscini*a is also given by populations in western Colombia, northern Venezuela, Ecuador, and, including white-breasted populations, in parts of Amazonian Peru, but that in southeastern Peru (Madre de Diós) and adjacent Bolivia, a musical song differing from those of both *philomela* and *luscini*a is uttered (*fide* B. Coffey, Ridgely, J. Fitzpatrick) by white-breasted birds, currently considered to belong to the same subspecies (*marginatus*), that sing like *luscini*a farther north.

As the *luscini*a song does not remotely suggest that of a nightingale (nor does the bird look like that Palearctic bird) Eisenmann thinks Whistler Wren might be a more useful name for the southern populations, reserving Nightingale Wren for *M. philomela*.

These curious wrens are true forest inhabitants found from sea level to high in the mountains, where there is suitable cover and reasonable

freedom from disturbance. Blake recorded 1 from 3000 m on the volcano in Chiriquí. My own few records there were from 1500 m. I found them also in the higher forests on Cerro Campana, and on Cerro Azul, and to 1300 m on Cerro Tacarcuna.

This small and secretive species is encountered on the ground in heavy forest, moving about under dense cover. On first sight, their rather heavy bodies, long bills, and very short tails briefly suggest tiny rails rather than wrens. Rarely, in some heavily shaded area, one may appear briefly from a tangle of roots, with body bobbing excitedly, uttering low, high-pitched chattering calls. To Slud and Ridgely its gait suggests a Spotted Sandpiper's.

Although very infrequently seen, on the basis of its distinctive vocalization, it proves not uncommon in forest and canopied second-growth woods in humid regions, while somewhat local. Between the years 1965 and 1976 it has been recorded on the basis of voice in the western Chiriquí highlands (between El Volcán and Sereno, Pujals, 1976), Veraguas (above Santa Fé near and below the Continental Divide (Eisenmann, Pujals, N. G. Smith, Ridgely, 1973-75; in 1926 R. Benson collected 1 at Santa Fé as low as 480 m [specimen in American Museum of Natural History]); Province of Panamá (Cerro Campana, Cerro Azul-Cerro Jefe hill forest, Río Bayano Basin forest in lowlands along El Llano-Cartí road, Río Majé, and "Cuipo" (*Cavanillesia*) forest on ride along road to Jesus María (same observers and years); Canal Zone (Chagres Basin, near Summit, and Caribbean coastal area); extreme eastern Darién (in Tuira basin near Río Mono to Cerro Quía up to 750 m, Ridgely 1975; specimen in Gorgas Memorial Laboratory collection from Cerro Quía). Tape recordings have been taken by E. S. Morton (Cornell Laboratory of Ornithology) in Panamá Province and the Canal Zone, and in most areas birds have been mist-netted frequently. Specimens have been preserved from Cerro Campana and the Pipeline area near Gamboa.

The distinctive vocalization consists of a series of ten or so long, drawn, very thin, high whistles each on one tone, and separated by increasing intervals of silence, usually from ca. 2-10 seconds, but when the song is long perhaps to 15; the last may be separated by as much as 30 seconds (*fide* R. Smart). Each note of this series is about a second long, and successive whistles seem on the same or very slightly lower pitch. Before the thin whistled series starts, there is an introductory phrase of about 4 to 7 short notes, usually given so fast that they may seem jumbled, moving up and down scale. At Rancho Grande, Venezuela, Eisenmann recognized the same thin, whistled song (race *squa-*

mulatus), but the introductory phrase heard was of only three notes. P. Schwartz said that when introducing the first of a cycle of songs the opening phrase was more elaborate.

The nest and eggs appear to be unknown. Slud observed a bird in southwestern Costa Rica carrying food on February 17. A female collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) in the Canal Zone area in November was in breeding condition and weighed 22.2 g.

Family MIMIDAE: Thrashers, Mockingbirds

A family of about 35 species found in the Americas, ranging from southern Canada south through the United States, Central America, and the West Indies to southern Argentina and Chile. Two species are found in Panamá, one of them, the Tropical Mockingbird, was introduced from Colombia. The other, the Gray Catbird, is a winter season visitor from the north.

KEY TO SPECIES OF MIMIDAE

1. Undersurface of body white; crown gray like back.
Tropical Mockingbird, *Mimus gilvus tolimensis*. p. 124
- Undersurface of body gray; crown black; back gray.
Gray Catbird, *Dumetella carolinensis*. p. 127

MIMUS GILVUS TOLIMENSIS Ridgway: Tropical Mockingbird, Sinsonte del Caribe

Mimus gilvus tolimensis Ridgway, Smiths. Misc. Coll., vol. 47, August 6, 1904, p. 113. (Plains of Tolima, Boyacá, Colombia.)

Rather large, with long, white-tipped tail; gray above, white underneath.

Description.—Length 240-275 mm. Adult (sexes alike), upper surface of head and body somewhat brownish light gray; crown narrowly streaked with dusky; wings and tail blackish slate, with indistinct narrow pale gray edgings, becoming white on tips of greater coverts where they form two somewhat indefinite bands; tertials and secondaries edged narrowly with white at distal end; tail tipped broadly with white, with this continued as a narrow border on the outermost rectrix to the base; a dusky streak from the lores to back of the eye, covering the free margins of the eyelids; a somewhat indistinct band of white above the eye, becoming broader behind; undersurface white, tinged more or

less faintly with gray across breast; axillars and underwing coverts white, marked indistinctly with dusky. Immatures are more brownish above.

Iris yellow; bill black; tarsus and toes fuscous.

Measurements.—Males (10 from the range of the race in Colombia), wing 116.2-129.5 (121.7), tail 119.7-128.7 (125.4), culmen from base 21.5-25.1, (23.1, average of 9), tarsus 31.9-35.9 (34.7) mm.

Females (10 from the range of the race in Colombia), wing 112.1-128.0 (117.6), tail 110.2-128.5 (116.1), culmen from base 20.2-25.7 (23.2), tarsus 31.7-35.8 (33.2) mm.

Introduced. Common in the Canal Zone and adjacent Colón and Province of Panamá, on both slopes, in cleared, especially residential, areas, east at least to Portobello, Colón, and, on the Pacific slope, to Cañita, near the Bayano Dam site, where Ridgely (*in litt.*) found a pair on December 29, 1974.

Introduced from its range in western and central Colombia, its presence is due apparently to birds released through customs control, and probably in part also by escape from cages.

The first definite report of this mockingbird in Panamá that has come to attention is that of Herbert G. Deignan (Auk, 1933, p. 125) who wrote that "On July 13, 1932, while standing in front of the Balboa station of the Panama Railroad, I heard the song of a mockingbird and discovered the bird perched at the top of a flagpole nearby." Arbib and Loetscher (Auk, 1935, p. 326) listed the mockingbird from the Canal Zone in summer, 1934, but were told (in error) that it had been introduced from California. Chapman (Auk, 1941, pp. 98-99), in January 1938, recorded a pair at the Gorgas Memorial Institute in Panamá City, and at Balboa, and mentioned that it was reported at Pedro Miguel "breeding" near Ancón. In 1938 and 1939, he secured specimens, which he found were *Mimus gilvus* of South America, and not *M. polyglottos* of North America, as some had supposed, referring them to the Venezuelan *melanopterus*.

Earlier, Tollef Mönniche had collected a male, August 23, 1937, at the Finca Lérída above Boquete, Chiriquí. This, Blake (Fieldiana, Zool. vol. 36, no. 5, 1958, p. 548) in his account of the Mönniche collection, considered to be a locally-escaped cage bird, and not an extension of range from the far distant Canal Zone. The spread had begun, however, and in February 1952, I recorded several and collected a male near the mouth of the Río Indio in western Province of Colón. Here also they may have become established through release of cage birds.

The male from Lérída, while listed by Blake as *M. g. melanopterus*, on examination proves to be the somewhat larger race *tolimensis*.

With regard to introduction, an account received through the entomologist James Zetek, long resident in Panamá, relates that during World War I a shipment of mockingbirds that originated in Medellín, Colombia, came to the Canal Zone en route to the United States. Since all birds were temporarily prohibited entry into that country as a precaution against the disease psittacosis (then little understood), the carrier released the entire shipment.

I was told of a similar occurrence in 1956 by Mr. E. J. Husted, retired employee under the Canal Zone government and a resident of the Canal Zone since boyhood. Mr. Husted related that in late 1935, about 100 live mockingbirds in cages were brought from Colombia on a ship that docked at Pier 18 in Balboa. They were loaded on a truck in Mr. Husted's charge, the birds being intended for sale in the market. When the authorities demanded a dollar import duty per bird, the importer, who had expected to sell them at \$1.50 each, became disgusted and released the entire shipment.

Colombia has 2 populations of this mockingbird that differ slightly in size. The somewhat larger form, the subspecies *Mimus gilvus tolimensis*, found in western and southern Colombia, measures, as follows: Male, wing 116.2-129.5, tail 114.7-128.7 mm. Female, wing 108.9-122.3, tail 102.4-120.4 mm. The other, *Mimus gilvus melanopterus*, slightly smaller, has the following dimensions: Male, wing 109.1-119.8, tail 102.4-120.4 mm. Female, wing 93.4-101.2, tail 100.1-108.3 mm. It is found in northeastern and eastern Colombia to Venezuela and Guyana southward to adjacent northern Brazil.

The two are closely similar in pattern of markings and in color. While it is possible that both may have been represented in imported captives, the few that have been available for examination as museum specimens have the size of the larger *tolimensis*.

In Ancón, where I have seen them regularly, they carry nesting material into the tops of the royal palms in late December and early January. Young with short tails, recently from the nest, have been observed from mid-December to mid-September.

In song and mannerisms this mockingbird is closely similar to our common species *Mimus polyglottos* of the United States, although it is not known to imitate other birds. On the ground, males frequently stand or move with partly spread, waving wings (which are plain, without white), exactly like our northern species. The mannerism is one

that I have found especially interesting in view of the arguments as to why our northern bird with the prominent white patch on the wing has this habit. It is evident that the display is in the wing action, with no basis in color pattern.

DUMETELLA CAROLINENSIS (Linnaeus): Gray Catbird, Pájaro Gato

Muscicapa carolinensis Linnaeus, Syst. Nat., ed. 12, vol. 7, 1766, p. 328. (Virginia.)

Medium size, slender, with long tail; dark gray.

Description.—Length 185-215 mm. Adult (sexes alike), crown, wings, and tail black; wings, and to a lesser degree, tail, margined with gray; body slate gray, darker above, paler below; undertail coverts chestnut.

Bill black; tarsus and toes blackish brown; iris dark brown.

Measurements.—Males (10 from the breeding range), wing 86.0-96.0 (91.2), tail 89.0-103.0 (95.9), culmen from base 20.0-20.2 (20.1), tarsus 27.0-29.0 (27.9) mm.

Females (10 from the breeding range), wing 84.0-91.0 (88.1), tail 82.0-97.0 (91.7), culmen from base 19.2-20.4 (19.8), tarsus 27.0-28.5 (27.9) mm.

Migrant from temperate North America; common in Bocas del Toro, September 1-March 31 (May 29, once), (Almirante, Changuinola, Cocoplum). Occurs casually and irregularly elsewhere in western Panamá, in Chiriquí (Boquete), and Veraguas (Paracoté); winters in very small numbers and irregularly to the Canal Zone chiefly on the Caribbean slope (Curundu, Corozal, Coco Solo, Barro Colorado Island, Juan Mina, Frijoles, Ft. Davis, Gamboa Pipeline Road, Gatún, Lion Hill); casual in San Blas (Mandinga, Armila, Puerto Obaldía); recorded on Islas Escudo de Veraguas and Bastimentos, and on Taboga Island in the Gulf of Panamá (Sturgis). On the Pacific slope the farthest east appears to be one seen by Ridgely at Cerro Azul on March 11, 1979.

The catbird is common in thickets and low forest around Bahía Almirante, ranging usually under cover, calling only occasionally. Though not especially timid, they usually remain under leafy cover so that relatively few are seen. Rarely, one may sing. Their true number becomes evident when mist nets are set, as many are captured.

Dr. Pedro Galindo, who has netted catbirds regularly in his studies at Almirante, has furnished the following interesting information. One that he banded October 18, 1963, was reported from Oxford, Nova Scotia, in July 1964; and another, caught December 19, 1963, was

captured near Springfield, also in Nova Scotia, July 4, 1964. Four others given bands near Almirante were recaptured subsequently at that banding locality as follows: one November 6, 1963, was retaken there October 13, 1967; one on October 13, 1964, was retaken October 4, 1967; one April 8, 1965, was recaptured April 13, 1967; and one on January 16, 1964, was recaptured July 11, 1967. The returns from Nova Scotia mark the far northeastern border of the breeding range of the species, while Panamá and Colombia are the southern limit of the wintering range.

In another netting study, Rogers and Odum (Wilson Bul., 1966, p. 418) found that in Panamá newly-arrived southbound migrant catbirds that had just flown across the Gulf of Mexico weighed 26.5-37.4 (31.2) g and had exhausted their fat reserves; some had also experienced weight loss in the breast muscles, which seemed reduced so that the keels of the sternums protruded noticeably.

Reports of netting around Almirante indicate that many birds winter in the area and a number return the following or subsequent seasons. The migration generally begins in early October and the peak is reached the fourth week of that month, with a few birds remaining into May (Galindo and Méndez, Bird-Banding, 1965, pp. 233-234; Loftin, Carib. Journ. Sci., 1963, p. 66; Loftin and Olson, Carib. Journ. Sci., 1964, p. 194).

Family TURDIDAE: Thrushes, Zorzales

The thrushes are a worldwide family of approximately 300 species that include some of the most familiar birds of temperate regions, known for their confiding presence around human habitation and for their fine vocal abilities. Fourteen species are found in Panamá, including 4 migrants from the north. The native species fall into two groups, robins of the genus *Turdus*, and nightingale-thrushes, genus *Catharus*. The robins have habits similar to the North American *Turdus migratorius*, but those inhabiting dense forest are sometimes hard to see—although they will often approach a squeaking sound. The Clay-colored Robin is widespread in the lowlands and at home in yards and gardens; the other species of *Turdus* are found from the foothills to above timberline. Robins usually place their cup-shaped nest in a tree or bush. The Clay-colored Robin, like its northern relative, has so accustomed itself to human habitation that it sometimes builds its nest in the angle of a roof.

The clear flutelike phrases of some of Panamá's nightingale-thrushes are among the most beautiful songs produced by any bird. The nightingale-thrushes are highland birds, found mainly in the west. They nest on or near the ground. Like the robins, their diet usually is mostly fruit or animal matter.

The solitaires, *Myadestes*, have long been considered part of the thrush family (Ripley, Check-list Birds World, 1964, p. 89), but recent evidence assembled by Sibley (Auk, 1973, p. 408) and Ames (Bonn. Zool. Beitr., vol. 26, 1975, p. 127) suggests that they are more closely related to the silky flycatchers, Ptiligonatidae. I have followed their recommendations in including *Myadestes* in the Ptiligonatidae and placing that family next to the Turdidae.

KEY TO SPECIES OF TURDIDAE

1. Smaller, less than 180 mm..... 2
Larger, more than 190 mm..... 10
2. Undersurface spotted..... 3
Undersurface unspotted..... 6
3. Spotting extensive, from throat to abdomen.
Wood Thrush, *Hylocichla mustelina*. p. 143
Spotting restricted to throat and upper chest..... 4
4. Eye-ring distinct.
Swainson's Thrush, *Catharus ustulatus*. p. 144
Eye-ring indistinct or absent..... 5
5. Spotted area of upper chest washed with cinnamon-buff.
Veery, *Catharus fuscescens*. p. 149
Spotted area of upper chest whitish.
Gray-cheeked Thrush, *Catharus minimus minimus*. p. 148
6. Back blackish-gray.
Slaty-backed Nightingale-Thrush, *Catharus fuscater*. p. 154
Back brown..... 7
7. Crown brown or black..... 8
Crown gray..... 9
8. Crown brown.
Ruddy-capped Nightingale-Thrush, *Catharus frantzii wetmorei*. p. 158
Crown black.
Black-headed Nightingale-Thrush, *Catharus mexicanus fumosus*. p. 152
9. Chest with greenish-brown band.
Black-billed Nightingale-Thrush, *Catharus gracilirostris*. p. 163
Chest gray.
Orange-billed Nightingale-Thrush. *Catharus aurantirostris*. p. 160
10. Throat boldly striped dusky and white, upper chest white.
White-throated Robin, *Turdus albicollis*. p. 130
Throat striped indistinctly or not at all..... 11

11. Undersurface brown..... 12
 Undersurface gray or blackish..... 13
 12. Upper surface dark brown.
 Pale-vented Robin, *Turdus fumigatus obsoletus*. p. 135
 Upper surface light brown.
 Clay-colored Robin, *Turdus grayi casius*. p. 137
 13. Undersurface gray.
 Mountain Robin, *Turdus plebejus plebejus*. p. 140
 Undersurface blackish.
 Sooty Robin, *Turdus nigrescens*. p. 142

TURDUS ALBICOLLIS Vieillot: White-throated Robin,
 Cascá Gargantiblanco

Turdus albicollis Vieillot, 1818, Nouv. Dict. Hist. Nat., nouv. ed., 20, p. 227.
 (Brazil = Rio de Janeiro.)

Rather large; robinlike; upper throat boldly streaked dusky and white, upper chest pure white.

Description.—Length 190-226 mm. Adult (sexes alike), upper surface from crown to rump brownish olive; scapulars, wing coverts, and secondaries brownish olive; primaries and rectrices darker brown; side of face brownish olive; throat boldly streaked dusky and white, with white continuing on to upper chest; rest of undersurface tawny-olive, to abdomen and undertail coverts, which are white or pale buff; underwing coverts tawny-olive.

Juvenile, scapulars and feathers on upper back veined and tipped russet; undersurface from throat to breast, and sometimes to abdomen, spotted dusky.

The White-throated Robin is a wide-ranging species, found from northern Mexico through Central America and into South America as far as southernmost Brazil, Paraguay, and northern Argentina in Misiones Province. In Panamá it occurs mainly on the Pacific slope, in Chiriquí, Veraguas, the western side of Azuero Peninsula, in Coclé at El Valle, and eastern Province of Panamá at Cerro Campana, and in eastern Darién. There are several recent sightings from Barro Colorado Island after the nesting season (Ridgely, 1976, p. 274) and elsewhere in the Canal Zone (Toucan, May 1977, pp. 3-4). This species is common in forest and forest borders in the foothills and lower highlands. Aldrich and Bole (Scient. Pub. Cleveland Mus. Nat. Hist., vol. 7, 1937, pp. 25, 26) found it common in rain forest and cloud forest (900 m and above) on the western slope of the Azuero Peninsula, and Worth (Auk, 1939, pp. 307-308) called it common at 168 m in forests and clearing near Río Gariché, Chiriquí. The population on Coiba Is-

land, subspecifically distinct from the mainland forms, lives at sea level.

All observers have commented on the similarity of the usual song of this species and *T. migratorius*. The call, however, is entirely different—a rather froglike guttural, harsh *umk* or *yuck*. It also gives a screechy *kyé-ee-yoo* somewhat suggestive of the whining call of *T. grayi*. It also, more rarely, gives a rich, repetitive song more suggestive of a mimid or wren than a robin.

Sometimes seen singly or in pairs, I have also found White-throated Robins feeding in fruiting trees in groups of a dozen or more. Its diet is mainly vegetable. Some of E. A. Goldman's notes of stomach contents of specimens of *T. a. daguae* collected at Cana, Darién, are typical: one with the stomach two-thirds full had bits of a spider 3%, 5 drupes of *Ficus* sp. 85%, wild fruit skin 12%; one a fourth full had the heads of two carabid larvae 5%, 2 seeds of an unidentified plant and other fragments 65%, 1 drupe of *Oleaceae* sp. 30%; and one with the stomach nearly empty had bits of a locustid 15% and bits of skin of a wild fruit 85%. Willis (Living Bird, 1966, p. 202) has found single individuals following army-ant swarms on Barro Colorado Island September through January.

TURDUS ALBICOLLIS CNEPHOSUS (Bangs)

Merula leucauchen cnephosa Bangs, 1902, Proc. New England Zool. Club, 3, p. 92. (Boquete, Volcán de Chiriquí, Panamá.)

Characters.—Upper surface brownish olive; bill yellowish.

A female taken March 5, 1951, at Cerro Campana, Panamá had the iris light brown; prominent thickened eye-ring honey yellow; base of maxilla and tip of culmen dull dark brown; rest of bill light greenish olive; tarsus dull greenish olive; toes light brownish white.

Measurements.—Males (10 from Chiriquí and Coclé), wing 114.6-123.4 (119.5), tail 85.2-96.2 (90.3), culmen from base 21.3-23.7 (22.7), tarsus 28.6-31.1 (30.0) mm.

Females (10 from Chiriquí, Coclé, and Province of Panamá), wing 114.7-124.8 (119.1), tail 82.4-93.2 (88.7), culmen from base 22.0-24.0 (22.9, average of 9), tarsus 29.8-32.0 (30.7) mm.

Resident. Fairly common in Chiriquí, Veraguas, Coclé to western Province of Panamá on the Pacific slope in forest and forest edges of middle elevations, at least occasionally wandering to lowlands. It is also found in southwestern Costa Rica. Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 114), on the western slope of the Azuero Peninsula, said "this species was first encountered at Mariato River camp at 250 feet elevation, but became more abundant

as we ascended in the mountains. It reached its peak of abundance at our highest camp, Cavulla, near the top of Cerro Viejo at 3000 feet elevation," in subtropical forest.

I have encountered this thrush in many localities in Chiriquí: on February 26, 1954, I shot 2 males at El Volcán in open forest at the edge of the llano when the woods were completely dry; on March 8, 1954, I noted several in forest at Palo Santo; on March 27, 1954, I took 1 at Laguna Grande; the next day I found others singing and calling in the tops of tall trees at 1490 m in Silla de Cerro Pando; several were in heavy woodland on the Quebrada Candela at Sereno on February 23, 1955; at San Félix I shot 1 on February 19, 1956; and at Boquete I found several in forest at 1100 m.

In Coclé I have collected specimens at El Valle from Río Antón, from Cerro La India Dormida at 750 m, and from the open forest along the head of Río Mata Ahogada (480 m), where it was common.

Arcé collected it in Veraguas at Santa Fé (not dated).

In the Province of Panamá I found a dozen or so on Cerro Campana in a tract of heavy forest where a purple berry was common. They remained under heavy cover and responded readily to a squeak. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) at Cerro Campana weighed 66.2 g, a female 77.2 g.

The song of the White-throated Robin is usually described as robin-like and very fine, consisting of rich, powerful phrases mixed with shorter phrases that are high and weak. In Costa Rica, Skutch (Pac. Coast Avif., no. 34, 1960, p. 84-85) has heard them singing from early February until August 20, with a peak of song in early April. There is also another non-robinlike song less commonly heard. Its calls include a peculiar note like the high-pitched croak of a frog, which does not at all suggest a *Turdus*.

In Panamá, nests and eggs are known from April through July. Blake (Condor, 1956, p. 387) describes a nest collected April 28, 1932, by Mönniche at approximately 1620 m on the slopes of Volcán de Chiriquí that was located half a meter above the ground in a large rotten stump. The nest was a shallow cup 76.2 mm wide and 38.1 mm deep, loosely constructed of coarse twigs. It contained 3 partly incubated eggs "so heavily speckled and blotched with dull reddish-brown as largely to obscure the pale greenish-white ground cover." The eggs measured 31.3×20.6, 30.4×20.6, 31×21 mm.

Worth (Auk, 1939, p. 307) found a nest along the Río Gariché, Chiriquí (1200 m) that on June 26, 1937, contained 2 eggs with a ground color "almost white, tinged with a very pale and diluted green.

They were heavily spotted with small dots of russet, so thickly clustered at the blunt end as to become confluent." Their measurements were 29×21 and 28×22 mm. The nest was nearly 2 m from the ground in the crotch of a small coffee tree, with a foundation of coarse dead grass and a superstructure of living green moss. The cup-shaped cavity was lined with fine rootlets. The eggs from this nest hatched on July 3. At hatching the young had a few tufts of long buffy down, and by July 17 one of the fledglings had already flown from the nest.

E. S. Morton (*in litt.* to Eisenmann) reports the White-throated Robin a common breeder on Cerro Campana, western Province of Panamá, in April-July in 1970 and 1971. Some nests were in niches formed by epiphytes or on depressions on the trunk of a tree, and were composed mainly of moss with a little mud. During most of the dry season the species almost completely disappeared, probably descending to the humid lowlands or dispersing widely in search of fruit.

TURDUS ALBICOLLIS COIBENSIS Eisenmann

Turdus assimilis coibensis Eisenmann, 1950, Auk, 67, p. 366. (Coiba Island, Veraguas, Panamá.)

Characters.—Above and below ruddier than *cnephosus*; undertail coverts with broad fuscous margins; bill largely dark.

A male taken March 23, 1962, on Isla Brincanco, Islas Contreras, had the iris orange-brown; eye-ring honey yellow; base of bill dull fuscous-black; tip dull greenish yellow shading to honey yellow on distal half of cutting edge; tarsus and toes light buffy brown; claws dull brownish white.

Measurements.—Males (8 from Isla Coiba and 2 from Isla Brincanco), wing 109.5-117.5 (112.8), tail 74.8-89.1 (83.1), culmen from base 20.5-22.9 (21.7), tarsus 27.6-31.8 (30.1) mm.

Females (5 from Isla Coiba and 1 from Isla Rancheria), wing 108.0-113.4 (112.1), tail 79.5-86.8 (82.6), culmen from base 21.0-23.3 (22.2), tarsus 29.0-31.0 (30.2) mm.

Resident. This is the only thrush on Coiba Island and adjacent Isla Rancheria. In January and February 1956 it was the most abundant bird on Coiba in high forest, although unlike the mainland forms, here it also descends to sea level, where I found it in the edge of a mangrove swamp at the Río Catival. In the Punta Damas section of the island I saw them feeding on berries in trees and searching among the dry leaves on the trail. By squeaking I often drew in a dozen. Their call is a complaining *chur-r-r* or *pru-rr-r*, and their song, which I heard on

January 22 and 31, suggested *T. grayi casius* but with a slower delivery and notes much higher on the scale. In early April 1976 Ridgely found it common in forest, singing all day, a song of excellent quality; it uttered a guttural call like birds of the western highlands.

On March 23, 1962, I collected 2 male White-throated Thrushes on Isla Brincanco, Islas Contreras. Both birds were in full breeding condition and several times I heard their sweet robin song. I have tentatively assigned them to the race *coibensis*, although with a larger series subspecific differences may become clear. Eisenmann notes that bill colors of these birds suggest intermediacy between the dark-billed birds of Coiba and the yellow-billed western mainland birds. The Coiba race of the Streaked Saltator, *Saltator albicollis scotinus*, is also known to extend to Isla Brincanco.

TURDUS ALBICOLLIS DAGUAE Berlepsch

Turdus daguae Berlepsch, 1897, Orn. Monatsb. 5, p. 176. (San José, Río Dagua, Colombia.)

Characters.—Undersurface sepia; upper surface ruddier than other Panamá races.

A male taken January 31, 1961, on Cerro Pirre, Darién, had the iris bright brown; thickened eyelid dull lemon yellow; maxilla and tip of mandible black; base of mandible light olive-green; tarsus and toes brownish gray.

A male taken March 9, 1964, at Tacarcuna Village, Darién, had the iris warm brown; thickened edge of eyelid bright, somewhat greenish yellow; maxilla fuscous-black; cutting edge of mandible and gape dull yellow; end of mandible and extreme base of rami fuscous, middle section dull yellowish green; tarsus and toes dull, somewhat grayish brown; claws somewhat darker.

Measurements.—Males (10 from Darién, Panamá, and Chocó, Colombia), wing 102.4-110.9 (108.2), tail 73.3-81.6 (77.3, average of 9), culmen from base 19.0-21.6 (20.1, average of 9), tarsus 26.8-30.1 (28.1) mm.

Females (7 from Darién, Panamá, and Chocó, Colombia), wing 103.1-107.4 (105.6), tail 73.0-77.9 (75.4), culmen from base 20.4-21.8 (21.2), tarsus 27.1-29.6 (27.9) mm.

Resident. Fairly common in eastern Darién on the Pacific slope. Found also in western Colombia and Ecuador. The Smithsonian has several specimens taken by E. A. Goldman between February and June 1912 at Cana, at elevations from 540 to 600 m, and I have collected

others at Tacarcuna Village (570 m) and on Cerro Pirre at the head of the Río Seteganti (450 m). The 3 birds I took at Cerro Pirre all had the tail feathers damaged or cut, as though they had been feeding in "caña brava" (*Bactris minor*), a small palm heavily armed with long slender spines. The male I collected at Tacarcuna Village on March 9, 1962, was in breeding condition; its song was clear and sweet with robin tones, but with many notes that suggested an oriole.

The only other indications of the breeding season of this race in Panamá comes from Bangs and Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 221), who reported 3 adults and 2 "spotted young" taken at the headwaters of the Río San Antonio on Mt. Sapo in April 1922. A heavily spotted immature in the Smithsonian collection (USNM no. 427026) was collected by Carriker in Colombia at Villa Arteaga, Antioquia, on May 6, 1950.

TURDUS FUMIGATUS OBSOLETUS Lawrence: Pale-vented Robin,
Cascá Barriga Blanca

Turdus obsoletus Lawrence, Ann. Lyc. Nat. Hist., New York, vol. 7, February 1862, p. 470. (Panamá.)

Bill black; plain dull brown above; breast and sides somewhat paler.

Description.—Length 215-225 mm. Adult (sexes alike), upper surface, wings, and tail warm sepia-brown; breast and sides wood-brown; throat brownish white streaked with dull brown; abdomen and undertail coverts white; underwing coverts ochraceous-buff.

Immature, upper surface somewhat duller; more olive above, with pale narrow shaft lines; wing coverts spotted with ochraceous-buff; throat somewhat buff-gray, spotted and lined with olive-brown; breast and sides dull buff, spotted heavily with blackish brown; abdomen and undertail coverts white; underwing coverts as in adult.

An adult male, taken February 25, 1964, at 1280 m on Cerro Malí, Darién, had the iris dark mouse brown; bill black, except for the fuscous-colored base of the mandibular rami; tarsus and toes olive-brown; claws fuscous.

Measurements.—Males (10 from Cerro Campana, and Darién), wing 119.2-124.5 (121.6), tail 84.3-92.3 (89.3), culmen from base 23.0-25.3 (24.4), tarsus 28.7-31.0 (30.0) mm.

Females (10 from Bocas del Toro, eastern Province of Panamá, San Blas, and Darién), wing 110.4-122.0 (115.9), tail 79.5-90.2 (84.2), culmen from base 21.0-25.1 (23.6), tarsus 27.9-31.5 (29.9) mm.

Resident. Found in forested mountain areas in Bocas del Toro (upper Río Changuena), Chiriquí (reported from the Caribbean slope

of Volcán de Chiriquí, which might be the Bocas del Toro side of the Continental Divide), Veraguas (Santa Fé), Province of Panamá (Cerro Campana and Cerro Azul), Darién, and San Blas.

The race *obsoletus* is found also on the Caribbean slopes of Costa Rica and in northwestern Colombia (Jiménez). Eisenmann writes: "I don't think the *T. obsoletus* complex (from Costa Rica to western Ecuador) is conspecific with the *T. fumigatus* of eastern Amazonia and northwestern South America—which was Hellmayr's (Cat. Birds, Am., vol. 7, 1934, p. 389) very broad treatment. Gyldenstolpe (Kungl. Sv. Vet. Akad. Handlingar, 22, no. 3, 1945, p. 279) concluded that the *T. hauxwelli* complex must be removed from the species *T. fumigatus*, as they proved to be sympatric in Brazilian Amazonia. Ripley (Checklist Birds World, vol. 10, 1964, p. 219) followed Gyldenstolpe in the specific separation of the *T. hauxwelli* complex from *T. fumigatus*. Probably through an oversight, he left the *T. obsoletus* complex in *T. fumigatus* when its morphological affinities and geography are with the more western *T. hauxwelli*. Meyer de Schauensee (Birds of South America, 1966, pp. 416-417) accordingly merges the *T. obsoletus* and *T. hauxwelli* complexes in one species, using, because of priority, *T. obsoletus* as the species name." In limited encounters I have seen these thrushes singly, for brief periods only, in trees or occasionally on the ground, usually near or under cover. Most of the specimens that I have handled were captured in mist nets. This species is a bird of the forest interior, and almost entirely arboreal.

Ridgely (1976, p. 275) describes the song as similar to the Clay-colored Robin's, but faster and less rich.

The type specimen, without definite locality, has been attributed almost surely erroneously to Lion Hill or the Panama Railroad in the Canal Zone (where there is no other record of this species).

Stomachs that I have examined have been filled with fragments of drupes and small seeds, with an ant in one (perhaps swallowed with a berry).

The statement by Ridgway (U.S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 92) that *fumigatus* (*sensu stricto*) of northern South America has "much greater adhesion of the anterior toes" than other thrushes does not hold in the series examined.

There has been no report of the nest or eggs of the Panamá race. Belcher and Smooker (Ibis, 1937, pp. 511-512) described the nest and eggs from Trinidad as "a bulky cup with exterior of green moss and lining of rootlets. In cacao plantations it is placed about 15 feet up as a rule; in forest the site may be in the crown of a tree-fern or near the

top of a slender sapling, or, more rarely, in a recess in the stem of some great tree. On roadsides they may be built in a niche or on a projection of a steep face, and here they are often higher off the road surface than is the nest of *T. albicollis*. The eggs are usually three, less often two; they are similar to, but rather larger than, the eggs of *T. albicollis*; the deep blue type with pronounced markings does not, however, occur in this species. Typical eggs may be described as regular ovals, smooth-shelled, and slightly glossy. The ground is pale greenish-blue, and the markings are profuse marblings and blotches of pale reddish-brown, converging toward the larger end and there forming a cap. Average measurements are 28.2×20.4 mm.: a large set of two measure 32.2×20.8 and 32×21.4 mm."

**TURDUS GRAYI CASIUS (Bonaparte): Clay-colored Robin,
Cascá Pardo**

Planesticus casius Bonaparte, Compt. Rend. Acad. Sci., vol. 41, no. 17, 1855 (not earlier than October 22), p. 657. (Panamá.)

Rather dull brown in color throughout; a typical "robin" (in the American sense) in appearance and action.

Description.—Length 205-235 mm. Adult (sexes alike), dull clay brown to buffy brown on undersurface, with the throat paler and streaked with dark brown; darker brown above.

Juvenile, brighter buffy brown on undersurface, with broken bars of dull grayish brown; back and sides of head streaked, and wing coverts tipped with cinnamon-buff.

Iris verona to orange-brown; anterior half of bill, and the cutting edge of the mandible, dull honey yellow; basal half dull greenish gray; tarsus, toes, and claws dull neutral gray, the claws sometimes buff at tip. The bill color is brighter in breeding season.

Measurements.—Males (14 from Panamá), wing 114.1-129.3 (120.3), tail 89.1-106.8 (95.5) culmen from base 22.3-24.4 (23.1), tarsus 30.0-33.0 (31.2) mm.

Females (12 from Panamá), wing 110.2-119.2 (115.2), tail 85.9-96.5 (92.2), culmen from base 21.1-25.0 (22.9), tarsus 27.9-32.2 (30.3) mm.

Resident. Common, chiefly in the Tropical Zone. On the Pacific slope from Costa Rica east, including the Azuero Peninsula through the Province of Panamá (where recorded east to the lower course of the Río Majé). On the Caribbean side, from Bocas del Toro through northern Veraguas, Colón, and the Comarca de San Blas to Colombia (Acandí, Chocó). In Chiriquí it ascends to the Subtropical Zone above

El Volcán and Cerro Punta, and in Boquete (Lérida, Quiel); recorded also near Santa Fé in Veraguas, (elevation not stated), Isla Canal de Afuera (sight record); Isla Cébaco. Not recorded from Perlas Islands nor observed on Isla Coiba by any recent students (a specimen in the American Museum of Natural History collected by Batty is probably mislabeled, as are many of his "island" specimens).

The Clay-colored Robin is the best known of its group in Panamá because of its wide distribution. Under primitive conditions it is common in open forest growth, and in brushy areas; in denser stands found mainly along streams or other borders. As the land is cleared for cultivation this is one of the birds that is able to adapt to the changed conditions, perhaps even to profit by them, as it shifts to the borders of fields, to *rastrojo*, where quick-growing shrubs offer cover, and also settles among coconut groves, mangos, and other trees and shrubbery about houses; it even follows clearings well up into the mountains. In the older, settled regions, when lawns are developed, in due course the Cascá Pardo becomes bolder, so that in Balboa and Panamá City it runs about freely on open lawns, like the American Robin so widespread in the settled areas of North America. Its usual mannerisms are closely similar to the northern bird, much more so than is the case with most others of its genus found in Panamá.

Though this thrush is seen constantly, its true abundance is evident only when trees that bear edible berries are in fruit. Then the birds come in numbers, often boldly, to feed with other birds. Like the American Robin (*Turdus migratorius*) they eat many earthworms where these are abundant, and like related thrushes they decoy readily when I have used calls to attract small birds. Their alarm note is a rapid repetition of a single syllable, *pup, pup*, higher in pitch than that of the northern robin. A common note, rather low, is a curious drawn-out whine that suggests vaguely some of the calls of the Smooth-billed Ani.

When the first brief rains come in the latter half of the dry season, perhaps in February, the Cascá Pardo begins to sing, at first in low tone and hesitantly, but by early March males in full song present a chorus at the first hint of dawn that has awakened me pleasantly on many tropical mornings. Eisenmann writes that the song resembles that of the North American Robin, but tends to be softer and sweeter. It sometimes includes *twee-oo* or *chwee-oo* phrases, which occasionally are uttered alone and suggest a Streaked Saltator. Clucking and cackling calls also suggest vocalizations of its northern congener, although often sounding rather less vigorous. Distinctive is a long-drawn, whin-

ing call with a nasal quality syllabized by Eisenmann as *kee-weé-vah* or *wce-cé-gua*.

The nest, fairly sturdy, rests on a base of leaves and other dried materials that often is loose and untidy. The main cup is of grass and fibrous materials, with a hardened inner wall of mud, molded by the breast of the female. The bottom is padded lightly with fine rootlets and grass, and the outside may be covered with green moss. A usual site is in a fork in a tree or shrub, anywhere from 1.5 to 10 m above the ground (though, rarely, they may be placed much higher). Many locations are chosen, from fronds of a palm or a banana, an epiphyte, or even the broad leaves of an herbaceous plant, sometimes where support is insufficient so that the nest may fall. It is common to find one located in some roof angle on a house. For years there were nests on the tops of the pillars at the entrance of the old Tivoli Guest House in Ancón.

The eggs, usually two or three, occasionally four, in form are oval, and in color are white with a tinge of green, deeper in some, liberally dotted over the entire surface with cinnamon and rufous-brown markings, which may appear purple or lilac where thinly covered by chalky shell. Some strongly marked examples have a heavy overlay of color forming an irregular cap over the larger end. In three sets collected in the Canal Zone by Major General G. Ralph Meyer, external measurements are as follows:

- (1) 28.0×20.2, 28.1×21.0, 29.0×21.2, and 29.6×20.5 mm.
- (2) 27.5×19.5, 28.1×19.5, and 29.0×19.9 mm.
- (3) 26.9×21.0, and 28.1×21.1 mm.

The principal nesting season is from March to July, with occasional records in February and August. In the breeding season of 1970 Morton (Science, vol. 171, 1971, p. 920) observed 56 nests in Summit Gardens, Canal Zone, and found that increased nest predation during the rainy season, which began in late April, reduced nesting success from the 42 percent of the dry season to 15 percent. He suggested that the robins begin breeding in the dry season when food for nestlings is scarcer because the increased predation of the rainy season outweighed any increase in productivity that might result from greater food availability.

Fully grown immature birds, to be recognized from adults by the prominent clay-colored tips on the feathers of the greater and middle coverts, are common by the first week in September. Adults are in molt at the end of August. After the breeding season, the birds may gather at sunset in small companies to roost in groves of trees, often near houses.

While known widely as one of the species called *cascá*, locally this familiar bird has other names, as *platanera* in Herrera, *capasucia* in southern Veraguas, and *si quiere* near Almirante, the last perhaps in imitation of its curious whining call.

The species is widely distributed through Central America north to southern and eastern Mexico, (even casually reaching Texas) and south to northern Colombia. Northward, the race *casius* extends from Panamá through Costa Rica on both slopes. On the Caribbean side it crosses the Colombian border in eastern San Blas to Acandí on the western shore of the Gulf of Urabá.

H. Loftin (Eisenmann *in litt.*) reports one banded at Ancón, Canal Zone, on September 6, 1964, recaptured dying on April 13, 1974, at Balboa, less than 1 km from the banding site. Another, banded at Gamboa on October 23, 1964, was found dead in June 1968 within 3 km of the banding site.

TURDUS PLEBEJUS PLEBEJUS Cabanis: Mountain Robin,
Cascá Serrana

Turdus plebejus Cabanis, Journ. für Orn., vol. 8, September 1860 (January 1861), p. 323. (Costa Rica.)

Adults brownish gray, darker above, lighter below; with black or blackish brown bill.

Description.—Length 235-250 mm. Adult (sexes alike), above dark olive-brown to brownish gray with the crown faintly darker; lighter, grayer below, with the abdomen more or less grayish white; throat faintly streaked with brownish black; undertail coverts with wedge-shaped dusky markings; underwing coverts dull brown, margined with tawny.

Immature, like adult, but with small tips of buff on the outer greater primary wing coverts and breast. (These are soon lost, so that the juvenile individual rapidly becomes like the adult).

Kennard (Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 460), in a male taken March 13, 1926, on the Boquete Trail, noted that the bill was "blackish brown; iris raw umber, tarsus brown."

Measurements.—Males (11 from Chiriquí), wing 127.7-140.6 (136.7), tail 92.3-99.9 (94.8), culmen from base 22.7-25.0 (23.7), tarsus 31.5-34.5 (33.4) mm.

Females (11 from Chiriquí), wing 122.9-134.8 (130.0), tail 88.0-94.5 (92.6, average of 10), culmen from base 22.7-24.4 (23.7), tarsus 32.1-35.0 (33.5) mm.

Resident. Found in the Subtropical Zone in the mountains of Chiriquí, where it is recorded from Cerro Picacho, on the main volcano from near Cerro Punta on the western side, and from above Boquete on the east; reported by Griscom from Cerro Flores in eastern Chiriquí. Ridgely reports it down to 1000 m in central Chiriquí (Fortuna Dam site). Found also on the Caribbean slope, where it was taken by Kennard at about 1400 m on the Boquete Trail. The species occurs from southern Mexico to western Panamá; the nominate race in the mountains of Costa Rica and Panamá.

Griscom's report of this species from the mountains of Veraguas (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 361) appears to be in error, as the bird is not known to range eastward beyond the limits given above.

This is a species of the mountain forests, common where found, but of restricted range in Panamá. I have seen individuals frequently about feeding trees, where they often descend to the ground to pick up fallen berries in addition to those taken among the branches. They decoy readily at a faint squeak, and come near to remain completely motionless, sometimes on open limbs, and sometimes under cover of leaves. Occasionally, I have noted them on high perches in dead trees in clearings. They are usually in small flocks of as many as 15 or 20.

The cacking or clucking call note is much like that of the North American Robin (*Turdus migratorius*). Kennard and Peters (Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 460) record the song as more musical than that of the northern bird, but Ridgely (1976, p. 275) calls the song "inferior to that of its allies, being faster, more repititious and monotonous, with few pitch changes." In addition to the cacking and kicking calls, they give a whining call resembling that of the Clay-colored Robin, but more musical and more mournful, like *oóoooooreee*, lasting about 1½ seconds, then repeated after an interval of 4-5 seconds.

Skutch (Publ. Nuttall Orn. Club, no. 7, 1967, p. 112) found a cup-shaped nest hidden among dead leaves and other debris in the crotch of a tree, elevated 3 m above the ground. In it were 2 young with feathers sprouting. Later, when grown, "the plumage closely resembled that of [the] parents, except for some rather inconspicuous buffy spots or bars on its breast and wing coverts." No description of the eggs has been seen.

For the date of Cabanis's description of this thrush, see statement at the end of the account of *Turdus nigrescens*.

TURDUS NIGRESCENS Cabanis: Sooty Robin, Cascá Tiznada

Turdus nigrescens Cabanis, Journ. für Ornith., vol. 8, no. 47, "September, 1860," published January 1861, p. 234. (Volcán Irazú, Costa Rica.)

Large; adult blackish brown; bill and feet yellow.

Description.—Length 235-270 mm. Adult male, dull grayish brown to blackish brown; wings and underwing coverts dull black; lores and area around eye black; throat indistinctly lined with black.

Adult female, similar to male in general, but duller; throat faintly paler, with black lines more distinct.

Immature, averaging lighter on dorsal surface; crown, back, and scapulars streaked with dull buff; greater and middle wing coverts tipped narrowly with dull buff to form somewhat indistinct bars; under-surface basally dull ochraceous-buff, with the individual feathers tipped and barred with dull black; dull buff of throat only lightly marked; undertail coverts blacker, narrowly lined with buff; underwing coverts dull blackish brown, barred and edged with dull cinnamon-buff.

In an adult female, taken March 1, 1965, at 2300 m on the west face of Volcán de Chiriquí, the iris was ivory-white; bill bright yellow, with a faint clouding of dull brown on the nasal operculum, and on the side of the culmen adjacent; tarsus and toes bright yellow; claws black; bare, thickened outer rim of eyelid honey yellow. Some specimens of either sex have the entire bill plain yellow.

Measurements.—Males (10 from 1900 to 3100 m on Volcán de Chiriquí), wing 137.5-144.9 (140.9), tail 107.3-119.4 (114.2), culmen from base 23.6-26.1 (24.9), tarsus 37.0-39.3 (37.8) mm.

Females (10 from 1920 to 3100 m on Volcán de Chiriquí), wing 134.8-138.9 (137.6), tail 107.2-114.2 (110.4), culmen from base 23.5-25.0 (24.4), tail 35.1-38.4 (36.5) mm.

A series from Costa Rica agrees in size with the measurements above.

Resident on the higher levels of Volcán de Chiriquí, Chiriquí, at 1800 to 3000 m, also occurs lower on the Volcán de Chiriquí massif, and in the high mountains of Costa Rica.

The little that is known of these mountain thrushes indicates them usually to be tame, ranging among trees and also on the ground, alone or in scattered company of a few individuals, frequently in pastures and clearings. The species, described from Volcán Irazú in Costa Rica, was first recorded from Panamá by Salvin and Godman (Biol. Centr. Amer., Aves, vol. 1, 1879, plate 1, p. 25) from several specimens sent to them by Enrique Arcé marked "Volcán de Chiriquí." Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 49) recorded a series

taken by W. W. Brown in May and June 1901 from the high slopes of the volcano. Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 549-550) listed 8 in the Mönniche collection from elevations of 1980 to 3078 m. The specimens examined from Chiriquí appear identical in size and coloration with those from the mountains of Costa Rica.

Eisenmann writes that in western Chiriquí it is known from above timberline on Volcán de Chiriquí, but is also frequently seen on the ground in the cleared area about the top of the trail between Cerro Punta and Boquete, at about 2400 m. On July 21, 1964, at least a hundred were in groups of as many as 20 in one small tree at about 1860 m. It is likely that some downward wandering occurs after the breeding season; some of the birds seen were in juvenal plumage.

Ridgely (1976, p. 276) describes the song as "poor but still somewhat robinlike" and renders the calls as "*trrrrr* and a harsh *tchweerp*, *tchweerp*." He adds (*in litt.*) that the Sooty Robin does not seem to sing very often.

A nest found in Costa Rica at Villa Mills, Cartago Province, April 21, 1974, by Maxine Kiff held two eggs containing feathered embryos. The eggs were "robin's egg blue" and unspotted. One, now in the collection of the Western Foundation of Vertebrate Zoology, measured 33.00×22.42 mm. The nest was located 4 m high in a 7-m tree at the edge of cutover montane rain forest and pasture, about 1 m from the trunk in the crotch of a limb. The nest was composed of mosses and sticks, lined with fine grasses. A nest found by Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 738-739) at Volcán Irazú was made of grass and mud.

The original description of this thrush, in the *Journal für Ornithologie*, was published in the final issue for the year, which was dated September 1860. The copy of this number in the library of the Smithsonian's Division of Birds when received had a notice printed on the bottom of the front cover stating that it had been published "im Januar, 1861." This data is carried in C. W. Richmond's card catalogue for *nigrescens*, and was so listed by Ridgway (Bull. U.S. Nat. Mus., vol. 50, Part IV, 1907, p. 124).

**HYLOCICHLA MUSTELINA (Gmelin): Wood Thrush,
Zorzal Pechimanchado**

T. (urdus) mustelinus Gmelin, 1789, Syst. Nat., 1 (2), p. 817, ex Latham "Tawny Thrush" ("in Noveboraco" = New York).

Medium size; upper surface rufescent brown; undersurface white, heavily spotted with black.

Description.—Length 163-192 mm. Sexes alike; undersurface white, heavily spotted with black on breast and sides; top of head and hind-neck tawny brown to russet, changing to cinnamon-brown and russet on back and wings; rump and tail light olive; a distinct white ring around eye; side of head dull black, lined narrowly with white; bill black, with base of lower part yellowish buff; tarsus and toes flesh color.

Measurements.—Males (10 from North Carolina to Pennsylvania), wing 102.4-109.6 (106.2), tail 62.5-72.4 (68.3), culmen from base 18.9-21.5 (20.2), tarsus 29.7-32.4 (30.9) mm.

Females (10 from North Carolina to Pennsylvania), wing 102.0-106.2 (105.0), tail 65.3-70.0 (67.5), culmen from base 19.1-21.4 (19.8), tarsus 28.4-32.0 (30.0) mm.

Winter resident, found locally October to April, mainly from the Canal Zone westward. Panamá is at the southern end of this species' winter range, which begins in Texas. There is one record for Colombia, a male collected west of the Río Atrato in extreme northwestern Chocó on December 6, 1975; the specimen is in the collection of Inderena, Bogotá (J. V. Rodríguez, *Lozania*, no. 31, April 30, 1980, p. 8). In their winter home Wood Thrushes live in the undergrowth on and above the forest floor in wooded areas where their presence may be indicated by their sharp call notes, though the birds usually remain hidden.

One banded October 8, 1963, at Magnolia Gardens, Charleston, South Carolina, by T. A. Beckett was captured alive and released by Galindo at Almirante, Bocas del Toro, October 26, 1963. Willis (*Living Bird*, 1966, pp. 198-200) on Barro Colorado Island found them in small numbers from October to April associated in feeding on and near the ground with ant swarms. Galindo, in netting and banding operations at Almirante, in 1962 recorded them as arriving October 16. They have been found with some regularity east to the Canal Zone, but only casually beyond. I caught 1 in a mist net at the old Tacarcuna Village site in Darién on March 10, 1964, and recorded 2 calling at Mandinga in western San Blas, February 7, 1957.

Ridgely has only once heard the Wood Thrush singing in Panamá, on March 20, 1979, at Nueva Suiza, Chiriquí.

**CATHARUS USTULATUS (Nuttall): Swainson's Thrush,
Zorzal de Swainson**

Medium size; upper surface olive-brown, undersurface white, with olive-brown streaks on side of throat and spots on upper breast.

Description.—Length 148-185 mm. Sexes alike; upper surface from crown to lower back uniform olive to sepia, upper tail coverts slightly brighter; wings and tail olive to sepia, with basal third of all but outermost primary and innermost secondary lighter (more distinctly on undersurface of wing); distinct buffy white streak at lores and eye-ring; side of face like back; throat buffy white, streaked with dark brown on sides; upper breast washed with pale buff and spotted with dark brown; rest of undersurface white with sides color of back; underwing coverts buffy.

The Swainson's Thrush is the commonest of the North American thrushes that migrate through or winter in Panamá. It breeds across much of northern North America and winters from the southern United States to Brazil and Argentina. In extensive netting operations at Almirante, Bocas del Toro, Galindo and Méndez (Bird-Banding, 1965, p. 234) found during the fall of 1963 that this species formed 76 percent of all migrant thrushes netted. They captured 3120 Swainson's, compared with 743 Gray-cheeked Thrushes, 145 Veeries, and 95 Wood Thrushes. Galindo and Méndez, and Willis (Living Bird, 1966, p. 201), who spent the fall of 1960 on Barro Colorado Island, found Swainson's Thrushes commonest in October, "scattered" or "rare" in winter, and uncommon in spring. Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 361) calls it "casual" in summer, based on a specimen taken on July 4 at Permé, San Blas. The earliest fall specimen in the Smithsonian collection is from October 10, 1960, taken at Almirante, Bocas del Toro, and the latest spring specimen was collected on the Río Jaqué, Darién on April 11, 1947.

Ripley (Checklist Birds World, vol. 10, 1964, pp. 171-173) lists 4 races of the Swainson's Thrush. They are analyzed in detail by Bond (Proc. U. S. N. M., vol. 114, 1963, pp. 373-387). Specimens of all 4 have been collected in Panamá. *C. u. swainsoni* is the form that regularly occurs here; it may be found in wooded and shrubby areas throughout the Republic from lowlands and foothills, up to at least 1800 m in the Chiriquí highlands, and on the Pearl Islands.

CATHARUS USTULATUS ALMAE (Oberholser)

Hylocichla ustulata almae Oberholser, 1898, Auk, 15, p. 304. (East Humboldt Mts., opposite Franklin Lake, Nevada.)

Characters.—Upper surface distinctly grayer than in other forms.

Measurements.—Males (10 from Alaska, Mackenzie, and Alberta), wing 96.1-102.1 (99.8), tail 66.1-70.6 (68.8), culmen from base 14.2-17.7 (16.4), tarsus 27.0-28.7 (27.9) mm.

Females (10 from Alaska, Mackenzie, and Alberta), wing 93.2-100.0 (97.1), tail 60.2-68.2 (62.3), culmen from base 13.5-16.7 (15.7), tarsus 26.1-29.3 (27.4) mm.

This race breeds in southern and eastern Alaska east to western Mackenzie and south through the mountains to Colorado and northwest Utah. The winter range is unclear, in large part, perhaps owing to the difficulty of identifying specimens out of the breeding season. Russell (A. O. U. Ornith. Mon. no. 1, 1964, p. 142) does not list this form for British Honduras, and Monroe (A. O. U. Ornith. Mon. no. 7, 1968, p. 307) considers it "too weakly differentiated to recognize taxonomically," so gives no information for Honduras. Dickey and van Rossem (Field Mus. Nat. Hist., Zool. Ser., vol. 23, pub. 406, 1938, p. 457), however, call it a "locally common spring migrant" in El Salvador. *C. u. almae* is not mentioned by Slud (Bull. Amer. Mus. Hist., vol. 128, 1964, p. 299) as occurring in Costa Rica, although Bond (Proc. U.S. Nat. Mus., vol. 114, no. 3471, 1963, p. 380) lists 1 collected at Bonilla, Costa Rica, April 13, 1908. Miller (Univ. Calif. Pub. in Zool., vol. 66, no. 1, 1962, p. 42) collected 1 he believed was *C. u. almae* in the western Andes of Colombia at latitude 3.5°N on December 26, 1958.

Nine specimens from Panamá in the Smithsonian collection have been identified as *C. u. almae*. One of these was collected in winter, on January 20, 1965, at Isla Cébaco, Veraguas; others were taken between March 7 and April 6: in Darién at Tacarcuna Village (March 7, 1964) and Jaqué (April 6, 1946), at Cerro Chame, Province of Panamá (March 27, 1955), El Barrero, Herrera (March 22, 1948), and Isla Brincanco (March 23, 1962) and El Volcán (March 27, 1954), Chiriquí.

CATHARUS USTULATUS USTULATUS (Nuttall)

Turdus ustulatus Nuttall, 1840, Man. Orn. U.S. and Canada, ed. 2, pp. vi, 400, 830. (forests of the Oregon = Fort Vancouver, Washington.)

Characters.—Upper surface sepia brown, brightest on rump; more rufescent in autumn.

Measurements.—Males (10 from British Columbia and Washington), wing 95.6-102.0 (99.4), tail 66.1-74.6 (71.3), culmen from base 15.8-17.8 (17.2), tarsus 27.9-31.6 (29.0) mm.

Females (10 from British Columbia and Washington), wing 92.7-98.6 (95.4), tail 65.1-70.8 (67.7), culmen from base 16.5-18.3 (17.1), tarsus 27.7-31.4 (29.1) mm.

This race breeds in southeastern coastal Alaska from Juneau south, coastal British Columbia, and west of the Cascade Mountains in Wash-

ington and Oregon. It migrates through California to winter primarily in western Mexico. There are 2 specimens of nominate *ustulatus* from Panamá in the Smithsonian collection, from El Volcán, Chiriquí, collected March 17, 1965, and February 26, 1960.

CATHARUS USTULATUS OEDICUS (Oberholser)

Hylochichla ustulata oedica Oberholser, 1899, Auk, 16, p. 23. (Santa Barbara, California.)

Characters.—Upper surface grayer and paler than that of nominate *ustulatus* and buffier, less olivaceous, than *swainsoni*.

Measurements.—Males (10 from California, Oregon, and Washington), wing 92.0-100.8 (95.2), tail 66.1-74.5 (71.9), culmen from base 12.9-13.9 (13.5), tarsus 25.3-29.1 (27.7) mm.

Females (8 from California and Washington), wing 89.0-96.5 (93.1), tail 64.8-74.7 (69.9), culmen from base 12.7-14.9 (13.5), tarsus 26.7-29.9 (28.1) mm.

This race breeds in California, southwest Oregon, and along the east slopes of the Cascade range to northern Washington. It winters from Arizona south to southern Mexico. I have not found any references in the literature to its occurrence farther south, but 1 specimen in the Smithsonian collection, USNM no. 457921, seems best assigned to this race. It is a male collected by Frank A. Hartman at El Volcán, Chiriquí, on March 2, 1953.

CATHARUS USTULATUS SWAINSONI (Tschudi)

Turdus Swainsoni Tschudi, 1845, Faun. Peru., Aves, p. 28; new name for *Merula wilsonii* Swainson, *nec Turdus wilsonii* Bonaparte (Carlton House, Saskatchewan.)

Characters.—Upper surface olive-brown, distinctly less gray than *C. u. almae*.

Measurements.—Males (10 from Labrador, Nova Scotia, and Maine), wing 98.1-102.6 (100.7), tail 66.2-72.2 (68.3), culmen from base 15.6-17.6 (17.0), tarsus 26.5-32.3 (27.9) mm.

Females (10 from Labrador, Quebec, Manitoba, Alberta, Maine, and Montana), wing 93.2-103.0 (97.9), tail 64.5-70.0 (67.2), culmen from base 15.9-17.5 (16.7), tarsus 27.0-28.8 (27.8) mm.

This race breeds from eastern Alberta to the Atlantic Coast, through Saskatchewan, Manitoba, Ontario, Quebec, and southern Labrador south to northern New England and in the Appalachians from New

York to West Virginia, and farther west from northern Michigan to northern Minnesota. It winters from Mexico to northern Argentina.

As on its northern breeding grounds, in Panamá this is the most arboreal of the spotted woodland thrushes. It is a regular visitor to fruiting trees and bushes, and also sallies after insects. Willis (Living Bird, 1966, p. 201-203) on Barro Colorado Island found that it descends to the ground to follow swarms of army ants, pecking at the insects flushed by the ants, and usually driving away Gray-cheeked Thrushes and Veeries, but foraging only in niches not occupied by resident species. Willis noted that when following army ants in November, Swainson's Thrushes would occasionally deliver fragments of song, in addition to call notes. Skutch (A Naturalist in Costa Rica, 1971, p. 103) found them singing in Costa Rica from March to early May. In Panamá, Ridgely (*in litt.*) has heard in March and April "a full whisper song similar to what one hears on migration in eastern U.S."

An interesting example of how rapidly these birds can put on weight to increase the fat supply needed for migration is recorded by Leck (Bird-Banding, 1975, p. 201), who netted a Swainson's Thrush at the Volcán de Chiriquí Field Station of the Florida Audubon Society on April 28, 1968, when it weighed 25 g, and retrapped it there 6 days later, on May 4, when its weight was 31.6 g.

CATHARUS MINIMUS MINIMUS (Lafresnaye): Gray-cheeked Thrush;
Zorzal Carigrís

Turdus minimus Lafresnaye, Rev. Zool., vol. II, no. 1, January, 1848, p. 5. (Bogotá, Colombia.)

Medium size; upper surface dull olive; upper breast streaked irregularly with dusky, rest of undersurface white.

Description.—Length 157-187 mm. Sexes alike; upper surface from crown to back, olive to grayish olive; tail somewhat browner; side of head grayish olive; no distinct eye-ring; ear region streaked narrowly with dull white; side of jaw buffy white; undersurfaces of body white, with upper breast washed with pale buff; sides of throat to upper breast pale buff streaked irregularly with dusky; rest of undersurface white, with the sides dull gray; underwing coverts dull gray, edged lightly with white.

In a male collected at Independence, Kansas, May 6, 1905, the iris was brown, maxilla and tip of mandible black, rest of the bill dull yellow; tarsus dull brown.

Measurements.—Males (10 from Alaska to Newfoundland), wing

100.0-106.4 (103.2), tail 68.1-75.2 (70.2), culmen from base 15.5-17.9 (16.9), tarsus 27.1-30.2 (29.5) mm.

Females (10 from Alaska to Newfoundland), wing 95.4-99.2 (97.8), tail 65.2-68.6 (66.4), culmen from base 16.0-17.9 (17.0), tarsus 27.4-32.2 (29.9) mm.

Migrant. Gray-cheeked Thrushes are noted especially in the period of fall migration; most of those seen are probably the nominate subspecies, although *bicknelli* and *aliciae* (if it can be distinguished) may also occur. Specimens of the nominate race definitely identified are 2 recorded by Chapman (Auk, 1931, p. 121) taken by R. R. Benson at Cocoplum, Bocas del Toro, October 31 and November 1, 1927. Others that I have examined are as follows: a male in the British Museum taken by Arcé on the Volcán de Chiriquí in 1870 (date not specified); a male taken by B. Feinstein at the old Tacarcuna Village in Darién February 11, 1959; another male from the same locality that I collected March 5, 1964; 2 (from the Gorgas Memorial Laboratory) taken at Almirante, Bocas del Toro, a female on October 12, 1962, and another with sex not marked on October 6, 1962. This race winters from Nicaragua to northern Peru and northwestern Brazil.

In extensive netting operations, Dr. Pedro Galindo, assisted by E. Méndez and Abdiel Adames (Bird-Banding, vol. 34, 1963, pp. 202-209) banded 264 of these thrushes at Almirante from October 15 to the end of November, 1962. None were taken in the following spring period. In 1963 the first record for fall was October 2. In 1964, on January 29, 1 was netted followed by others on April 22 and 24. In fall, the first appeared September 25 and the last on November 25. Willis (Living Bird, 1966, p. 203) found them fairly common on Barro Colorado Island in 1960 from October 5 to December 3. He recorded 15 on November 1. The following year he noted migrants commonly from October 12 to November 24, and single birds seen subsequently on January 25, February 4, and April 15, 1961. They were noted regularly around moving ant swarms, apparently in search of other insects, not the ants.

Loftin (Carib. Journ. Sci., vol. 3, no. 1, 1963, p. 6) reported banding 65 of this species near Almirante October 19-21, 1962, with 2 on November 10-11, 1962, and a few in the Canal Zone near Corozal and Curundu in November 1962.

CATHARUS FUSCESCENS (Stephens): Veery, Zorzal Lomo Oscuro

Size medium; upper surface dull rufous-brown; sides grayish white, without markings.

Description.—Length, 151-175 mm. Sexes alike; above dull grayish brown to somewhat tawny brown; center of throat, lower breast, and abdomen white (changing on lower foreneck and upper breast to pale buff), streaked and spotted rather lightly with tawny-brown; sides grayish white.

Migrant and winter visitor from the north. Fairly common, found from September to early May.

The Veery, like the Swainson's Thrush, ranges in forest areas; it has been encountered mainly through individuals captured in mist nets. Usually they are taken in company with the much more abundant Swainson's Thrush. Of the 4 geographic races currently recognized on their northern breeding grounds, 3 are represented in collections now at hand from Panamá, as indicated under the names that follow. As the remaining group, *Catharus fuscescens subpallidus* Burleigh and Duvall (Proc. Biol. Soc. Washington, vol. 72, 1959, p. 33), is migrant from its breeding grounds like the others, it seems probable that it will be identified in the Republic as further data accumulate. It is similar in general to *C. f. salicicola*, differing in duller, more grayish, less rufescent coloration on the dorsal surface.

Sightings cannot be identified as to subspecies and even in the hand racial identification can be difficult. Most Panamá observations are of mist-netted birds on the Caribbean coastal area. G. V. N. Powell and S. G. Martin netted many at Ft. Sherman, Canal Zone, between September 28 and October 22, 1966; the numbers caught were highest between October 3 (16) and October 15 (8). None were caught during banding done on Cerro Campana. At Almirante, Bocas del Toro, this species was taken rather infrequently, although in 1963 and 1964 some were taken from the last week in September (earliest Sept. 23, 1963) through the third week in November (1 bird), and none in December, January, or February. In spring, far fewer birds are netted at Almirante.

On the Pacific slope, one was banded by V. Kleen at Nueva Suiza, Chiriquí, on October 12, 1967, and Ridgely observed 1 at Ft. Clayton, Canal Zone, on September 28, 1968.

CATHARUS FUSCESCENS FUSCESCENS (Stephens)

Turdus fuscescens Stephens, in Shaw, Gen. Zool., vol. X, pt. 1, September 1817, p. 182. (Pennsylvania.)

Characters.—Brighter, more reddish brown, on the entire dorsal surface from crown to rump.

Measurements.—Males (10 from the breeding range, taken in June), wing 98.1-105.1 (101.7), tail 70.0-77.5 (73.7), culmen from base 15.6-17.5 (16.9), tarsus 29.0-31.0 (29.9) mm.

Females (10 from the breeding range, taken in May and June), wing 92.2-100.4 (96.9), tail 64.2-73.4 (67.6), culmen from base 16.2-18.4 (17.1), tarsus 27.7-30.0 (28.6) mm.

Migrant from the north, recorded definitely in Panamá from 2 male specimens: one, in the National Museum, received from the Gorgas Memorial Laboratory, collected at Almirante, Bocas del Toro, October 25, 1963; and a male, in the museum at the University of Cincinnati, collected October 10, 1931, at Puerto Obaldía, San Blas, by Hasso von Wedel.

The northern nesting grounds extend from southwestern Quebec and southern Ontario south to northeastern Ohio, eastern Pennsylvania, central New Jersey, and the District of Columbia (Rock Creek Park) and the mountains of eastern Tennessee and northwestern Georgia. In its winter home it has been recorded from Colombia and Venezuela to south-central Brazil. The few reports from Panamá indicate that it is a passage migrant.

CATHARUS FUSCESCENS FULIGINOSUS (Howe)

Hylocichla fuscescens fuliginosa Howe, Auk, vol. 18, No. 3, July 1900, p. 271. (Codroy, Newfoundland.)

Characters.—Rather bright reddish brown above; in general, like *C. f. fuscescens*, but decidedly darker.

Measurements.—Males (10 from Newfoundland and New Jersey), wing 94.0-104.6 (100.3), tail 71.4-76.1 (73.3), culmen from base 15.0-18.6 (16.2), tarsus 27.8-31.6 (29.3) mm.

Females (6 from Newfoundland, Rhode Island, and Mississippi), wing 94.2-100.2 (96.4), tail 64.2-71.2 (69.0), culmen from base 14.8-17.3 (16.4), tarsus 27.9-29.9 (28.9) mm.

This is the breeding form of Newfoundland, the Magdalen Islands, and south-central Quebec. In the north it is recorded as a migrant near the Atlantic Coast from Massachusetts to Virginia, and is believed to winter in northern South America.

There are 2 specimens at present known from Panamá, both taken during Galindo's banding studies at Almirante, Bocas del Toro, a male on October 25, 1962, and a female in October 1963 (without more definite date).

CATHARUS FUSCESCENS SALICICOLA (Ridgway)

Hylocichla fuscescens salicicola Ridgway, Proc. U.S. Nat. Mus., vol. 4, no. 240, April 13, 1882, p. 374. (Fort Garland, Colorado.)

Duller, less reddish brown, averaging darker above as compared to *fuscescens* or *fuliginosa*.

Measurements.—Males (10 from Manitoba, Montana, Colorado, and Wisconsin), wing 95.4-102.0 (99.4), tail 66.3-79.3 (72.5, average of 9), culmen from base 14.5-18.5 (16.7), tarsus 27.7-31.5 (30.3) mm.

Females (9 from Minnesota, North Dakota, Iowa, Montana, and Colorado), wing 90.0-101.3 (94.8), tail 65.0-73.4 (70.0), culmen from base 14.6-17.4 (15.9, average of 8), tarsus 27.0-32.3 (29.1) mm.

Breeds from southern British Columbia, Alberta, Manitoba, Nevada, Colorado, South Dakota, and Minnesota to southern Wisconsin, Indiana, and southwestern Ohio; recorded in winter in South America from Colombia, Venezuela, and Mato Grosso, Brazil.

Two specimens have been taken at Almirante, Bocas del Toro, during banding studies: a female October 12, 1962, and a male marked October, without more certain date, 1963.

CATHARUS MEXICANUS FUMOSUS Ridgway: Black-headed Nightingale-Thrush, Zorzal Cabecinegro

Catharus fumosus Ridgway, Proc. U.S. Nat. Mus., vol. 10, August 6, 1888, p. 505. (Costa Rica.)

Size medium; crown in male dull black, in female brownish black.

Description.—Length 146-164 mm. Male, crown black; upper surface, including tail brownish olive; band across upper breast and lower foreneck, sides, underwing coverts and feathered area on upper legs somewhat brownish olive; throat, upper foreneck, breast, and undertail coverts white; wings like tail, but with outer webs of primaries reddish brown.

Female, similar but crown brownish black.

Juvenile (male, Río Changuena, September 8, 1961), crown, back, and wing coverts blackish brown, with feathers lined centrally with dark buff; upper breast buff centrally, feathers edged and tipped with dusky black; lower breast and abdomen dull buff.

Measurements.—Males (10 from Veraguas and Costa Rica), wing 81.3-88.5 (84.5), tail 54.8-64.5 (60.3), culmen from base 14.1-17.5 (15.8), tarsus 28.4-32.7 (30.8) mm.

Females (10 from Panamá, Costa Rica, and Nicaragua), wing 78.5-

87.0 (82.8), tail 52.1-61.6 (57.5), culmen from base 13.5-17.5 (15.5, average of 9), tarsus 28.2-31.8 (30.1) mm.

Resident. Found locally in the higher elevations on the Caribbean slope of the mountains in western Panamá. Recorded to date from the Boquete trail, and the upper Río Changuena, 1060 m, both in the highlands of western Bocas del Toro; Calovévora, and the Cordillera del Chucú, Veraguas (around Santa Fé, high on both slopes). Beyond Panamá this race is recorded north to Nicaragua; other races are found north into Mexico.

In the original description, Ridgway listed his type as "Adult male (No. 101765, Costa Rica, October 20, 1881; José C. Zeledon)." Zeledon, in his *Catálogo de las Aves de Costa Rica* (Anal. Mus. Nac., 1887, published 1888), cited under each species the localities and number of specimens in the collection of the Museo Nacional. On page 104, family Turdidae, he wrote "*Catharus fumosus* Ridgway, Jiménez 1," this being a specimen in the local collection (not Ridgway's type, which is in the Smithsonian collections). Deignan (Bull. U.S. National Museum, 1961, vol. 221, pp. 429-430), with reference to Zeledon, above, listed Ridgway's type as "'Costa Rica' = Jiménez, Province of Limón, Costa Rica," but no such specific locality can be ascribed to the actual type.

Slud (Birds of Costa Rica, 1964, pp. 300-301) speaks of *fumosus* as a species of the Caribbean slope in the humid foothills of that country, found frequently in the same habitat as its relative *Catharus fuscater hellmayri*, low down in undergrowth, often on a log or on the ground, remaining rather constantly undercover, moving with quick hops, then coming to a sudden halt.

In November 1940, on the watershed leading to the Caribbean slope on Cerro Santa María, Costa Rica, I found these thrushes fairly common, ranging near the ground in the dense shadows of the humid forest. When detected they disappeared immediately in the heavy cover. At this season they were quiet, and were not singing.

Slud (*op. cit.*) says the song is variable, with one or two short phrases, with an extra note or two added at the start or end. In some phrases there is a slurred, sharp "sreek." The quality is fuzzy, slurred, or skewy flutelike; some notes are wavering warbles. Calls are a quick dry trill, a rattle like stones knocked together, a very soft unclear *pseer*, and an antbirdlike *grrr* and *meeww*. C. Hartshorne characterizes the song as "barely mediocre," weaker and inferior to that of *C. frantzii*.

Carriker (1910; Ann. Carn. Mus. vol. 6, p. 749) reports 2 nests on the lower foothills north of the Volcán de Turrialba, Costa Rica, at about 600 m, that on April 20 each held 2 eggs. The eggs were pinkish white, very thickly and finely speckled with reddish brown over the entire surface; average measurements were 24×18 mm. The nests were almost entirely of green moss with a lining of skeletonized leaves. Each nest was placed about 1.6 m from the ground in a small palm in heavy forest cover.

CATHARUS FUSCATER (Lafresnaye): Slaty-backed Nightingale-Thrush,
Zorzal Pizarreño

FIGURE 12

Upper surface dark slate color; side of head and chin deep black; upper foreneck and throat white.

Description.—Length 160-180 mm. Adult (sexes alike), above, dark slate, the head somewhat blacker, wings and wing coverts slightly grayer; breast, foreneck, and sides gray; center of breast and abdomen white.

FIGURE 12.—Slaty-backed Nightingale-thrush, Zorzal Pizarreño, *Catharus fuscater*.

This wide-ranging species is found in mountain areas from Costa Rica and Panamá to the Andes of northwestern South America, where it ranges from Colombia and northwestern Venezuela to northern Bolivia. Three subspecies are recognized in Panamá.

CATHARUS FUSCATER HELLMAYRI Berlepsch

Catharus fuscater hellmayri Berlepsch, Orn. Monatsber., vol. 10, no. 5, May 1902, p. 69. (Chiriquí.)

Characters.—Gray of undersurface, including sides and flanks, definitely darker; throat grayer.

A juvenile in the Museum of Comparative Zoology from Coliblanco de Sarapiquí, on Irazú, Costa Rica, taken August 23, 1899, has the entire crown fuscous-black; hindneck natal brown; back, rump, scapulars, and wing coverts between natal brown and bone brown, wings and tail fuscous; throat and upper foreneck buffy brown, with the bases of the feathers grayish white; sides of neck, breast, and area adjacent olive-brown, with indistinct spots of dull chamois, and basal shaft streaks of grayish white; flanks and undertail coverts olive-brown. The culmen (in the dried skin) is fuscous; rest of the bill, tarsi, and feet light brownish yellow, indicating that these areas were light-colored in life, as they are in the adult bird.

An adult male in the Museum of Comparative Zoology collected above Boquete, Chiriquí, March 1, 1901, has the following color notes on the label, made by W. W. Brown, Jr., "Iris white; orbital ring and tarsus orange-vermilion; upper mandible vermilion, region of nostrils, and tip of culmen dusky; under mandible vermilion."

Measurements.—Males (10 from Chiriquí), wing 88.0-94.4 (89.7), tail 64.6-73.6 (68.5), culmen from base 17.5-19.0 (18.2), tarsus 34.1-36.8 (35.4) mm.

Females (4 from Chiriquí), wing 78.6-81.9 (89.7), tail 54.0-60.4 (58.2), culmen from base 15.3-17.8 (16.5), tarsus 31.3-35.0 (33.4) mm.

Resident. Found in the mountains of Chiriquí, recorded on the eastern face of the volcano above Boquete at 1200-3000 m, and in eastern Chiriquí at Chame, and above Tolé, including the upper valley of the Río Caldera (Bajo Mono).

This race was known early in Panamá, mainly from a series collected in 1901 by W. W. Brown, Jr., on the mountain slopes above Boquete (Bangs, Proc. New Engl. Zool. Club, vol. 3, 1902, p. 50). It may be restricted in distribution, as I did not find it during several seasons on the western and northern slopes of Volcán de Chiriquí, from above El Hato and Cerro Punta to near Sereno on the Costa Rican boundary, nor on the headwaters of the Río Chiriquí Viejo. From eastern Chiriquí, Salvin (Proc. Zool. Soc. London, 1867, p. 132) received an early specimen taken by Arcé in the Cordillera de Tolé, above Tolé.

Ridgely (*in litt.*) suggests that the restricted range may be based on

the fact that this species occurs only in humid areas, while most of Volcán de Chiriquí, especially the west side, is relatively dry. The bird is common in wetter areas to the east, such as the Fortuna Dam site, where Ridgely found up to 5 birds at ant swarms in February-March 1976.

Older statements of range for *hellmayri*, in addition to Chiriquí, have included Veraguas, based apparently on the report by Salvin (Proc. Zool. Soc. London, 1870, p. 180) of specimens collected by Arcé from Calovévora, and Cordillera del Chucú, in the mountains north of Santa Fé. The report requires confirmation if the skins, which may be in the British Museum, can be located.

Slud (Birds of Costa Rica, 1964, p. 301), describes the song of *hellmayri* as clear and flutelike in tone, with a definite pattern in its syllables. Ridgely described the songs of birds at Fortuna as "tooo teee, tee-too-too-tee, with some variation, beautiful clear whistles."

M. A. Carriker (Ann. Carnegie Mus. vol. 2, 1910, p. 748) found a nest in Costa Rica at Juan Viñas, May 20, 1907, with two fresh eggs. "The nest is not so pretty a structure as that of *mexicanus*, being constructed of leaves, moss, and weedstems, and lined with fine weed-fibres and grass. It was placed in a low bush in the heavy forest. The eggs are pale blue, thickly speckled and dotted and blotched over the entire surface with light chestnut-rufous. Measurements: 25×18 mm."

CATHARUS FUSCATER MIRABILIS Nelson

Catharus fuscater mirabilis Nelson, Smiths. Misc. Coll., vol. 60, no. 3, September 24 (September 27), 1912, p. 24. (Head of Río Limón, 1585 m elevation, Cerro Pirre, Darién.)

Characters.—Similar to *Catharus f. fuscater*, but gray of foreneck and upper breast duller; throat grayish white; white of lower breast and abdomen duller; dorsal surface slightly paler.

Measurements.—Males (6 specimens), wing 83.3-88.4 (86.6), tail 68.0-70.9 (69.5), culmen from base 17.5-18.7 (18.3), tarsus 33.2-37.5 (34.6) mm.

Females (4 specimens), wing 78.8-82.9 (80.7), tail 57.2-64.0 (60.9), culmen from base 17.6-19.5 (18.4), tarsus 32.7-34.7 (33.5) mm.

Resident. Found in the Subtropical Zone on Cerro Pirre, Darién, at 1500-1600 m; specimens in the Gorgas Memorial Laboratory were taken at Cerro Cana (August 1965) and Alturas de Nique (April 1972).

E. A. Goldman, who collected the series from which this race was

described, found it fairly common in undergrowth. He described the song as three short syllables given in sequence, with the middle one slightly higher in tone than the others. In late April they were in pairs and were breeding. A set of two eggs that he collected on April 30, 1912, are very pale greenish white, spotted lightly with dots of cinnamon-brown, which are grouped to form a faintly-indicated cap on the summit of the blunt end. They measure as follows: 24.7×17.7 , and 25.0×18.3 mm.

In both Darién populations the distinct yellow wash on the underparts of fresh birds disappears in a relatively short time (*vide* P. Galindo; also noted by Eisenmann).

CATHARUS FUSCATER FUSCATER (Lafresnaye)

Myioturdus fuscater Lafresnaye, Rev. Zool., vol. 8, September 1845, p. 341. (Bogotá, Colombia.)

Characters.—Upper foreneck and throat white; side of head and chin deep black.

An adult male, taken February 24, 1964, on Cerro Malí, Darién, had the iris pale brownish white; thickened border of eyelid yellow; space above nostril, and distal end of culmen dull black; rest of bill, tongue, and inside of mouth bright orange; gape orange-yellow; tarsus and toes orange-yellow; claws yellowish brown. A female, collected 2 days later, was similar to the male.

Measurements.—Males (10 from Cerro Tacarcuna and Cerro Malí, Darién), wing 85.4-90.7 (87.9), tail 69.4-76.0 (72.6), culmen from base 17.1-19.5 (18.4), tarsus 33.8-35.3 (34.4) mm.

Females (9 from Cerro Tacarcuna and Cerro Malí, Darién), wing 81.7-86.8 (83.3), tail 61.4-70.5 (66.8), culmen from base 17.6-19.6 (18.4, average of eight), tarsus 32.3-35.0 (33.6) mm.

Resident. Subtropical Zone on Cerro Tacarcuna and Cerro Malí, Darién, 600 to 1500 m; fairly common.

Found locally, low in open undergrowth on the slopes of the mountains, in part in cloud forest. In late February (1964), gonads were in resting stage. In life, with the birds perched quietly near at hand, the bright colors of eye, bill, and feet are prominent.

This race appears to range through the mountains to Ecuador and the eastern Andes of Colombia, and to the Sierra de Perijá in northwestern Venezuela. In Panamá, it extends across the higher slopes of Tacarcuna. Nothing is recorded of its nesting. Specimens in the American Museum of Natural History collected by Anthony on the eastern

base of Tacarcuna in Colombia are similar to those seen from Panamá.

Some form of *C. fuscater* occurs in the mountainous Cerro Azul-Cerro Jefe area of eastern Province of Panamá, not far east of the Canal Zone. E. S. Morton writes of its song there, heard on May 29, 1966, "a clear series of whistles like a solitaire in quality but slightly similar to a Wood Thrush in phrasing. A minor tone—each series of three whistles followed by two whistles, each whistle a single pure tone: *tu tee tu* (last note a half tone lower than first) followed by *tu tee*; then a longer pause (3 seconds), and it starts all over again. It was an exceedingly beautiful sound coming out of the mist on Cerro Azul." E. O. Willis, present at the time, considered the song pleasing, but rather simple, in fact, much simpler than that of *C. frantzii*. Ridgely, on Cerro Jefe on July 24, 1975, heard one singing with the same rhythm, but he syllabized it as *to-to-tee, tee-too*.

Willis believes that similarity in song suggests that *C. fuscater* may be a representative of the spotted *C. dryas*, which is absent from southern Middle America, but reappears in South America. Eisenmann feels the evanescent yellowish tones and vague grayish to olive mottling below also suggest the relationship.

CATHARUS FRANTZII WETMOREI Phillips: Ruddy-capped Nightingale-Thrush, Zorzal Cabecirrojizo

Catharus frantzii wetmorei Phillips, Auk, vol. 86, no. 4, October 30, 1969, p. 615. (Boquete, Chiriquí.)

Rather small; upper surface brown; throat and abdomen white, rest of undersurface gray.

Description.—Length 145-170 mm. Adult. Male, crown russet-brown; back, rump, and wing coverts somewhat duller; outer webs of wings grayer; side of head grayish olive, with area in front of eye indefinitely black; throat dull white, becoming gray streaked with white centrally on upper foreneck; lower foreneck and upper breast dull gray, changing to lighter gray on breast and sides, and to white on lower breast, abdomen and undertail coverts; undersurface of wings dull dark gray; tibia dull dark gray.

Female, somewhat paler russet-brown above.

A male, taken at 2300 m on the north slope of Volcán de Chiriquí, Chiriquí, February 24, 1965, had the iris dark brown; maxilla black; mandible yellowish orange, becoming brighter orange along the commissure, yellower elsewhere; inside of mouth, including the tongue,

orange; tarsus and toes grayish brown, becoming paler brownish white along the narrow thin knifelike posterior margin; claws of two lateral anterior toes dull brownish white; others grayish brown.

An adult, taken on the same date, was like the male except that the tarsus and toes were somewhat duller colored.

Measurements.—Males (10 from Chiriquí), wing 84.7-90.5 (87.3), tail 66.0-73.1 (70.2), culmen from base 17.6-19.5 (18.4), tarsus 33.3-36.7 (34.5) mm.

Females (10 from Volcán de Chiriquí and Cerro Punta, Chiriquí), wing 78.3-84.2 (81.2), tail 62.0-68.1 (64.0), culmen from base 17.6-18.8 (18.0), tarsus 32.1-34.4 (33.2) mm.

Resident on the high slopes of the volcano in western Chiriquí, mainly above 2000 m, but fairly common down to 1600 m at Cerro Punta, found also in southern Costa Rica; other races range from northern Costa Rica through Mexico. Phillips (Auk, 1969, pp. 605-623) reviews the characters separating this species from *C. occidentalis*.

These birds range over the mountain slopes in undergrowth and usually remain concealed. They move about quietly and are difficult to observe unless one appears in the bushes bordering a trail, on the ground at the edge of a pasture, or on the banks of a stream. In late February and early March, they occurred in pairs, and were not especially shy.

Occasionally one came beneath the window of our quarters, where it hopped quickly over the ground or rested quietly, with head erect. The call was a low *kree-ee-eet*, rather harsh in sound. They responded quickly to an imitation of it.

There has been no account to date of the nest and eggs of this bird in Panamá. Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 747) in an account of the closely allied race, *Catharus frantzii frantzii*, on Volcán Irazú in Costa Rica, found 2 nests, April 13 and 14, 1902, one of which he described as "made entirely of green moss, but lined with fine grass and rootlets. It is very large and bulky for the size of the bird, but the cavity of the nest is small . . . [the nest was] placed on sprays of bamboo hanging over the side of a deep ravine, and about seven feet from the ground. The eggs are pale blue, thickly speckled and blotched with cinnamon-rufous and lilac, thickest about the larger end, in one egg forming a cap of rufous and lilac. Measurements: 24.5 to 25.5 × 18 to 19 mm."

In the Bambito-Cerro Punta area of western Chiriquí, this species, although shy and hard to see, is common, usually on or near the ground,

in and bordering forest from about 1500 to 2250 m. The song is liquid and long-continued, far-ranging, but not nearly so loud as those of the local *solitaire*. One of the frequent phrases can be syllabized as *dleédle-edleéyee*. The song is reminiscent of that of the northern Hermit Thrush, the effect melancholy, the quality liquid, but rather throaty; the phrases are deliberate with pauses of 2 to 3 seconds between them, and the song so long continued that over a hundred phrases may be given before there is a rest of more than a very few seconds. Dr. C. Hartshorne, *in litt.* to Eisenmann, characterized the song very well as having phrase structure close to that of the northern Wood Thrush, but tone quality closer to that of the Hermit Thrush.

CATHARUS AURANTIROSTRIS (Hartlaub): Orange-billed Nightingale-Thrush, Zorzal Pico Anaranjado

Turdus aurantirostris Hartlaub, Rev. Mag. Zool., March 1850, p. 158. (Caracas, Venezuela.)

Rather small; crown gray; rest of dorsal surface rufescent brown, breast gray, rest of undersurface white.

Description.—Length 132-158 mm. Adult (sexes alike), crown gray; rest of dorsal surface, including wings and tail, rufescent brown; upper breast and sides gray; throat white, streaked with gray; lower breast, abdomen, and undertail coverts white.

Immature, back and, to a lesser degree, the crown dull dark brown with the feathers tipped irregularly with black; breast and sides dull, faintly buffy white, with the feathers tipped and edged with dull black; undertail coverts buffy brown; bill black.

Widely distributed as a species from northern Mexico through Central America and northern South America, in Colombia, Venezuela, and the island of Trinidad. Several forms are recognized, two of them found in Panamá. (For notes on this species see Zimmer, Auk, 1944, pp. 404-408.) The gray-crowned populations of southwestern Costa Rica, Panamá, and western Colombia were formerly regarded as a separate species, *C. griseiceps*.

Ridgely (1976, p. 278) describes the song as "poor and unmusical with varied phrases, some twangy, others squeaky; a short *tsip*, *wee-ee*, *tsirrip-tsip* is one of several."

This species tends to range lower in the highlands of Panamá than the other species of *Catharus* and is the most widely distributed, favoring clearings and second growth.

CATHARUS AURANTIIROSTRIS RUSSATUS Griscom

Catharus griseiceps russatus Griscom, Amer. Mus. Nov., no. 141, October 31, 1924, p. 6. (Boruca, Costa Rica.)

Characters.—Upper surface darker. Crown darker gray; back, wings, and tail duller, darker reddish brown; gray of undersurface darker.

In a male taken on Volcán de Chiriquí, February 2, 1954, the bill, including a ring around the nostril and the base of the culmen, was light brick red; line of culmen otherwise dark neutral gray; eyelids light brick red; iris dark brown; tarsus and toes dark honey yellow; claws buffy brown.

A female, on March 13, had the ring around the nostril, the sides of maxilla and mandible, and a ring around the eye bright orange; rest of maxilla dark neutral gray; iris dark brown; tarsus and toes yellowish orange, with a line down the front of the tarsus, the central portion of the toe scutes, and the toes fuscous. In another female, March 19, 1965, the iris was light brown; thickened eyelid orange; culmen and sides of mandible fuscous-brown; rest of bill, gape, and entire inside of mouth, including the tongue, reddish orange; tarsus and toes deep yellow, with one or two toes on each foot tinged with brown.

Measurements.—Males (9 from Chiriquí), wing 76.7-82.9 (79.4), tail 51.3-61.4 (57.4), culmen from base 15.5-18.4 (17.1), tarsus 29.4-31.7 (30.8) mm.

Females (7 from Chiriquí and Costa Rica) wing 72.3-78.3 (75.4), tail 54.3-58.1 (56.6), culmen from base 15.3-18.4 (17.3), tarsus 28.9-31.5 (30.3) mm.

Resident in the mountainous area of western Chiriquí from the Costa Rican boundary eastward, mainly from 1000 to 1650 m on the slopes of Volcán de Chiriquí.

Ridgely found this species in north-central Chiriquí on the upper Río Chiriquí (Fortuna Dam site) in a clearing at 1000 m on March 3, 1976, but, without specimens, it cannot be determined to what race the birds belong.

Eisenmann regards *aurantiistrois* as a poor, unmusical singer. The song is variable and often rapid. He has syllabized it at Bambito, on the western slope of the volcanic massif, as *ts-teyt*, *teweeet*, *tisteet*; *witsteeyt*, *steeweewa*, *tiststeet*; and *tsipeeareet*, *tseea*; elsewhere he has heard *tsip*, *wee-ee*, *tsirrip-tsip*. Usually only the second phrase can be called musical. Sometimes there are twanging *wang* or *snip* notes interposed. Songs heard about Boquete were generally of similar quality.

Found in low, dense thickets in high forest on Silla de Cerro Pando, they were always secretive and difficult to see. Occasionally, I heard them give low, mewing, sometimes trilling calls. One (prepared as a specimen) was captured lower down in a mist net set near the Río Chiriquí Viejo. Two birds in juvenile dress, fully grown, were taken by S. L. Olson and K. Blum at Bambito, at about 1600 m, July 3, 1966.

Blake (Condor, 1956, p. 388) described a nest in the Mönniche collection from Lérída, Chiriquí, as located 2.5 m above the ground in a small tree, a compact structure of moss, much like that of the Black-faced Solitaire, but with a few bits of dried leaves and plant stalks woven into its base and sides. The cup, neatly lined with black hairlike rootlets, had outside dimensions of $5\frac{1}{2} \times 4\frac{1}{2} \times 3$ inches, with the cup $2\frac{1}{2} \times 1\frac{3}{4}$ inches. The single egg preserved, pale greenish white, thickly and almost uniformly speckled with light reddish brown, measured 23.4×17.3 mm. The collector's field notes state that the second egg, similar in color, measured 23×18 mm.

CATHARUS AURANTIROSTRIS GRISEICEPS Salvin

Catharus griseiceps Salvin, Proc. Zool. Soc. London, May 1866, p. 68. (Veraguas.)

Characters.—Upper surface paler; crown grayer; back lighter brown; breast and sides lighter gray.

A female collected at El Copé, on the Pacific slope of the Province of Coclé had the iris dark brown; edges of eyelids and bill orange, with the culmen dark neutral gray; tarsus and toes light orange; claws light brown.

Measurements.—Males (10 from Chiriquí and Veraguas), wing 72.5-82.5 (78.3), tail 55.5-62.0 (55.8, average of 9), culmen from base 15.1-17.8 (16.5), tarsus 28.5-31.3 (30.2) mm.

Females (9 from Chiriquí, Veraguas, and Coclé), wing 73.5-82.5, tail 54.6-62.5 (59.5), culmen from base 13.1-18.6 (16.1), tarsus 29.5-31.7 (30.6) mm.

Resident. Found locally in Chiriquí (Chame, Barriles, San Félix), Veraguas (Soná, Sante Fé) and Coclé (El Copé).

Near San Félix I found them in a small tract of forest near the Río San Félix, and near the coast in the area called Macano, also in forest. At El Copé, on February 25, 1962, in the hills on the Pacific side, the one taken was in heavy undergrowth in a small tract of forest.

Eisenmann (*in litt.*) saw the species singing above Santa Fé, Veraguas, at approximately 750 m, near the Agricultural School, on March 28, 1974.

CATHARUS GRACILIROSTRIS Salvin: Black-billed Nightingale-Thrush,
Zorzal Piquinegro

Catharus gracilirostris Salvin, 1865, Proc. Zool. Soc. London, (1864), p. 580.
(Volcán de Cartago, Costa Rica.)

Rather small; bill black.

Description.—Length 140-155 mm. Adult (sexes alike), head and neck slate-gray, becoming paler, whiter, on the throat; crown dark brownish gray, lighter, grayer on the forecrown; back of head, hind-neck, back, and rump somewhat reddish brown; wings and tail duller but with brighter edgings; undersurface plain gray changing to white on the abdomen; a broad band of pale dull brown across the upper breast; throat lined narrowly and indistinctly with white; underwing coverts dark gray.

Immature, upper surface as adult; throat gray; breast, sides, and flanks reddish brown; increasingly buffy on center of belly; abdomen white.

Found in Chiriquí on the high slopes of the volcano above Boquete, and on the west face; recorded also in eastern Chiriquí on "Cerro Flores" (Cerro Santiago), and in the western end of the Serranía de Tabasará (near boundary between Chiriquí and Bocas del Toro). The nominate race is found in the mountains of Costa Rica.

Little is available as yet on the habits of this interesting bird. In the original description of the race *accantor*, Bangs included the observation by Brown that, like its relatives in the genus, it "is a fine songster." Brown's series, 8 adults of both sexes, was collected on the higher slopes of the volcano from about 1500 to 3000 m elevation. Griscom found it in eastern Chiriquí near the western end of the Serranía de Tabasará at about 1800 m, where he collected 2 (male and female), in March 1924. With limited comparative material he described these as a separate race *bensoni*, which later he found not valid. However, a specimen collected by R. H. Pine on the Chiriquí-Bocas del Toro border 23 km north-northeast of San Félix on June 16, 1980, matches Griscom's original description of *bensoni* and is easily distinguishable from the series of specimens from western Chiriquí in the Smithsonian collections.

Eisenmann writes that on the Volcán de Chiriquí massif in the area above Cerro Punta it is the highest ranging nightingale-thrush, usually the commonest above 2100 m on the trail to Boquete. It seems less shy than its allies, often feeding on the ground in cleared patches. On a recently plowed field at about 2250 m, Eisenmann saw one member of a feeding pair chase away one of a pair of the larger *C. frantzii*, but the

bird returned. Generally, this species is seen on or a few feet above the ground. The song suggests in pattern that of *C. frantzii*, but in Eisenmann's opinion, much inferior, being weaker, with a squeaky quality. The nest and eggs are little known. Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 745) described the egg of *C. g. gracilirostris*, the closely similar subspecies of Costa Rica found on Volcán Irazú, as "blue, more or less thickly speckled and dotted with reddish brown or deep chestnut, usually with a heavier wreath or cap of this color at the larger end, though rarely speckled evenly over the entire surface. Measurements: 20.5 to 23×15 to 16 mm."

CATHARUS GRACILIROSTRIS ACCENTOR Bangs

Catharus gracilirostris accentor Bangs, Proc. New England Zool. Club, vol. 3, January 30, 1902, p. 50. (Volcán de Chiriquí, 10,200 ft. (3140 m), Chiriquí, Panamá.)

Characters.—Forehead gray, rest of upper surface light reddish brown; band across breast paler than in *bensoni*.

An adult male, caught at Volcán de Chiriquí, March 4, 1965, had the iris dark reddish brown; thickened edge of eyelid fuscous-black; bill black, with the tip of maxilla and of mandible on the inner side dark slate; rest of inside of mouth, including tongue and gape, orange; tarsus dull brown, paler on back on the plantar edge; claws fuscous-black.

Measurements.—Males (8 from Chiriquí), wing 71.2-78.4 (75.4), tail 56.7-66.7 (61.9), culmen from base 15.1-17.0 (15.8, average of 7), tarsus 30.9-33.4 (32.0) mm.

Females (6 from Chiriquí), wing 70.8-74.8 (73.1), tail 54.6-62.2 (59.3), culmen from base 14.3-18.3 (15.8), tarsus 30.0-31.1 (30.5) mm.

Resident. Known from the highlands of western Chiriquí. In the Smithsonian collections there are 2 males taken March 4 and 9, 1965, to 2650 and 2700 m on the west face of Volcán de Chiriquí. A male and female were collected also near Cerro Punta, March 12, 1962, by C. L. Hayward. Blake (Fieldiana Zool., vol. 36, no. 5, 1958, p. 552) listed 4 males and 4 females in the Mönniche collection from western Chiriquí from Casita Alta, Peña Blanca, and Volcán de Chiriquí from 2040 to 3130 m, without other comment than the localities with date and elevation. (For this series he used the name *Catharus gracilirostris gracilirostris*.)

CATHARUS GRACILIROSTRIS BENSONI Griscom

Catharus gracilirostris bensoni Griscom, Amer. Mus. Nov., no. 141, October 31, 1924, p. 7. (Cerro Flores, 6000 ft, eastern Chiriquí, Panamá.)

Characters.—Forehead blackish brown; rest of upper surface dark reddish brown; band across breast dark reddish brown.

Measurements.—Male (1 from Cerro Flores, Chiriquí, the type specimen), wing 68.9, tail 62.8, culmen from base 15.3, tarsus 30.5 mm.

Females (2 from eastern Chiriquí), wing 68.0-69.0 (68.5), tail 59.7-62.7 (61.2), culmen from base 14.2-15.0 (14.6), tarsus 29.7-31.8 (30.8) mm.

Resident. Known from the highlands of eastern Chiriquí, where in 1927 Benson collected a male and female for Griscom at 2000 m in Cerro Flores and where R. H. Pine collected two at 1800 m on Cerro Bollo, 23 km north-northeast of San Félix.

[This race was described by Griscom from a small series taken on Cerro Flores in easternmost Chiriquí. Most authors have not recognized it and it was considered to be a synonym of *accentor* in the original draft of this manuscript. Subsequently, however, R. H. Pine collected 2 specimens on the Chiriquí-Bocas del Toro border 23 km north-northeast of San Félix, Chiriquí, on June 16, 1980, that necessitate a reappraisal of this form. These specimens are from very near the type locality of *bensoni* and were preserved in alcohol, from which one was prepared as a skin. This specimen is much darker and more rufous dorsally than *accentor* and has a much darker, fuscous crown. The colors do not appear to have been affected by alcohol, which if anything usually causes fading and lightening in color. The fresh specimen matches Griscom's original description of *bensoni* exactly, whereas the type series of *bensoni*, although still distinguishable from *accentor*, shows somewhat less pronounced differences, suggesting that they may have been affected by aging. In any case, from the evidence available now it would appear that the race *bensoni* is quite distinct and should be maintained. S.L.O.]

Family PTILOGONATIDAE: Solitaires and Silky-flycatchers,
Solitarios y Dorales Sedosos

These attractive birds form an assemblage that may or may not be related. The solitaires usually are placed in the Turdidae, but Sibley (Auk, 1973, p. 394-410), after a review of past analyses and an exami-

nation of egg-white proteins, concludes that they are more closely related to the silky-flycatchers and should be placed in that family, in a position next to the Turdidae. The silky-flycatchers, sometimes given subfamilial rank in the Bombycillidae, were found by Sibley to be less similar to the waxwings than to the solitaires. Ames (Bonn. Zool. Beitr., vol. 26, 1975, pp. 125-127), in an examination of syringeal morphology in the Muscicapidae, concludes that the generalized oscine syrinx in *Myadestes* places it outside the Turdidae, but not necessarily in the Ptilonotidae.

The 2 solitaires and 2 silky-flycatchers found in Panamá are all highland birds living in forest and forest edges where they feed on fruit and insects. All but the Varied Solitaire are restricted to Costa Rica and western Panamá; this last has an equally narrow distribution in the highlands of eastern Panamá and extreme northwestern Colombia.

The solitaires are shy and their drab plumage makes them difficult to see in the thick foliage, but their song makes up for their inconspicuousness. The Black-faced Solitaire's loud, liquid, seemingly studied whistles are among the most beautiful of bird songs. The song of the Varied Solitaire, from what little is known, is harsher. Although essentially arboreal except when they follow foraging bands of ants, solitaires build their cup-shaped nest on or close to the ground.

The silky-flycatchers, in contrast, are strikingly colored in patterns of yellow and gray or black. The tapered, elongated tail of *Ptilonotus caudatus*, black with white spots, is flashed dramatically in aerial acrobatics when the birds are pursuing insects. Also, unlike the solitaires, their voices are undistinguished and their nests are placed in bushes and trees.

KEY TO SPECIES OF PTILONOTIDAE

1. Yellow present on undersurface..... 2
 No yellow on undersurface..... 3
2. Tail long, graduated, with white spots.
 Long-tailed Silky-flycatcher, *Ptilonotus caudatus*. p. 171
 Tail not graduated, all black.
 Black-and-yellow Phainoptila, *Phainoptila melanoxantha*. p. 175
3. Back dark blue-gray.
 Black-faced Solitaire, *Myadestes melanops*. p. 167
 Back bright reddish brown.
 Varied Solitaire, *Myadestes coloratus*. p. 169

MYADESTES MELANOPS Salvin: Black-faced Solitaire,
Solitario Carinegro

FIGURE 13

Myiades tes melanops Salvin, Proc. Zool. Soc. London, for 1864, February 1865, p. 580, pl. 35. (Tucurrique, Costa Rica.)

Medium size; body color rather dark gray, with face, wings, and tail black.

Description.—Length 157-186 mm. Adult (sexes alike), body slate color throughout, slightly paler on lower surface; side of head, including space around eye, cheeks, forehead, and chin, deep black; wings black except for the base of the tertials, outer webs of the secondaries, and inner webs of inner primaries, which are edged with gray; tail black, except the outer web and distal end of the outer rectrix, which are brownish gray; some of the longer rectrices with a small terminal spot of white.

Juvenile, in first plumage, dark sooty black, the feathers with a terminal spot of light tawny brown; undersurface with the light markings more extensive.

Adult male, iris dark brown, varying individually in depth of color; external edge of eyelids narrowly dark brown; bill, tongue, and inside of mouth orange; tarsus and toes honey yellow; tips of claws dull neutral gray.

Measurements.—Males (10 from Chiriquí), wing 84.5-91.1 (87.9), tail 76.1-80.5 (77.5), culmen from base 14.2-16.5 (15.1), tarsus 20.5-23.2 (21.4) mm.

Females (10 from Chiriquí and Bocas del Toro), wing 85.8-91.2 (89.0), tail 74.1-80.7 (77.3), culmen from base 13.1-16.1 (15.0), tarsus 19.5-23.3 (21.1) mm.

Resident. Found locally in the higher mountain forests in Chiriquí and Bocas del Toro (Río Changuena, 1975 m, Almirante); on the upper slopes of the Chiriquí volcano from 1200 to 2900 m (fairly common above Boquete and the Bambito-Cerro Punta area); in the mountains on the upper Río Changuena, northwestern Bocas del Toro, in heavy forest, down to 750 m; recorded eastward in the mountains of eastern Veraguas (on the Pacific slope at Santa Fé, 830 m, Chitra, 1170-1500 m; on the upper Caribbean slope near Calovévora and Cordillera del Chucú).

There are a few specimens labeled as from lowland localities near sea level. Three collected by Batty from the Pacific Coast islands Brava (January 28, 1902) and Cébaco (February 6, 1902) in the American

Museum of Natural History are probably mislabeled. One taken in a mist net at Almirante, Bocas del Toro (October 28, 1963; Gorgas Memorial Laboratory) could have been either a stray or a cage-bird escape.

The solitario is a forest inhabitant, living mainly on tree-grown slopes or in thickets in ravines and gullies. Though shy and retiring, they may be seen moving under cover in low vegetation, along shaded cut banks near roads and streams, or, casually, flying across open trails. Their songs may be heard regularly, but country-dwellers assure the traveler that it is impossible to see the bird at freedom! In my observations, they are not gregarious, as I encountered them singly. They were captured rather regularly in mist nets.

FIGURE 13.—Black-faced Solitaire, Solitario Carinegro, *Myadestes melanops*.

In Costa Rica, where they are better known, they are prized as cage birds for their songs. Skutch, in his detailed study of the solitaire in that country (Publ. Nuttall Orn. Club, no. 7, 1967, p. 117), says that it “sings with a calm deliberation that seems the product of a studied art.”

C. B. Worth (Bird-Lore, vol. 41, 1939, p. 283) in late July and early August noted that it was not then in song, as he heard it utter only a "loud rasping *shoo-wee-ee*." Eisenmann writes that their songs in Chiriquí are loud, clear, and deliberate, with a liquid quality suggestive of the better *Catharus* singers, but louder, and often with a sharpness that reduces the pleasing quality. The phrases are usually separated by pauses of about three-fourths of a second. Songs transliterated as *leedldeedleé*, *tleéah*, *lee-dah*, *lee-dee* may alternate with songs consisting of three, two, or one phrase, usually with components like *tleedlee*, *leelee*, *leydee*, *lee-dah*, *leedo*, *leedoo*, *leeoo-lee* or the like. They sing most abundantly in the late afternoon, after 4 p.m.

Blake (Condor, 1956, pp. 387-388) described a nest in the Mönniche collection, found March 30, 1932, near the Finca Lérída above Boquete "located in the crevice of a rock about three feet above a road. It is made almost wholly of soft moss and has a smooth lining of black hair-like rootlets. Dimensions: $6 \times 5 \times 2\frac{1}{2}$ inches, the cup $3\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{2}$ inches. The two eggs, partly incubated, measured 24×16.7 and 22.8×16.9 mm. They are pinkish white, minutely speckled with dull chestnut except toward the larger end where they are increasingly spotted and blotched with the same."

The solitaire is reported to feed on berries, including those of palms, other trees and shrubs, and also on insects. In Costa Rica, Slud and Skutch have found it ranging near foraging bands of ants, presumably attracted by the insects that are disturbed. Two males collected at Cerro Punta by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 30.0 and 32.6 g.

MYADESTES COLORATUS Nelson: Varied Solitaire, Solitario Variado

Myadestes coloratus Nelson, Smiths. Misc. Coll., vol. 60, no. 3, September 27, 1912, p. 23. (Cerro Pirre, 1524 m elevation, Darién.)

Similar to *Myadestes melanops*, but with back and wing coverts rufous-brown.

Description.—Length 162-181 mm. Adult (sexes alike), crown, upper hindneck, and entire lower surface gray; back, wing coverts, and tertials rusty brown; forehead, throat, space around eye, and anterior area of side of head black; tail with three outer rectrices tipped with white.

Juvenile, compared to that of *melanops*, distinctly brown above, with pale markings more extensive, crown more heavily spotted; abdomen marked indistinctly with white.

Two adult males, collected on Cerro Malí, Darién, February 21, 1964, had the iris dark brown; edge of eyelid orange-brown; bill, inside of mouth, and tongue orange; tarsus and toes somewhat paler orange; claws orange-yellow.

Measurements.—Males (10 from Cerro Malí and Cerro Pirre), wing 86.5-93.2 (88.8), tail 74.2-81.2 (77.5), culmen from base 13.6-15.4 (14.6), tarsus 20.5-23.1 (21.9) mm.

Females (10 from the same areas), wing 84.4-88.7 (86.8), tail 71.2-78.8 (75.2), culmen from base 13.2-15.3 (14.2), tarsus 20.8-22.8 (21.8) mm.

Resident. Found locally on Cerro Pirre (1500 to 1600 m), Cerro Malí (1400 to 1460 m), Cerro Quía (900 m), Aturas de Nique, Darién.

In the latter part of February 1964, these solitaires were fairly common in forest on the slopes of Cerro Tacarcuna, ranging mainly low, concealed in the leaves in the tops of low undergrowth. Generally they remained hidden in this fairly dense cover, so that most of those taken for specimens were captured in mist nets. Rarely, one was seen in the forest. Also rarely, we heard a single note of the song, harsher in sound than that of *melanops* of the mountains in Chiriquí.

No nests have been recorded. Young recently from the nest and fully grown birds in juvenile dress were noted in the latter part of May and in June. A female (AMNH) from "Mt. Tacarcuna, 4600 ft." is labeled "ovary large" on April 16. A full grown molting juvenile (Gorgas Mem. Lab) was taken at Cerro Cana on August 9.

The species of the genus *Myadestes* in Panamá, obviously of related ancestry, form a highly attractive group. Hellmayr (Cat. Birds Amer., pt. 7, 1934, pp. 440-443) treated them with those of the Andes as geographic races under the name *ralloides* (described by d'Orbigny from Bolivia). All are residents of the intermediate and higher elevations in mountain areas, where it may be presumed that their obvious differences may have been established during Pleistocene time. In the present Recent period those of Panamá divide in two isolated groups, separated in range by considerable spaces of lowland, and here regarded as species.

The western form *melanops* of the mountains of Costa Rica and western Panamá, with wholly gray body color, black facial mask and yellow bill, is isolated by the broad lowlands of the central isthmus from the eastern *coloratus* group of the mountains of eastern Darién. These agree with *melanops* in black mask and yellow bill, but differ completely in wholly brown back. Though this second group is like the forms of the Andes in brown back, it is separated geographically from them by

the broad break of the lowlands across northern Chocó in northwestern Colombia. The Andean birds, which lack the facial mask and have smaller, dull-colored bills, form the distinct species *ralloides*, with three or more closely similar subspecies ranging south to Peru and Bolivia.

PTILOGONYS CAUDATUS Cabanis: Long-tailed Silky-flycatcher,
Capulinero Colilargo

FIGURE 14

Ptilogonys caudatus Cabanis, 1861, Journ. f. Orn., 8 (1860), p. 402. (Irazú, Costa Rica.)

Medium size; sleek, crested, tail more than half total length of bird; blackish wings and tail; body gray and yellowish green (male) or all yellowish olive (female).

Description.—Length 200-244 mm. Male, crown pale gray; bushy crest olive-yellow; rest of upper surface slate gray, slightly lighter on rump; wing coverts slate gray; primaries and secondaries black, with outer webs edged slate gray; tail black, tapered, with central pair of feathers elongated, round white spots on outer four pairs; eye-ring (sometimes incomplete) lemon yellow; throat pale olive-yellow, becoming more intense on breast; band across chest slate gray; flanks yellowish green; abdomen pale yellow; undertail coverts lemon yellow.

Female, like male but back and wing coverts olive-green, tinged gray on rump; undersurface olive-green becoming grayish olive on abdomen.

Immature, body gray-green; undertail coverts whitish; wings and tail as adult.

One (sex not recorded) taken on Volcán de Chiriquí, Chiriquí, February 24, 1965, had the iris reddish brown, bill black, tarsus, toes, claws black.

Measurements.—Males (10 from Chiriquí), wing 91.0-101.0 (95.9), tail 120.0-143.3 (130.2), culmen from base 12.3-15.4 (14.1), tarsus 18.6-22.4 (20.3) mm.

Females (10 from Chiriquí), wing 84.8-96.0 (90.4), tail 106.7-119.3 (115.1), culmen from base 12.5-14.9 (13.6), tarsus 17.5-21.7 (19.7) mm.

Resident. Common in the Temperate Zone in highlands of western Chiriquí above 1500 m (Ridgely, 1976, p. 281) in forest edges and in pastures and clearings with tall trees. Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 552), who says the bird "has seldom been reported below an altitude of 8000 feet [= 2400 m]," lists specimens collected by Mönniche at Alto de Chiquero, Casita Alta, Copete (summit), Lérída, Peña

Blanca, and Volcán, at elevations between 1800-3090 m. A male collected by Hartman at Cerro Copete (2100 m), near Boquete is now in the Smithsonian collections, and another male from El Salto (1740 m), also near Boquete is now in the California Academy of Sciences collection. Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 58) wrote that in May and June 1901, W. W. Brown "found this species only at high altitudes [3000-3300 m] on Volcán de Chiriquí. The birds were in small flocks, composed of adults and full-grown young still in nestling plumage. Sometimes he saw one of these flocks leave the high peak of the mountain and fly across the valleys in the direction of the lofty Costa Rican mountains, which could be seen in the distance."

Ridgely (*in litt.*) found small numbers at the Fortuna Dam site in central Chiriquí, including several down to 1200 m, the lowest elevation from which it has been recorded; Fortuna is also the easternmost location from which it is known.

Besides westernmost Panamá, this species is found only in Costa Rica, at similar elevations.

I have encountered this bird several times on Volcán de Chiriquí and at Cerro Punta. On February 25, 1955, I took a male in near breeding condition at 2010 m in Bajo Grande, Cerro Punta. It was feeding on the drupes of a small tree in partly open forest. The tongue was distinctly bifid at the tip like that of a titmouse. I saw these birds also on Cerro Picacho above 1800 m, but found them so wild that they flew before I could shoot. Their flight is swift and direct, but somewhat undulating.

Skutch (Auk, 1965, pp. 375-426) is the only one to have studied the breeding biology of this species. From February to July 1963 he observed several pairs in the trees around a large dairy farm on the western end of the massif of Volcán Barba, in the Cordillera Central of Costa Rica. Their diet was composed of large quantities of insects caught in the air in long sallies and of berries, including those of *Fuchsia arborescens*, *Eurya theoides*, *Citharexylum moccinnii*, and a mistletoe, all picked while the bird was perched.

Long-tailed Silky-flycatchers are highly vocal but practically songless. The call most frequently heard is a dry *che chip*, *che chip*, given both while perched and in flight. Another call given when taking off and in flight is a long-drawn, dry *che-e-e-e-e*. The song, which Skutch heard rarely, is composed of "low, lisping notes that were scarcely audible at a distance of 25 yards"; it was delivered by the male from a high, exposed perch while his mate incubated.

These birds are loosely social, often traveling in flocks of more than

a dozen that may casually split apart or regroup in flight or at a feeding tree. Similarly, nests are often situated within 25 to 100 m of one another in "colonies" of up to five pairs, or may be entirely by themselves.

FIGURE 14.—Long-tailed Silky-flycatcher, Capulinero Colilargo, *Ptilogonys caudatus*, male.

The birds defend an area around the nest of no more than 30 m, sometimes less, and often disregard intruders entirely.

The nesting season, in Costa Rica at least, begins in April, with the

peak of nest building and egg laying in late April and early May. Nests are situated from 2 to 20 m off the ground in trees or, rarely, large shaded shrubs; the average height of the 19 nests Skutch found was about 7 m. The bulky, cup-shaped nest, made almost exclusively of beard-lichen (*Usnea*), with a small amount of cobweb or caterpillar silk to bind the lichens together, is placed in the fork of an erect branch or in a stout horizontal limb, where upright twigs provide support. Males seem to choose the site and begin construction, although they are soon joined by their mates, and together are intensely active in bringing material to the nest—Skutch watched one pair that made 42 visits in an hour. The finished nest has dimensions of 114-127 mm in overall diameter, 50-64 mm height, 57-64 mm diameter of the cavity, and 41 mm cavity depth.

Egg laying begins 2 to 4 days after construction is finished; the two eggs that form a complete clutch are laid a day apart. Skutch describes them as "long-ovate and rather pointed, and the shells are without much gloss. The ground color is pale gray, of a shade that almost matches the bed of lichens on which the eggs lie. On this gray background, blotches and spots of shades of dark brown and pale lilac are variously distributed. Often there is a distinct belt of heavy brown pigment around the thickest part of the egg." The measurements of 10 eggs averaged 25.8×17.2 mm.

Incubation is done exclusively by the female and lasts 16 or 17 days, during which time she is frequently fed by her mate, although she also leaves the nest often to feed herself. At hatching the nestlings have a distinctive plumage of short, compact tufts of whitish down arranged in narrow rows surrounded by large bald areas. By the age of 9 days their eyes are open and contour feathers are beginning to expand on most parts of the body; in addition, secondary down now covers much of the upper surface that was bare at hatching. The young are fed several times an hour by each parent. In their first few days of life they receive an almost exclusively insect diet; later more fruit is brought to them, although they continue to be fed insects as long as they are in the nest. At 16 or 17 days of age they begin climbing about beyond the edge of the nest, but not until 23-25 days do they fly more than a few feet and leave the nest altogether, after which they are still attended for several days. By early June they can catch insects by themselves.

Skutch found that of the 15 nests for which he knew the outcome, 4 successfully produced fledglings. From the others the eggs or nestlings vanished, possibly taken by Blue-throated Toucanets (*Aulacorhynchus caeruleogularis*) or Brown Jays (*Psilorhynchus morio*).

PHAINOPTILA MELANOXANTHA Salvin: Black-and-yellow Phainoptila,
Capulínero Orinegro

Phainoptila melanoxantha Salvin, 1877, Proc. Zool. Soc. London, p. 367. (Costa Rica = San Francisco, *fide* Hellmayr, 1935.)

Phainoptila melanoxantha minor Griscom, 1924, Amer. Mus. Novit., no. 141, p. 8. (Cerro Flores, eastern Chiriquí, Panamá.)

Medium size; male mostly shining black with bright yellow on flanks; female mostly olive-green with bright yellow on flanks.

Description.—Length 180-217 mm. Male, entire upper surface except rump shining black; rump lemon yellow; face, throat, and upper breast shining black; band across lower breast yellowish green; sides and undertail coverts lemon yellow; rest of undersurface gray; underwing coverts yellowish green.

Female, crown shining black; hindneck bluish gray; back and wing coverts yellowish green, with flecks of bluish gray and slightly brighter green on rump; primaries, secondaries, and tail feathers brown, edged yellowish green; throat gray; band across upper breast olive-yellow; sides and undertail coverts lemon yellow; rest of undersurface gray; underwing coverts pale yellow.

Immature male, like female, with a few black feathers on throat.

Measurements.—Males (10 from Chiriquí, Panamá and Irazú, Costa Rica), wing 95.4-103.8 (99.5), tail 82.2-90.0 (85.5), culmen from base 16.0-19.2 (18.0), tarsus 25.6-28.9 (27.2) mm.

Females (10 from Chiriquí, Panamá, and Irazú, Costa Rica), wing 92.3-99.0 (96.4), tail 77.4-85.4 (81.0), culmen from base 15.2-17.6 (16.8), tarsus 25.4-28.8 (26.2) mm.

Resident. Uncommon in Temperate Zone highlands of western Chiriquí and Bocas del Toro (one record, Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 553) and from eastern Chiriquí and Veraguas. The Mönniche specimens described by Blake came from elevations of 1560-3300 m. Ridgway (U.S. Nat. Mus. Bull., vol. 50, part 3, 1904, p. 124) gives the range of elevation as 1200 to 3300 m. Ridgely (*in litt.*) collected a female above the Fortuna Dam site, central Chiriquí, at 1150 m, on February 27, 1976; the specimen is in the collection of the Gorgas Memorial Laboratory.

Apparently commoner in Costa Rica, this bird was first listed for Panamá by Salvadori and Festa (Bol. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 14, no. 339, 1899, p. 3) on the basis of a specimen collected by Arcé labeled only Chiriquí. Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 58) discusses specimens collected by W. W. Brown, Jr., during January-May 1901 from Volcán de Chiriquí and

Boquete. Blake, cited above, gives several western Chiriquí localities as well as the single record from Bocas del Toro on the Caribbean slope. In 1924 Griscom reported 4 specimens in extreme eastern Chiriquí, at Cerro Flores (1800 m), nearer the mountains of Veraguas than to the Volcán de Chiriquí. He described these as a new race, *minor* (Am. Mus. Nov., no. 141, 1924, p. 8), "similar to the typical form from Costa Rica, but averaging smaller; male not differing in color; female with hind-neck more extensively gray of a slightly darker shade; rump, upper tail-coverts, and edgings to tail feathers slightly greener, less yellow." In 1926 Benson collected at Chitra from 1290 to 1500 m on the Pacific slope in Veraguas, the farthest east from which this bird is known; Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 363) assigned these to *minor*. The race *minor* has generally not been admitted (e.g., Greenway, in Peters, Check-list Birds World, vol. 9, 1960, p. 373), and its invalidity was confirmed by Pasquier and Olson on examination of specimens from both of the series attributed to *minor*.

I have never encountered this bird myself, and most of what is known of its biology comes from Skutch's work in Costa Rica (Auk, 1965, p. 420-422), where in 1963 he observed them near the western end of the massif of the extinct Volcán Barba, in the Cordillera Central. Here he found them from 2040 to 2250 m, usually within the edge of the forest, where the canopy was broken by the removal of a few trees, and in adjoining shady pasture. They moved about mainly in the middle levels of the tall oaks, flying out from exposed branches to catch insects and then continuing on to another branch, unlike many flycatching birds which return to their initial perch. Fruit is also an important part of their diet; Skutch found them eating the berries of *Drimys winteri*, *Bocconia frutescens*, *Monnina*, and *Ardisia*. They pick the fruit either while perched on the plant or while fluttering in front of it.

Black-and-yellow Silky-flycatchers are far less social than Long-tailed Silky-flycatchers, which in fact they hardly resemble. They are usually found singly or in pairs, and are less active, never catching flying insects with the acrobatic manoeuvres of *Ptilogonys*. The only calls that Skutch heard were "a weak *chip* rather like a wood warbler's note" given by a male and "low, soft notes" from a foraging pair.

The nest and eggs of *Phainoptila* were unknown until 1972, when they were discovered in Costa Rica by Lloyd Kiff. With F. G. Stiles and B. K. MacKay, he found a nest on May 2 at 2400 m on Volcán Boas, Alajuela Province; it was 1.5 m from the ground in the central crotch of a 2-m sapling, in a thicket so dense as to make the nest in-

visible from above or the sides. Kiff (*in litt.*) describes it as "a large compact open cup composed mostly of green moss interspersed with a few slender stems and fern fronds. It was lined with fine rootlets and plant stems. The outer diameter of the nest was 22×16 cm, and it was about 12 cm in depth. The inner cup was 3 cm in diameter and 2 cm deep." Two other nests of *Phainoptila* from Costa Rica were discovered in similar situations at the same time of year.

The 2 eggs from Kiff's nest were "subelliptical in shape and slightly glossy. They had a grayish-white ground color with a dense sprinkling of fine light gray, purplish brown and dark brown spots over their entire surfaces. Each egg contained a slightly developed embryo." They measured 27.84×20.30 and 27.19×19.20 mm, with empty dry shell weights of 0.274 and 0.260 g, respectively. Kiff concludes that, "aside from their somewhat blunter shape," the eggs of *Phainoptila melanoxantha* "are simply larger versions of those of *Phainopepla nitens* or *Ptilogonys cinereus*."

Family SYLVIIDAE: Gnatwrens and Gnatcatchers, Cazajejenes

The gnatwrens and gnatcatchers are both usually placed in the family Sylviidae, the Old World warblers. Some put the gnatcatchers in a subfamily (Poliophtilinae) of a broadened Muscicapidae, which also includes the subfamily Sylviinae, or in an entirely separate family, the Poliophtilidae, or reduce them to a tribe (Poliophtilini) of the Sylviinae. The gnatwrens have in the past been considered to be wrens or even antbirds; Rand and Traylor (Auk, 1953, p. 334-337) and Parkes (Proc. Biol. Soc. Wash., vol. 93, 1980, pp. 61-67) review the history of their classification. Although gnatwrens superficially resemble antbirds, they have an oscine syrinx. Rand and Traylor concluded that *Ramphocaenus* and *Microbates* are most closely allied to certain Old World warblers, especially the African genus *Macrosphenus*, than to *Poliophtila*. Beecher (Auk, 1953, pp. 279, 328) considers resemblances to Old World genera to be convergent.

Of the 9 species of gnatcatchers, 2 are found in Panamá. They share the typical gnatcatcher characters of a slim build, gray and white plumage, and a long tail continually wagged or cocked as the bird flits through the foliage searching for insects. The gnatwrens are also insect eaters and, like the gnatcatchers, build cup-shaped nests that often are decorated with mosses, leaves, or lichens.

KEY TO SPECIES OF SYLVIIDAE

1. Upper surface brown, bill very long..... 2
 Upper surface gray, bill relatively short..... 3
2. Undersurface below throat buffy, tail long.
 Long-billed Gnatwren, *Ramphocaenus melanurus rufiventris*. p. 183
 Undersurface below throat gray, tail short.
 Tawny-faced Gnatwren, *Microbates cinereiventris*. p. 186
3. General coloration light bluish gray.
 Tropical Gnatcatcher, *Polioptila plumbea*. p. 178
 General coloration dark slaty gray.
 Slate-throated Gnatcatcher, *Polioptila schistaceigula*. p. 182

**POLIOPTILA PLUMBEA (Gmelin): Tropical Gnatcatcher,
 Cazajén Tropical**

FIGURE 15

Todus plumbeus Gmelin, 1788, Syst. Nat., 1, pt. 1, p. 444. (Surinam.)

Small, slender, with long tail; upper surface gray and black; under-surface light gray and white.

Description.—Length 92-103 mm. Adult male, crown, hindneck, and upper parts of sides of neck black, with a tiny white feather or two behind the nostril; back, scapulars, rump, and wing coverts bluish gray; primaries and secondaries dusky neutral gray, with outer webs edged with slate gray, except for the two outer primaries; tertials edged broadly with white on outer webs, the edging becoming pale neutral gray toward the tip; tail black centrally, the two outermost rectrices white, the next two black at base, the fourth black, tipped white; lores and a broad superciliary white; eye-ring white; a conspicuous black line extending from the eye to the back of the nape; rest of side of head, throat, ventral area of sides of neck, abdomen, and undertail coverts white; rest of undersurface pale bluish gray; underwing coverts, and inner webs of primaries and secondaries, toward the base, white.

Adult female, like male, but upper surface entirely dark bluish gray, without black on the head.

Juvenile male, like adult female but crown slate-gray and white superciliary not fully developed behind eye.

The Tropical Gnatcatcher is a widespread species, occurring from southeastern Mexico to central Peru and central Brazil, with habits similar to the Blue-gray Gnatcatcher (*P. caerulea*) of temperate North America. In Panamá it is found up to about 1200 m almost everywhere that there are trees, from forest canopy and borders to scrubby areas to brushy savannas (Aldrich and Bole, Scient. Pub. Cleveland

Mus. Nat. Hist., vol. 7, 1937, p. 23). Ridgely notes that it occurs in the elfin cloud forest on the wind-swept summit of Cerro Jefe (900-1000 m), eastern Province of Panamá, where few other lowland birds occur.

This species is an active searcher of foliage and twigs, moving rapidly from branch to branch, constantly wagging or raising its tail to different angles. Usually encountered singly or in pairs, it often joins mixed foraging flocks. The diet seems to be purely animal matter: E. A. Goldman collected 2 at Cana, Darién, on May 26, 1912; the stomach of one contained 2 pentatonid nymphs 37%, a large fulgorid 35%, an ant 8%, bit of caterpillar skin 10%, spider remains 10%; the other contained a small caterpillar 25%, 2 small scarabaeids 20%, 3 curculionids (*Cryptorhynchini*) 15%, a small chrysomelid 5%, a small pentatonid 20%, homopteran remains 15%, bits of a spider with 2 or more eggs 5%. One taken by Burton near Pacora, Province of Panamá, weighed 5.9 g (Bull. Brit. Orn. Club, 1975, p. 85); 2 weighed by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) were 6.2 and 6.4 g.

FIGURE 15.—Tropical Gnatcatcher, Cazajején Tropical, *Polioptila plumbea*, male (below), female (above).

The vocal repertoire includes “a rather thin but musical song consisting of a series of simple notes with decreasing intensity, *sweet, weet, weet, weet, weet, weet*, sometimes faster and sibilant; the usual call is a *tzeet-*

tzeet" (Ridgely, 1976, p. 279). Eisenmann (*in litt.*) has heard nasal twanging or mewling notes, sounding like *twee*, *twee*, *twee* and *peéoo*, *peéoo*, *peéoo*.

POLIOPTILA PLUMBEA SUPERCILIARIS Lawrence

Poliioptila superciliaris Lawrence, 1861, Ann. Lyc. Nat. Hist. New York, 7, p. 304. (New Grenada, Isthmus of Panamá = Atlantic slope, near Panama Railroad; *vide* Lawrence *loc. cit.* p. 322.)

Characters.—Dorsal surface bluish gray; lower foreneck and breast whitish.

A male collected at Las Palmitas, Los Santos, on January 25, 1962, had the iris dark reddish brown; base of mandible neutral gray; rest of bill black; tarsus and toes dusky neutral gray; claws black.

Measurements.—Males (10 from Los Santos, Herrera, Coclé, and Province of Panamá), wing 43.5-48.6 (45.8), tail 36.2-46.3 (42.1), culmen from base 10.1-13.3 (12.2, average of 9), tarsus 14.7-17.3 (16.1) mm.

Females (10 from Los Santos, Herrera, Veraguas, Province of Panamá, Darién), wing 41.0-46.5 (44.1), tail 35.3-43.8 (39.9), culmen from base 11.7-13.3 (12.2, average of 9), tarsus 15.3-16.7 (15.9) mm.

Resident. Widespread and fairly common in a variety of mainland habitats including forest (although usually at breaks and edges), second-growth woodland, and scrub in semi-arid as well as humid areas. The Tropical Gnatcatcher is usually seen from sea level to about 1200 m, the highest elevational record being a female collected on March 10, 1951, by Frank Hartman at 1230 m on Cerro Pando, Chiriquí. Aldrich and Bole (Scient. Pub. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 23) found it one of the commoner birds in brushy scrub and forest margins of the Tropical Zone, arid division (sea level to 300 m) on the western side of the Azuero Peninsula. Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 48) calls it "not common" on Barro Colorado Island in the Canal Zone. He has found it in many localities in the Canal Zone and in adjacent parts of the Province of Panamá.

The Smithsonian has specimens from nearly every section of the Republic, from Almirante, Bocas del Toro, and Puerto Armuelles, Chiriquí, in the west, to Jaqué in eastern Darién. *P. p. superciliaris* has been collected in Veraguas at Puerto Vidal, at the mouth of the Río Virá, in the extreme southwest, and at Soná; in Herrera at Parita, Portobelillo, Santa María, and La Cabuya; in Los Santos at Las Palmitas and Pedasí; in Coclé at El Roble; in the Province of Panamá from Bejuco in the west to Chimán in the east; and in Darién from

the mouth of the Río Tuquesa on the Río Chucunaque, as well as from Cana and Jaqué. There is a recent sight report of a pair on Rey in the Pearl Islands on February 11, 1970 (Ridgely, 1976, p. 279). Beyond Panamá this race ranges north to Guatemala and probably south to adjacent northwestern Colombia.

I found a fully grown young bird at Jaqué on April 13, 1946, so the nesting season in Panamá may begin in February as it does in Costa Rica (Skutch, Pac. Coast Avif., no. 34, 1960, p. 34). On March 13, 1948, I collected a pair in near breeding condition at La Cabuya, Herrera. Along the Chepo Road in the Province of Panamá, Major General G. Ralph Meyer found a pair building a nest on March 18, 1944; the nest contained 1 egg on March 26, and 1 from the full clutch of 3 eggs was collected on April 9. Bond and de Schauensee reported a male with testes enlarged that was collected at Garachiné, Darién, on April 24, 1941. On May 26, 1912, E. A. Goldman collected a female at Cana, Darién, with an egg almost ready to lay.

Most of what is known of this race's breeding biology comes from Skutch (*op. cit.* pp. 43-56). He found 6 nests, which ranged in height from 2 to 8 m off the ground. The nest is built by both male and female and closely resembles the lichen covered cup-shaped nest of the North American Blue-gray Gnatcatcher (*P. caerulea*). The clutch was either 2 or 3, and the eggs white, finely speckled all over with brown. An egg obtained by Major General Meyer measured 14.4×11.7 mm. The males assisted in incubation, a habit shared with *P. caerulea* and *P. melanura*, and also with *Ramphocaenus*, but rare in tropical passerines as a whole. After a 13-day incubation period the young hatch entirely devoid of down. They are brooded regularly for at least the first 5 days and are fed entirely on insects. The length of the nestling period and the extent to which young are cared for thereafter are not known.

POLIOPTILA PLUMBEA CINERICIA Wetmore

Polioptila plumbea cinericia Wetmore, 1957, Smiths. Misc. Coll., 134(9), p. 80. (Isla Coiba, Panamá.)

Characters.—Similar to *P. b. superciliaris*, but dorsal surface, including the wings, decidedly darker gray; lower foreneck and breast grayer (instead of white as in *superciliaris*); sides darker gray; bill averaging broader.

Measurements.—Males (9 from Isla Coiba), wing 46.2-49.7 (48.5), tail 41.8-46.3 (44.1), culmen from base 13.0-14.9 (14.0), tarsus 16.6-17.8 (17.2) mm.

Females (6 from Isla Coiba), wing 45.1-47.4 (46.6), tail 41.9-45.3

(44.0), culmen from base 13.8-14.8 (14.4), tarsus 16.2-17.5 (17.0) mm.

Resident. This race is endemic to Isla Coiba, where I found it to be common in January and February 1956, ranging in leafy cover from low second-growth thickets near the shore to the summits of the tallest forest trees in the interior of the island. Invariably they moved about among the twigs and leaves in unceasing activity in pursuit of tiny insects, often so high above the ground that I could barely detect their tiny forms. The slender body, with long, narrow tail held at an angle above the back, and their quick, nervous movements, mark them even when the gray and white plumage is not clearly seen. I found them in pairs, and near breeding at this season. On January 21 one male was much excited by my squeaking, and came to perch within 4 m of me while it sang repeatedly a series of high-pitched notes of the usual gnatcatcher quality mingled with beautifully clear, warbling phrases of much louder sound that would have graced the gifted song of a mockingbird.

Eisenmann (with E. S. Morton) on October 8-11, 1965, found this species more numerous on Isla Coiba than anywhere else in Panamá. They also found it on nearby Isla Coibita. The vocalizations heard on Isla Coiba in October were neither musical nor noticeably nasal. Birds heard singing on Isla Coiba by Ridgely in early April 1976 seemed to him to vocalize like mainland birds.

POLIOPTILA SCHISTACEIGULA Hartert: Slate-throated Gnatcatcher,
Cazajején Gargantigris

Poliophtila schistaceigula Hartert, 1898, Bull. Brit. Orn. Club, 7, p. 30. (Cachabí [=Cachaví], 500 ft, Esmeraldas, Ecuador.)

Small, slender; dark slaty gray, except lower belly to undertail coverts, which are white.

Description.—Length 97-102 mm. Adult (sexes alike), crown, back, and undersurface from throat to chest dark slaty gray; base of lores faintly white; upper throat lightly spotted white; broken eye-ring white; upper tail coverts slightly lighter gray; wings and tail black, outer two pairs of rectrices slightly tipped white; lower belly to undertail coverts, underwing coverts, and inner web of underside of all but outer three primaries edged white.

A male collected at the Peluca Hydrographic Station in Colón on February 27, 1961, had the iris reddish brown; maxilla and extreme tip of mandible black; rest of mandible neutral gray; tarsus and toes dark neutral gray; claws black. The tongue spots were tiny and incon-

spicuous, being confined to the centers of the two posterior projections.

Measurements.—Males (2 from Colón and Colombia), wing 45.0-45.8 (45.4), tail 40.7-41.5 (41.4), culmen from base 11.7, tarsus 15.2-17.5 (16.4) mm.

Female (1 from Colombia), wing 45.5, tail 41.3, culmen from base 10.5, tarsus 14.7 mm.

Resident. Rare and little known. Hartert described this bird in 1898 from a specimen collected in Ecuador. Wytzman (Gen. Av., Part 17, 1911, p. 17) gives the range as northwest Ecuador (the type locality, Cachabi) and Isthmus of Darién, possibly based on an unsexed adult in the Paris Museum collected by C. Viguiet, as later reported by Hellmayr (Cat. Birds Am., Field Mus. Nat. History, vol. xiii, 1934, p. 492). Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 362) mentions only the Viguiet specimen, and Eisenmann (Trans. Linn. Soc. N.Y., vol. 7, 1955, p. 83) says "E. Panama (Darién)." Chapman (Bull. Am. Mus. Nat. Hist., vol. 55, 1926, p. 560), giving the range as northwestern Ecuador to northwestern Colombia, puts it in the Tropical Zone.

I encountered this bird once, at the Peluca Hydrographic Station on the Río Boquerón in Colón, in March 1961. The bird worked in typical gnatcatcher fashion through the tops of bushes on the bank of an open quebrada, moving with the usual vibrations of the tail and quick movements. Henry van Horn, who accompanied me on this trip, told me that he had seen 2 in similar situations traveling with groups of other small birds. The specimen I collected here and a male collected by Pedro Galindo at Cerro Quía (800 m) in southeastern Darién (Ridgely, 1976, p. 279) are the only recent specimen records for Panamá.

Ridgely (*in litt.*) has seen this bird on two occasions in eastern Darién: 1 on the slopes of Cerro Quía (500 m) on July 17, 1975; 1 above Cana (670 m) on March 2, 1981. In both instances the birds were traveling with mixed flocks dominated by various tanagers (*Tangara*, *Heterospingus*, *Hemithraupis*, etc.) in forest canopy, and were observed to forage mostly on terminal branches and in leafy areas, much as any other gnatcatcher. Neither bird vocalized.

RAMPHOCAENUS MELANURUS RUFIVENTRIS (Bonaparte):

Long-billed Gnatwren, Cazajén Piquilargo

Scolopacinus rufiventris Bonaparte, 1838, Proc. Zool. Soc. London, 5 (1837), p. 119. (Guatemala.)

Small; bill long; upper surface brown; tail black, tipped white; throat white with dark gray streaks; rest of undersurface buffy.

Description.—Length 105-118 mm. Adult (sexes alike), crown and hindneck dark olive-brown; back and wings grayish olive; secondaries and inner primaries edged cinnamon; tail graduated, blackish with all but central pair of feathers tipped white; facial area and sides of breast bright cinnamon; throat white with some dusky markings, varying in prominence; rest of undersurface buffy.

Juvenile, like adult, but upper surface browner, undersurface pale grayish brown.

A male taken March 25, 1961, at Pacora, Province of Panamá, had the iris light wood brown; maxilla and line on side of mandible fuscous-brown; rest of mandible pale brownish white; tarsus and toes dark neutral gray.

Another bird taken at Cañita, Province of Panamá, had the iris dull brownish gray; maxilla fuscous, except base of culmen which is fuscous-black; rami brownish white; rest of mandible fuscous-brown; tarsus, toes, and claws neutral gray.

Measurements.—Males (10 from Herrera, Province of Panamá, Los Santos, San Blas, and Darién), wing 47.5-54.0 (50.0), tail 37.4-48.2 (41.7), culmen from base 22.7-25.7 (23.9), tarsus 19.3-21.1 (20.1) mm.

Females (10 from Herrera, Los Santos, Province of Panamá, and Darién), wing 46.6-51.5 (48.5), tail 33.5-39.0 (37.3), culmen from base 21.6-24.8 (23.5), tarsus 19.7-21.8 (20.7) mm.

Resident. Widespread and fairly common in the lower growth of forest edges, second-growth woodlands, and damp thickets of fairly humid lowlands through most of Panamá. The range of *rufiventris* extends from southeastern Mexico to Colombia; other forms are found south through Brazil and Peru. In Panamá, *Ramphocaenus* is usually found up to 1050 m (Ridgely, 1976, p. 280), but Frank Hartman collected a male at 1200 m on Cerro Pando, Chiriquí, on March 11, 1951 (now in collection of Ohio State University). On the western slope of the Azuero Peninsula, Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. History, vol. 7, 1937, p. 25) found it uncommon in humid forest of the Tropical Zone (300-900 m). In the Canal Zone, Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 48) found it "fairly common in thickets in the lighter woods."

The Smithsonian has specimens from Bocas del Toro at Almirante; Chiriquí at Puerto Armuelles; Veraguas at Soná and Santa Fé; on the eastern side of the Azuero Peninsula at Punta Mala and Pedasí in Los Santos, and Pesé and El Barrero in Herrera; El Uracillo in Coclé; in the Province of Panamá and Canal Zone at several localities from

Bejuco in the west to Cerro Chucantí in the Serranía de Majé in the east; in Colón at Punta Pilon on the Río Indio; San Blas at Mandinga, and Darién at Pucro and Jaqué.

Ramphocaenus dwells in viny tangles of undergrowth and in lower trees where it moves wrenlike, cocking its tail, and flicking it constantly from side to side, rarely coming to the ground or foraging more than 10 m above it. The diet, as evidenced by the stomach contents of a female collected by Hallinan (Auk, 1924, p. 319) at Farfan, Canal Zone, is small insects and small seeds. Two collected by Burton (Bull. Brit. Orn. Club, 1975, p. 85) weighed 9.0 and 11.0 g.

This bird is usually found singly or in pairs. Its song is a distinctive musical trill on a single pitch, sometimes rising and then lowering in volume at the end. A sharp wrenlike ticking and a low, dry *churr* are some of its other calls.

In Panamá the nesting season runs from at least late April to July. Willis, on Barro Colorado Island in 1961, saw a bird on its nest on April 23 and another building a nest on July 6 (Willis and Eisenmann, *Smiths. Cont. Zool.*, 1979, p. 25). Ridgely (*in litt.*) observed a pair feeding a very recently fledged young bird in the wind-swept elfin cloud forest on Cerro Jefe (1000 m), eastern Province of Panamá, on July 24, 1975. Bond and de Schauensee (*Acad. Nat. Sci. Philadelphia*, Mon. no. 6, 1944, p. 40) mention a female collected at Garachiné that had enlarged ovaries on May 8, 1941. A male I took at Soná, Veraguas, on May 25, 1953, was in full breeding condition. The only published description from Panamá of the nest is of one found by Eisenmann (Auk, 1953, p. 369) in the Juan Franco suburb of the city of Panamá on July 15, 1950, when it contained 2 almost naked young. The nest, an open cup, was in a damp thicket, near a stream, about 15 cm off the ground, in a small shrub shaded by trees. It was built among the shrub's vertical shoots and was composed "chiefly of grass-stems, with a few twigs and dried leaves and to the exterior were attached several large dried leaves that hung loosely along the sides and extended below the nest proper, forming a sort of ornamental skirt." The measurements were exterior diameter approximately 10 cm; interior diameter 8 cm; exterior depth 12.5 cm; interior depth 8 cm.

Skutch (1960, *Pac. Coast Avif.*, no. 34, pp. 54-61) found a nest of *Ramphocaenus* in Costa Rica on April 6, 1939, the first egg being laid on April 14 and the second the following day. These were "white, lightly sprinkled with fine, pale cinnamon spots over the whole surface, with these markings heaviest at the thick end." Measurements were 19.8×14.3 and 19.1×13.5 mm. The incubation period at this nest was

17 days and the young hatched without any natal down. Pinfeathers pushed through the skin when the nestlings were 2 days old, and at 7 or 8 days they were all feathered. The young were fed small insects and spiders; they left the nest when 12 days old and able to fly only a few yards.

F. O. Chapelle (*in litt.* to Eisenmann) reports that in the Canal Zone he regularly found it with wandering bird bands (consisting chiefly of Formicariidae) conspicuous because of its musical trill, which is accompanied by tail vibration and sometimes by bill fluttering. The trill is usually preceded and sometimes terminated by a low *chip*. When foraging, the bird gives a drier, less musical version of the trill.

Although Aldrich and Bole (Scient. Pub. Cleveland Mus. Nat. Hist., 1937, vol. 7, 1937, p. 116) considered the birds they collected in the western Azuero Peninsula to be almost identical to *R. m. sanctaemarthae* of Colombia, this race is actually paler and browner than are any Panamanian birds, all of which are referable to *rufiventris*. Specimens in the Smithsonian show the range of *rufiventris* to extend into Colombia in the departments of Chocó, Antioquia, and Córdoba (Socorré, Río Sinú, and Quebrada Salvajín, Río Esmeralda), whereas birds from farther north in Córdoba (Pueblo Nuevo, 14.4 km north of Planeta Rica; Nazaret, 19.2 km northwest of Tierra Alta) and eastward through Bolívar, Magdalena, and Norte de Santander (Guamalito, 7 km west of El Carmen) are referable to *sanctaemarthae*, the range of which is thus rather far removed from Panamá, particularly the Azuero Peninsula. Some birds from the more westerly portions of Panamá tend to have less rufous on the head than, for example, those from Darién, but these are darker and grayer on the dorsum than *sanctaemarthae* and should be referred to *rufiventris*. Van Tyne and Trautman (Occ. Papers Mus. Zool. Univ. Michigan, no. 439, 1941, p. 9) comment on the frequently remarked color variation in Middle American populations of this species.

**MICROBATES CINEREIVENTRIS (Sclater): Tawny-faced Gnatwren,
Cazajején Carileonado**

Small, with long bill and short tail; upper surface brown; undersurface gray with throat white.

Description.—Length 94-102 mm. Adult (sexes alike), crown dark brown, back slightly lighter; wing coverts, primaries, and secondaries dark brown, edged rufous; tail dark brown, tipped blackish; side of face tawny; throat white, bordered by narrow black stripe on each side; upper breast striped black and white; rest of undersurface gray with

central whitish streak more or less present; flank feathers olive-brown, fluffy, decomposed; undertail coverts whitish.

This species, sometimes called the Half-collared Gnatwren, is found from Nicaragua to southern Peru. In Panamá, where two subspecies occur, it is an uncommon and little seen denizen of thick undergrowth in humid forest in lowlands and hill country to perhaps 1000 m. Usually found in pairs or small family groups, its behavior is wrenlike. It hops actively from log to vine to twig, often clinging sideways, holding the tail almost at a right angle and habitually jerking or flicking it. Ordinarily, it keeps low, not far above the undergrowth, but Ridgely reports seeing pairs foraging 5 to 7 m above the ground.

The gnatwren's diet is almost purely animal matter gleaned from plant stems and foliage or picked from the ground; sometimes it temporarily joins a mixed band of small birds following army ants. E. A. Goldman noted the stomach contents of 2 collected at Portobelo, Colón, in May 1911: both had full stomachs, one containing arachnid remains 20%, bits of a bug 10%, ant remains 60%, moth remains 10%, the other with a spider 30%, 9 ants and 5 ant eggs 59%, another hymenopteran 2%, bits of a bug 5%, elytra of a nitidulid 3%, embryo of a seed 1%.

The gnatwren has a variety of calls suggesting a wren or an antbird, but nothing that resembles a territorial advertisement song. Ridgely (1976, p. 280) says the usual call is "a fast chattering *chrichrichrichrichri*" and Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 306) lists "a 'woink, woink, woink,' usually followed by a chatter," "an antbird-like whining nasal 'yeah,' " "an even 'peep' with the timbre of an antbird or flycatcher," and several other sounds. Eisenmann reports that birds mist-netted deep within humid forest at 1000 m on Cerro Campana, after being caged gave a hissing *ssssss*.

Olson (Proc. Biol. Soc. Wash., vol. 93, no. 1, 1980, pp. 68-74) has recently revised the taxonomy of this species. His review did not affect the nomenclature of any Panamanian populations.

MICROBATES CINEREIVENTRIS SEMITORQUATUS (Lawrence)

Ramphocaenus semitorquatus Lawrence, 1862, Ann. Lyc. Nat. Hist. New York, 7, p. 469. (Line of Panama Railroad.)

Characters.—Belly darker gray with little if any whitish suffusion in the middle; no postocular stripe.

A male collected at the Peluca Hydrographic Station, Colón, on February 24, 1961, had the iris dark wood brown; mandible pale

neutral gray; line of commissure on maxilla narrowly edged with neutral gray; rest of maxilla black; tarsus, toes, and claws dusky neutral gray. A male caught in a mist net at the head of the Río Guabal, Coclé on February 26, 1962, had the iris dark brown; mandible light neutral gray; maxilla black; tarsus, toes, and claws dusky neutral gray. The tongue of one taken March 21, 1951, at Cerro Campana, Province of Panamá, had dark spots on either side of the base like those of *Ramphocaenus* and *Polioptila* but relatively smaller than in the latter.

Measurements.—Males (10 from Province of Panamá, Coclé, and Colón), wing 51.0-55.0 (53.0), tail 25.3-30.3 (28.4), culmen from base 17.4-19.4 (18.2), tarsus 21.1-25.8 (23.3) mm.

Females (10 from Province of Panamá and Colón), wing 48.8-55.7 (51.8), tail 22.8-31.9 (26.7), culmen from base 16.9-19.9 (18.1), tarsus 21.8-24.6 (22.9) mm.

Resident. Uncommon in humid forest lowlands, occasionally up to 900 m, on the Caribbean slope from Bocas del Toro to San Blas, and on the Pacific slope at Cerro Campana and Cerro Azul. The Smithsonian has specimens from Bocas del Toro: Changuena River (720 m); Coclé: head of the Río Guabal at Tigre (475 m), and El Uracillo on the Río Indio; Colón: Chilar, Boca del Río Indio, Cerro Bruja (north side, 600 m), and the Peluca Hydrographic Station on the Río Boquerón; Province of Panamá: Cerro Campana (south face, 900 m) and Cerro Azul; Canal Zone: Alajela; San Blas: Mandinga and Armila.

Cory and Hellmayr (Cat. of Birds of the Americas, 1924, p. 211) give the range of this subspecies in Panamá as "western Panamá (Volcán de Chiriquí, Santiago de Veraguas, Lion Hill Station)." Paynter (Check-list Birds World, vol. 10, 1964, p. 444) also says "western Panama," without assigning birds of central Panamá to any race. Olson (Proc. Biol. Soc. Wash. vol. 93, 1980, pp. 68-74) has found that this race extends along the entire Caribbean slope of Panamá to north-western Colombia at Acandí on the Gulf of Urabá (USNM no. 427204), and that Griscom's (Bull. Mus. Comp. Zool., vol. 72, no. 9, 1932, p. 366) identification of specimens from San Blas as the Colombian race *magdalenae* was erroneous.

E. A. Goldman found the nest and eggs of this bird on June 7, 1911, in Colón at Cerro Bruja, where it was "a rather common species at elevations up at least to 2000 feet." His previously unpublished notes say "the nest was in the center of a loose mass of leaves and trashy material spread over an area one foot across on the flat, horizontal upper side of a large palm leaf four feet from the ground. The nest was

lined with plant fibers. Overhanging leaves above sheltered it from rain." The nest contained 2 speckled eggs.

The only other description of the nest and eggs is by Kiff (Condor, 1977, p. 261-262), who found a pair carrying nesting material near Puerto Viejo, Heredia Province, Costa Rica on April 3, 1971. Placed one-half meter off the ground in a broad-leaved shrub, the nest, when completed, was "an open cup with an exterior diameter of 10 cm. and exterior depth of 15 cm., the inner cup being 5 cm. in diameter and 4 cm. deep. The outer walls were composed of green moss, papery bark fragments, leaf petioles, and bits of dead brown dicot leaves, all held together by plant fibers. The inner cup was lined with a soft layer of dead leaf skeletons, plant fibers, and a few strands of fine grass. The nest was attached by slender plant fibers to the trunk of the shrub along one entire vertical surface, and another side was built around a small limb which grew off the trunk at a sharp angle. The overall appearance of the nest was that of a semi-suspended, bulky cup of green moss, partially concealed by the leaves of the shrub." The eggs from this nest measured 18.8×13.8 and 18.5×14.2 mm. They were white "with a liberal sprinkling of fine reddish-brown and dark brown spots over their entire surface, but slightly denser on the larger ends." Kiff considered the nest similar to that of *Ramphocaenus* and the eggs identical in coloration and shape.

MICROBATES CINEREIVENTRIS CINEREIVENTRIS (Sclater)

Ramphocaenus cinereiventris, Sclater, 1855, Proc. Zool. Soc. London, 23, p. 76, pl. 87. ("Pasto," Colombia; Buenaventura substituted by Cory and Hellmayr, 1924, p. 212.)

Characters.—A distinct dark postocular stripe; underparts lighter; dorsum somewhat lighter, more olivaceous, contrasting with the darker crown.

Measurements.—Males (10 from Darién and Colombia), wing 50.0-57.0 (53.0), tail 24.9-30.7 (27.8), culmen from base 17.5-18.8 (18.0), tarsus 19.5-24.4 (22.2) mm.

Females (10 from Darién and Colombia), wing 49.5-54.5 (51.6), tail 26.7-30.4 (28.1), culmen from base 14.7-18.6 (17.2), tarsus 20.4-22.9 (21.6) mm.

Resident. Uncommon in Pacific slope lowlands of Darién. Despite the fact that Cory and Hellmayr (Cat. Birds Americas, 1924, p. 212) give the range of this race as extending "from eastern Panama (Tacarcuna) along the Pacific coast of Colombia south to Chimbo,

Prov. Guayas, western Ecuador," and Griscom (Bull. Mus. Comp. Zool., vol. 72, no. 9, 1932, p. 366) noted that nominate *cinereiventris* is "known to range northward to the Pacific slope of Darien," Paynter (1964, Check-list Birds World, 1964, p. 445) does not include Panamá in the range of this race. The Smithsonian has a series of 13 specimens from Jaqué and Río Jaqué, at the mouth of the Río Imamadó, 2 from Tacarcuna, and 2 from La Laguna that have the brown post-ocular stripe characteristic of nominate *cinereiventris*, the form resident on the Pacific slope of Colombia and Ecuador.

Two specimens (Gorgas Memorial Laboratory Collection) were taken at Alturas de Nique, eastern Darién at "2000 ft." Ridgely reports 2 seen in Cerro Quía cloud forest, 900 m, "with a very large mixed tanager flock . . . foraging 10-20 feet off the ground."

Family MOTACILLIDAE: Pipits and Wagtails,
Bisbitas y Lavanderas

The pipits and wagtails are a worldwide family of 54 species, found primarily in the Old World. Two pipits inhabit temperate North America and two wagtails breed in Alaska but return to Asia each year for the winter. Seven species of pipit including the Yellowish Pipit, represented by a race in Panamá, occur in South America. Pipits are streaked, rather like larks, to match the grassy environment that most inhabit. The tail often is edged with white, making the birds suddenly conspicuous when flushed. Pipits walk rather than hop; the tail wagging habit is less pronounced in the Yellowish Pipit than in many others. Pipits feed mainly on insects, although some vegetable matter may be taken at times. Their song characteristically is given while in the air, often several hundred feet from the ground. Many species of temperate regions are migratory, and in Panamá the Yellowish Pipit seems to some extent nomadic, since I have suddenly found groups of them in savannas that I had thoroughly searched for several days previously without success.

ANTHUS LUTESCENS PARVUS Lawrence: Yellowish Pipit,
Bisbita Amarillenta

FIGURE 16

Anthus (Notiocorys) parvus Lawrence, 1865, Proc. Acad. Nat. Sci. Philadelphia, 17, p. 106. (savanna near Panamá.)

Rather small, upper surface brown streaked with buff; undersurface mostly yellowish white; outer tail feathers white.

Description.—Length 106-118 mm. Adult (sexes alike), crown, back, and wings blackish brown, with feathers edged yellowish or pale cinnamon-buff; rump and upper tail coverts tawny-olive; tail blackish brown, with outer two rectrices dirty brownish white, inner of these with brown edge to inner web, and next rectrix sometimes with whitish edge to outer web; lores and eye-ring pale buff; side of face speckled pale cinnamon and brown; throat yellowish white; breast streaked with dark brown and tawny-olive, sometimes extending on flanks; rest of undersurface yellowish white to buffy; underwing coverts buffy cinnamon and white.

Juvenile similar, but upper parts spotted with pale brown; undersurface brownish white, streaked on breast, narrowly on sides.

A female taken January 22, 1963, at Penonomé, Coclé, had the iris brown; maxilla and tip of mandible fuscous-black; base of mandible brownish flesh color; tarsus and toes light buffy brown; claws dark mouse brown.

FIGURE 16.—Yellowish Pipit, Bisbita Amarillenta, *Anthus lutescens parvus*.

Measurements.—Males (10 from Chiriquí, Herrera, and Province of Panamá), wing 58.0-61.1 (59.7), tail 41.3-45.6 (43.6), culmen from base 10.3-12.5 (11.6), tarsus 18.3-20.4 (19.3) mm.

Females (8 from Chiriquí, Coclé, Herrera, and Province of Panamá), wing 56.7-60.5 (58.1), tail 40.8-44.3 (42.8), culmen from base 10.2-11.9 (11.3), tarsus 19.2-20.8 (19.7) mm.

Resident. This is a rather common though locally distributed bird in short grass savannas and fields in lowlands on the Pacific slope of western and central Panamá. I have collected the bird at Las Lajas in

Chiriquí, Santa María in Herrera, Penonomé and Antón in Coclé, and Chico, Pacora, and Chepo in the Province of Panamá, the last-named locality being the easternmost at which this bird has been found. I have also seen it in Los Santos, at Pedasí. The westernmost record is of 2 males collected by W. W. Brown, Jr., on December 3, 1900, at Divalá, Chiriquí. The race *parvus* is restricted to Panamá. Other races of *Anthus lutescens* are found on the coast of Peru and Chile and in savanna country east of the Andes from Colombia east and south locally to northern Argentina.

The Yellowish Pipit is often the first bird visitors to Panamá see, since it inhabits the landing fields of Tocumen Airport and Albrook Air Force Base; once when I landed at Albrook 2 of these pipits rose and flew along just beyond the wings of the plane, so close that I could see all their markings. Elsewhere, however, I have sometimes found them hard to detect—when strong winds blow across the short grass fields where they live, they prefer to crouch near the ground rather than fly. On the ground they walk and run rather than hop, and sometimes wag their tail; their usual flight is deeply bounding, but I have also seen them rise 125 m in the air, circling in 300 m circles, occasionally setting the wings wide and sailing, after which they often closed the wings and dropped for several meters. When ready to come down they dropped directly to the earth or broke the distance in two or three sections. When in flight, they occasionally utter a low, double call like that of the temperate North American *A. spinoletta*, but somewhat harsher. The song, also given in flight is “initially a series of *dzee’s* on a rising pitch, usually given as the bird ascends in a looping manner into the sky, then a long slurred *dzeeeeeeeeeeee* given as it slowly glides back to earth, often with a *dzip* at end.” (Ridgely, 1976, p. 280). Occasionally Eisenmann saw them also singing from the ground a shorter *tsitsirrit* and *tsitzeeeee*.

Yellowish Pipits nest in small colonies; in one at Santa María, Herrera, I counted 15 or 20 birds. A pair with developing gonads collected at Penonomé, Coclé, on January 23, 1963, is the earliest indication I have of the onset of breeding. Others collected during February, March, and as late as April 20 were nearly in breeding condition, but on March 26, 1949, near Chico, Province of Panamá I found a young bird just from the nest and on the same day collected adults that had not yet bred. On June 20, 1953, I took a female at Ancón, Canal Zone, that had recently laid, and on June 27 of that year I flushed a female from a nest at the La Jagua Hunting Club at Chico, Province of Panamá. The nest was on the ground, sheltered partly under a low grass

tuft, the top being covered. It was made of grasses and other soft vegetation, and contained 3 eggs. The female tried to decoy me with fluttering wings. The eggs were vinaceous-buff marked with wood brown; one had fine streaks all over the surface, slightly denser at the blunt end; the second had very fine spots and a ring of blotches at the blunt end; the third had fine speckles scattered at the pointed end, becoming denser toward the blunt end. This last egg, the only one now unbroken, measured 17.3×14.0 mm.

J. R. Karr (Eisenmann *in litt.*) during a study in La Jagua grassland (July 1968-July 1969), found three nests; September 12, 1968—2 eggs; January 4, 1969—2 young; January 15, 1969—3 eggs.

Ridgely notes (*in litt.*) that this species appears to be quite particular in its habitat requirements, and leaves areas that no longer suit it, only to return once again if they revert back. During the last 15 years this cycle has taken place several times along the dike over the Tocumen marsh, which, when heavily grazed, provides good habitat, but otherwise does not and the birds are not present, even at the same times of the year.

Two birds collected by Burton (Bull. Brit. Orn. Club, 1975, p. 85) at the military instruction center near Pacora weighed 13.0 and 13.5 g.

Family BOMBYCILLIDAE: Waxwings, Chinitos

The 3 species of waxwings breed in temperate Eurasia and North America. All are primarily fruit and berry eaters, also taking some insects on the wing; when not nesting they wander irregularly in flocks searching for food. The Cedar Waxwing is an irregular visitor to Panamá, not seen every year; it has been recorded as far south as Colombia and Venezuela.

BOMBYCILLA CEDRORUM Vieillot: Cedar Waxwing, Chinito Cedroso

FIGURE 17

Bombycilla cedrorum Vieillot, 1808, Ois. Amer., September (1807), 1, p. 88, pl. 57. (Amerique depuis le Canada jusqu' au Mexique = eastern North America.)

Medium size; slim, crested; mostly brown, with gray wings and tail; tail tipped bright yellow.

Description.—Length 153-172 mm. Adult (sexes alike); lores black; black stripe through and below eye extending to rear of crown but not meeting; narrow white line surrounding black, including lower rear edge of eye; crown dark cinnamon, crested; upper back olive-brown; lower back, rump, and upper tail coverts gray; tail blackish

gray, tipped lemon yellow; wing coverts olive-brown; primaries and secondaries blackish, with edge of outer web of all but outermost primary edged gray and secondaries sometimes with waxy scarlet tips; upper throat black, fading to olive-brown, which continues to belly; belly pale greenish yellow; thighs gray; undertail coverts whitish; underwing coverts white.

Immature, like adult but black only from maxilla to front of eye; crest and scarlet tips on secondaries usually lacking; undersurface broadly streaked olive-brown and creamy white.

Measurements.—Males (10 from eastern North America, taken in May), wing 90.0-96.2 (92.7), tail 50.6-58.3 (54.5), culmen from base 9.3-11.7 (10.4), tarsus 15.9-18.5 (17.1) mm

Females (10 from eastern North America, taken in May), wing 89.5-94.5 (92.6), tail 48.9-57.7 (54.3), culmen from base 9.5-10.7 (10.1), tarsus 15.2-18.7 (17.0) mm.

Migrant. A rare and irregular visitant, recorded some years from January to March from the western border east to the Canal Zone and the Pearl Islands. This species breeds in Canada and northern United States and winters irregularly south to the West Indies, and Middle America, casually to Colombia and Venezuela. Salvin and Godman (Biol. Centr.-Am., vol. 1, 1904, p. 216) said that at that time the southernmost occurrence of the species was in British Honduras, but Salvadori and Festa (Bol. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 14, no. 339, 1899, p. 3) cite a specimen from Chiriquí collected by Arcé. More recent Chiriquí records are those of Mönniche (Blake, Fieldiana: Zool, vol. 36, no. 5, 1958, p. 552), who collected 5 at Quiel and Lérída (1560-1590 m) March 19-21, 1933, and of Frank Hartman, who collected a female February 13, 1953, at 1260 m on Volcán de Chiriquí. In the Canal Zone, Scholes and Scholes (Condor, 1954, p. 167) observed Cedar Waxwings five times at localities on the Pacific slope of central Panamá in or near the Canal Zone from January 14 to March 4, 1951, 1 near Farfan Beach, several near Chorrera, an unspecified number in Ancón, and a flock of about 15 near Camp Empire. My own encounters with waxwings have been in the lowlands—on the Caribbean side at Almirante, Bocas del Toro, where on February 24, 1958, I found a flock of 40 or 50 gathered in two tall trees, and on the Pacific side at Puerto Armuelles, Chiriquí, where on February 21 and 26, 1966, I saw a dozen perched in a tall tree at the edge of a mangrove swamp. On San José Island in the Pearl Islands I saw a flock of 25 flying north over the large open area near East Bay on February 29, 1944.

More recently in the Canal Zone, Eisenmann (*in litt.*) reports seeing two flocks, each with over 15 birds, on the Pipeline Road on March 7, 1974, (with E. S. Morton) and several flocks aggregating at least 17 birds, at Summit Gardens on February 6, 1973 (with Ridgely). J. J. Pujals reports it on Escobal Road on March 20, 1971. N. G. Smith reports seeing a group of 4 on the road above Santa Fé, Veraguas, 930 m, on April 7, 1975, a late date. There seem to be no reports from the Azuero Peninsula or on the mainland east of the Canal Zone.

FIGURE 17.—Cedar Waxwing, Chinito Cedroso, *Bombycilla cedrorum*.

F. G. Stiles and S. M. Smith (Brenesia, vol. 17, 1980, p. 149) believe that occurrences in Costa Rica indicate it is irruptive at the southern end of its range, possibly with 3-4 year cycles—a major irruption occurred there in 1973-74, when birds were seen from December 1973 to mid-May 1974 at various localities.

Family PLOCEIDAE: Weaver Finches, Pinzones Tejedores

[**PASSER DOMESTICUS** (Linnaeus): House Sparrow, Gorrión Inglés

Fringilla domestica Linnaeus, 1758, Syst. Nat., ed. 10, p. 183. (Sweden.)

Up to about 20 House Sparrows were seen in downtown David, Chiriquí, in February and March of 1976 by C. Myers and Ridgely (*in litt.*); these appear to be established. Since at least March 1979 small numbers have also been found breeding in Panamá City, but as of 1982 the population had declined (Ridgely, *pers. comm.*). On April 29, 1980, Ridgely saw 3 at Changuinola, Boas del Toro. It is not certain whether these birds are the result of local introductions or a spread from Costa Rica, where the population is slowly increasing.]

Family STURNIDAE: Starlings, Estorninos

[**STURNUS VULGARIS** Linnaeus: Common Starling, Estornino

Sturnus vulgaris Linnaeus, 1758, Syst. Nat., ed. 10, vol. 1, p. 167. (Sweden.)

A single individual was seen at Albrook Air Force Base, Canal Zone, on February 10-12, 1979, by J. and R. A. Rowlett (Ridgely, *in litt.*). This individual was probably released.]

Family VIREONIDAE: Vireos, Peppershrikes, Shrike-Vireos,
Vireos y Follajeros

The Vireonidae is a strictly New World family that reaches its greatest diversity in the tropics but includes migratory forms from temperate regions of both North and South America. Although the peppershrikes (*Cychlaris*) and shrike-vireos (*Vireolanius* and *Smaragdanius*) were once placed in separate families (Cyclarhidae and Vireolaniidae), recent evidence from behavior and ecology (Barlow and James, Wilson Bull., 1975, p. 332) and anatomy (Raikow, Bull. Carnegie Mus. Nat. Hist. 1978, no. 7; Clark, Wilson Bull., 1981, p. 74) supports the opinion of Zimmer (Amer. Mus. Novit., no 1160, 1942, p. 15) that these genera belong in the Vireonidae. Vireos are primarily insectivores that glean from foliage, branches, and trunks; some take fruit as well. Except for the small greenlets, *Hylophilus*, which often forage in an active, warblerlike manner, vireos move slowly and deliberately through the foliage, where their greenish plumage makes them difficult to locate; their loud and persistent songs,

usually a monotonous warble or whistle, are given throughout the day and make these birds easy to find. All vireos, so far as known, build cup-shaped nests suspended in a forked branch in trees or shrubs. Sixteen species, including 1 peppershrike and 2 shrike-vireos, have been found in Panamá. Six species in the genus *Vireo* occur in Panamá as migrants or winterers from the north. The Yellow-green Vireo (*Vireo flavoviridis*) on the other hand is the only songbird that nests in Panamá and "winters" elsewhere. The other Panamanian species of vireos are permanent residents.

KEY TO SPECIES OF VIREONIDAE

1. Rufous stripe above eye.
 Rufous-browed Peppershrike, *Cyclarhis gujanensis*. p. 198
 No rufous stripe over eye..... 2
2. Light blue on crown..... 3
 No light blue on crown..... 4
3. Yellow superciliary.
 Yellow-browed Shrike-Vireo, *Smaragdolanus eximius*. p. 208
 No superciliary.
 Green Shrike-Vireo, *Smaragdolanus pulchellus*. p. 204
4. Wing bars present..... 5
 Wing bars absent..... 7
5. Throat bright yellow.
 Yellow-throated Vireo, *Vireo flavifrons*. p. 213
 Throat whitish or pale yellow..... 6
6. Wing bars yellowish, partial eye-ring yellowish to white.
 Yellow-winged Vireo, *Vireo carmioli*. p. 211
 Wing bars white, supra-loral stripe white.
 White-eyed Vireo, *Vireo griseus noveboracensis*. p. 210
7. Superciliary present..... 8
 Superciliary absent..... 12
8. Dusky moustachial stripe.
 Black-whiskered Vireo, *Vireo altiloquus*. p. 221
 No moustachial stripe..... 9
9. Undersurface entirely or partially yellow..... 10
 Undersurface entirely white (sometimes pale yellowish wash on flanks).
 Red-eyed Vireo, *Vireo olivaceus*. p. 215
10. Center of undersurface white, sides greenish yellow.
 Yellow-green Vireo, *Vireo flavoviridis flavoviridis*. p. 217
 Most of undersurface pale yellow..... 11
11. Crown definitely brown, contrasting with more greenish back.
 Warbling Vireo, *Vireo gilvus*. p. 225
 Crown grayish olive, same color as back.
 Philadelphia Vireo, *Vireo philadelphicus*. p. 223
12. Undersurface mostly white.
 Lesser Greenlet, *Hylophilus decurtatus*. p. 228

- Undersurface mostly yellow or greenish..... 13
13. Forecrown definitely brown.
 Tawny-crowned Greenlet, *Hylophilus ochraceiceps*. p. 234
- Crown greenish..... 14
14. Lores yellow, crown mainly light olive-brown.
 Golden-fronted Greenlet, *Hylophilus aurantiifrons aurantiifrons*. p. 231
- Lores and crown entirely olive-green.
 Scrub Greenlet, *Hylophilus flavipes*. p. 237

CYCLARHIS GUJANENSIS (Gmelin): Rufous-browed Peppershrike,
Pájaro Perico

FIGURE 18

Tanagra gujanensis Gmelin, 1789, Syst. Nat., 1(2), p. 893. (French Guiana.)

Large for a vireo; bill stout; head gray with rufous brow; rest of upper surface green; undersurface yellow and white.

Description.—Length 134-148 mm. Adult (sexes alike), broad rufous stripe from forehead, above eye to rear of crown, thin line under eye rufous; crown and nape brownish gray, usually tinged with rusty, rest of upper surface olive-green; sides of head and hind neck gray; undersurface variable, with upper throat white or light neutral gray, rest of undersurface bright yellow becoming white below; underwing coverts and edge of wing yellow; inner webs of primaries edged with yellow.

Immature similar, but superciliary stripe paler.

The peppershrike is a variable species that ranges from eastern Mexico to central Argentina; 21 races are currently recognized (Blake, Checklist Birds World, 1968, pp. 103-107), of which 4 occur in the Republic. This is evidently an adaptable bird, since it dwells in quite different habitats in various parts of Panamá, from forest borders in foothills and highlands of Chiriquí, at 840 to 2460 m, to light and scrubby woodlands in lowlands on the Pacific slope in Veraguas and the eastern side of the Azuero Peninsula, and in mangroves on Isla Coiba. Although fairly common where it occurs, the peppershrike is always a hard bird to see, even when singing, as it perches among or moves slowly through the dense foliage, searching for its insect prey by eye rather than by the frequent hops of the smaller insectivores with which it sometimes travels. Were it not for its loud song, the peppershrike might be impossible to find altogether, as is evidenced by the vast preponderance of males in museum series. The song is usually given repeatedly, although I have also searched for individuals that paused for more than a half hour between songs. The song is a series of short,

musical, whistled phrases, each repeated for many minutes, until a new phrase is taken up and repeated, the entire performance lasting for hours. There is great variety in the total series of songs.

Where it occurs in tall forest, the peppershrike often forages up high. In Costa Rica, Skutch (Publ. Nuttall Orn. Club, no. 7, 1967, p. 124) several times observed peppershrikes feeding on fat caterpillars, which were held beneath one foot while pieces were torn off and swallowed, a habit shared with shrike-vireos and true vireos. The nest is likewise similar to that of the true vireos; the highest one Skutch found was 9 m from the ground—although the birds foraged much higher in the surrounding trees—a cup hung by its rim from a forked branch, in typical vireo fashion.

FIGURE 18.—Rufous-browed Peppershrike, Pájaro Perico, *Cyclarhis gujanensis*.

The characters of each race found in Panamá are given below, but it should be added that some forms intergrade; 2 birds from Aguadulce and El Potrero, Coclé, are intermediate between *C. g. flavens* and *perrygoi* in the extent of yellow on the undersurface.

On May 29-31, 1971, Eisenmann (*in litt.*) saw 2 or 3 individuals singing at Playa Coronado, western Province of Panamá, in tall, planted trees, and a pair on visits on January 31, 1973, and March 27, 1974. On earlier visits during the 1940's to 1960's when the natural vegetation was scrubby and planted trees were much younger and lower, he did not notice this species. The song resembled those heard in the western Chiriquí highlands. N. G. Smith told Eisenmann that he had

observed the species in 1971 at Nueva Gorgona Beach, a few miles to the east of Playa Coronado. Another locality where the species has been found recently by Eisenmann and others is the hill country above Santa Fé, Veraguas.

CYCLARHIS GUJANENSIS SUBFLAVESCENS Cabanis

Cyclorhis subflavescens Cabanis, 1861, Journ. f. Ornith., 8 (1860), p. 405. (Highlands of Costa Rica.)

Characters.—Gray of side of face continues behind crown to form band on upper back; chin and upper throat white; lower throat, upper breast, and flanks strontian yellow; lower breast to undertail coverts white.

A male collected March 18, 1965, at El Volcán, Chiriquí had the iris light orange; maxilla light grayish brown, with distal end of culmen changing to dull black; mandibular rami dark neutral gray; anterior half of mandible ivory-white; tarsus and toes pale brown; claws light brownish neutral gray.

Measurements.—Males (10 from Chiriquí), wing 71.8-76.8 (73.5), tail 54.4-60.1 (56.7), culmen from base 16.8-19.8 (17.7), tarsus 20.9-26.1 (22.5) mm.

Females (5 from Chiriquí and Costa Rica), wing 72.4-77.5 (75.3), tail 56.7-60.1 (57.7), culmen from base 16.7-19.0 (17.8), tarsus 20.7-26.1 (22.4) mm.

Resident. Fairly common in foothills and highlands of Chiriquí, 840-2460 m. Known from the Volcán de Chiriquí ever since Arcé collected it there (Salvin, Proc. Zool. Soc. London, 1870, p. 184), it has also been collected at Boquete by W. W. Brown, Jr. (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 59) and Davidson (Proc. Calif. Acad. Sci., ser. 4, vol. 23, no. 17, 1938, p. 260). I have encountered peppershrikes at these localities and also at Cerro Pando. It is always highly vocal, but difficult to observe.

In Costa Rica, Skutch (Publ. Nuttall Orn. Club, no. 7, 1967, p. 126-128) found nests between March 27 and early June. He describes the eggs as white, sparsely speckled on the thick end with small dots of bright brown. The only nest recorded from Panamá was discovered by Worth (Auk, 1938, p. 539-540) on July 3, 1937, at El Volcán (1230 m). The nest was in a coffee grove in a large clearing in the jungle, and was built largely of a moss abundant on neighboring branches. It was attached to two forking twigs near the trunk, hung in typical vireo fashion, but woven more heavily and coarsely. The nest contained 2

fledglings about 5 days old, with pin feathers just beginning to sprout; evidently the young were born without down. They were fed entirely on insects, primarily soft caterpillars, and in the following week developed rapidly, assuming the same plumage as their parents. Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 555) reported an immature bird with "the appearance of a recent nestling" collected by Mönniche on the Volcán de Chiriquí on May 16.

CYCLARHIS GUJANENSIS PERRYGOI Wetmore

Cyclarhi. gujanensis perrygoi Wetmore, 1950, Proc. Biol. Soc. Washington, 63, p. 61. (Ciénaga Macana, near El Rincón, Herrera, Panamá.)

Characters.—Lores light neutral gray; chin, extreme upper throat, and center of abdomen white; undertail coverts citron yellow; rest of undersurface strontian yellow, becoming lemon yellow on the lower breast and flanks.

A male collected at Las Palmitas, Los Santos, on January 22, 1962, had the iris light orange; maxilla mouse brown; mandible neutral gray; tarsus, toes, and claws very light dull brown.

Measurements.—Males (10 from Herrera and Los Santos), wing 70.5-75.8 (72.4), tail 51.8-56.7 (54.2), culmen from base 16.6-18.9 (17.5, average of 9), tarsus 20.2-23.3 (22.0) mm.

Females (6 from Herrera and Los Santos), wing 65.8-76.2 (70.2), tail 51.6-56.6 (54.2), culmen from base 16.7-18.2 (17.1), tarsus 21.0-23.4 (21.9) mm.

Resident. In light and scrubby woodlands in lowlands on the Pacific slope of western Panamá from central and southern Coclé (Penonomé, Aguadulce) south through Herrera (El Rincón, Parita), and west in the drainage of the Río Santa María into extreme east central Veraguas (El Villano, 24 km southeast of Santiago). Sight records assumed to be this race come from Santa María, Quebrada Tejel, and Quebrada Chitrabé to the south and west of Pesé, and El Barrero, Herrera.

In the lowland, dry area of the eastern side of the Azuero Peninsula these birds are local in distribution, though not uncommon within the range outlined above. It is probable that they extend through tracts of scattered forest in hilly areas south through Los Santos, though there are no specimen records at present to substantiate this. On July 24, 1964, Eisenmann and N. G. Smith saw 2 in Los Santos on a wooded stream border between Llano de Piedra and Tonosí; Smith saw 1 carrying food. The brilliant coloration of this form is strikingly dif-

ferent from that of *C. g. subflavescens*, found in Veraguas and Chiriquí to the west. The transition between these two forms in the lowlands east of Santiago, Veraguas, is apparently along the low watershed between the Río Santa María of Coclé, Herrera, and extreme eastern Veraguas, which flows into the Gulf of Panamá, and the Río Martín Grande, with its tributaries, which empties into the Gulf of Montijo. A specimen from El Villano, in the drainage of the Santa María, is easily recognized as *perrygoi*, while another from La Colorada on a tributary of the Martín Grande, while somewhat intermediate, is to be placed with *subflavescens*.

I have named this form for Watson M. Perrygo of the U. S. National Museum, my friend and companion on many days afield in Panamá and elsewhere, who shot the first of our specimens of it.

CYCLARHIS GUJANENSIS FLAVENS Wetmore

Cyclarhis gujanensis flavens Wetmore, 1950, Proc. Biol. Soc. Washington, 63, p. 174. (Chimán, Punta Madroño, Panamá, Panamá.)

Characters.—Gray of side of face continues behind crown to form band on upper back; chin and small area in center of abdomen white, rest of undersurface between lemon chrome and lemon yellow.

Measurements.—Males (3 from Province of Panamá), wing 69.2-73.8 (70.0), tail 49.0-52.3 (50.9), culmen from base 17.7-18.5 (18.1), tarsus 20.5-23.2 (21.7) mm.

Female (1 from Province of Panamá), wing 66.0, tail 53.2, culmen from base 18.5, tarsus 21.6 mm.

Resident. Known from coastal area of eastern Province of Panamá, with specimens from Chimán and Majé.

In the course of fieldwork in eastern Panamá in the dry season of 1950 I was fortunate in securing specimens of the peppershrike, which on examination proved to represent an unrecognized form. The birds were found in small numbers in thickets back of the beach at the mouth of Río Majé, and at the mouth of the Río Chimán, near Punta Madroño opposite Chimán; these localities are on the coast a short distance from the Darién border. It is probable that the birds I recorded in 1949 at Chepo on the lower Río Mamóní are this race, and it is practically certain that this is the form obtained in 1941 at Garachiné by the Fifth George Vanderbilt Expedition (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mon. no. 6, 1944, p. 40). Likewise, a bird I found singing on Barro Colorado Island in the Canal Zone on March 9-10, 1950—the only record to date for the Zone—and a pair Ridgely (1976,

p. 282) noted in mangroves near Tocumen, eastern Province of Panamá, on July 10, 1975, were probably representative of this race. More recently others have been seen at Juan Diaz; these are almost certainly *flavens*, spreading from farther east in the Province of Panamá.

CYCLARHIS GUJANENSIS COIBAE Hartert

Cyclorhis coibae Hartert, 1901, Bull. Brit. Ornith. Club 12, p. 33. (Coiba Island, off Panamá.)

Characters.—Darker above than either *subflavescens* or *perrygoi*; chin light neutral gray; upper throat to abdomen pale lemon yellow, brightest just above abdomen, then fading to white on abdomen and undertail coverts.

A male collected on February 1, 1956, had the iris wax yellow; maxilla mouse brown; mandible neutral gray; tarsus and toes avillaneous.

Measurements.—Males (4 from Isla Coiba), wing 69.0-71.2 (70.6), tail 50.5-53.5 (52.6), culmen from base 16.4-17.6 (17.1), tarsus 21.0-22.4 (21.6) mm.

I have found no female specimens in collections.

Resident. During my stay on Coiba in January and February 1956 the peppershrike was fairly common, but this was the beginning of the dry season and their songs had become infrequent; without these notes as a guide they are difficult to find. While they are robust in body, they move about behind leafy cover in such a leisurely manner, resting for minutes with only slight movements of the head, that it is only casually that one is seen. They are birds of the high forest crown, but come also about clearings, even into the low second growth called *rastrojo*, or to the borders of mangrove swamps. At the María work camp I found 1 feeding in mango trees and coconut palms standing isolated in the extensive clearing.

The song is loud with strongly accented notes, and ends abruptly, when there is a pause of varying length, often of several minutes, before it is repeated. The first two or three syllables are uttered rather slowly, followed by a rapidly given louder phrase. The notes carry for several hundred yards, and, if the song is continued, eventually the bird may be located, though the process of finding one may require half an hour. The 3 males that I collected represent many hours of search, since, as already stated, during January the birds were not singing steadily.

In the original description, written 80 years ago, when relatively few specimens were available, Hartert compared the Coiba bird with the race of Cozumel Island, off the coast of Quintana Roo, Mexico, which was suggested by the duller colors of *coibae*. Actually, the subspecies of Coiba Island is more closely similar to the forms of the Panamanian mainland, from which it differs in very decidedly darker, duller colors, the breast and sides being distinctly greenish instead of bright yellow, the dorsal surface duller green, and the crown browner. The type specimen (American Museum of Natural History), taken by Batty April 20, 1901, an immature bird as is shown by the dark, almost black, bill, is browner on the crown than adult specimens.

SMARAGDOLANIUS PULCHELLUS (Sclater and Salvin):
Green Shrike-Vireo, Follajero Verde

FIGURE 19

Vireolanius pulchellus P.L. Sclater and Salvin, 1859, Ibis, p. 12. (Guatemala.)

Large for a vireo; heavy-headed with stout, hooked bill; bright green with blue on hindneck and sometimes on head, and yellow throat.

Description.—Length 126-144 mm. Adult (sexes alike), sides of head, face, and all of upper surface, brilliant parrot green, except blue hindneck and (depending on race) sometimes crown or forehead; abdomen and undertail coverts pale lemon yellow; edge of wing and underwing coverts, pale lemon yellow.

The Green Shrike-Vireo is a common bird wherever it occurs in lowlands and foothills mainly on the Pacific slope, but it rarely descends from the tops of tall trees in forest and second-growth woodland, so it is usually not noticed by those who do not know its three- or four-note whistled song, which it delivers constantly. Occasionally it joins a mixed flock of insectivorous birds and descends to lower levels. Panamá is the southern limit of its range, which extends north to south-eastern Mexico.

Lawrence (Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 468) received a specimen from McLeannan in 1862 and was the first to record this species from Panamá, but not until 1905, when Ridgway described the race *viridiceps* from McLeannan's specimen (Proc. Biol. Soc. Washington, vol. 16, 1903, p. 108), was it recognized that two forms exist in the Republic: one in the west with a blue forehead (*verticalis*), the other in the central and eastern region (*viridiceps*), with a green forehead matching the crown. The difficulty of collecting

or even seeing these birds at the many localities where they are common makes it impossible even today to delimit the range of either race with any certainty.

FIGURE 19.—Green Shrike-Vereo, Follajero Verde, *Smaragdolanus pulchellus*.

SMARAGDOLANIUS PULCHELLUS VERTICALIS (Ridgway)

Vireolanus pulchellus verticalis Ridgway, Proc. U.S. Nat. Mus., vol. 8, 1885, p. 24. (Angostura, Costa Rica.)

Characters.—Forehead, hindneck, and sometimes area surrounding eye, light blue; upper surface parrot green.

Measurements.—Males (6 from Veraguas, Costa Rica, and Nicaragua), wing 68.0-76.5 (73.0), tail 44.4-52.4 (47.9), culmen from base 17.4-21.2 (19.0), tarsus 21.6-22.1 (21.8) mm.

Females (4 from Veraguas, Costa Rica, and Nicaragua), wing 64.5-73.8 (69.5), tail 43.2-47.8 (46.1), culmen from base 17.0-19.5 (18.4), tarsus 20.9-21.8 (21.3) mm.

Resident. This race, which elsewhere occurs in Nicaragua and Caribbean Costa Rica, is known in Panamá from 5 specimens. One is mentioned by Bangs (Proc. Biol. Soc. Washington, vol. 19, 1906, p.

110), who says "I have one adult bird from Boquete, Chiriquí, that is absolutely typical." This is probably MCZ no. 115194, sex ?, "Boqueti," Chiriquí, no date, from the Bangs collection. The catalogue gives no further detail, except an indication that the skin may have been entered about 1901. This bird has the forehead and band across the hindneck blue, and fully agrees with *verticalis*.

Two others were collected at Calovévora, Veraguas, on the Caribbean slope. A male collected by Arcé, now BMNH no. 85.3.10.208, has the blue between the lores typical of *verticalis*, as well as the nuchal stripe. AMNH no. 246930, collected by R. R. Benson, at Calovévora (marked Veraguas, but possibly extreme eastern Bocas del Toro) has the blue on the forehead present, but restricted in extent. AMNH no. 187705-06, from Santa Fé, Veraguas, also collected by Benson, are typical of *verticalis* in the amount of blue on the forehead. These specimens are the basis for Griscom's listing of the race in Veraguas (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 363).

A specimen (USNM no. 61990), collected by Arcé at Calobre, Veraguas, has the feathers on the forehead partly missing, but the few that remain have a bluish cast in contrast to the bright green of the crown, thus showing an approach to *verticalis*. It appears that intergradation between *verticalis* and *viridiceps* takes place through the low divide of eastern Veraguas and probably western Coclé.

The specimen cited in Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 1, 1883, p. 210) collected by McLeannan at "line of railway" is probably the 1862 specimen Ridgway used as the type of *S. p. viridiceps*.

N. G. Smith reports (*in litt.* to Eisenmann) hearing this species, presumably *verticalis*, in Bocas del Toro in forest near the Changuinola-Almirante Canal, during late March 1967.

Slud (Bull. Am. Mus. Nat. Hist., vol. 128, 1964, p. 309) mentions various vocalizations and distinguishes between the songs of the two races, saying *verticalis* has a musical usually three-note *cheéur-cheéur-cheéur* on the same level, while *viridiceps* has a three- or four-syllable chatter, *chyuh-chyuh-chyuh-chyuh* or an almost "spinking" *pü-pü-pü*. My own notes show that the song varies within Panamá, but this constant singer is almost impossible to locate in the tall trees it inhabits and I have never been able to collect a singing bird. It is seen most often when foraging with a mixed flock. At Santa Clara, near Cerro Picacho, in Chiriquí I heard several giving a four-note song on March 16 and 19, 1954. Near Puerto Armuelles, on the hillslope above the terminus

of the logging road at Corotú the song I heard on February 12, 1966, was a three-note whistle. To the east, in the Canal Zone I have heard a three-syllabled *whu-whu-whu* at Juan Mina on January 10, 1955, and at Chiva Chiva on December 29, 1963.

SMARAGDOLANIUS PULCHELLUS VIRIDICEPS (Ridgway)

Vireolanius pulchellus viridiceps Ridgway, Proc. Biol. Soc. Washington, vol. 16, 1903, p. 108. (Panamá.)

Characters.—Blue only on hindneck; rest of upper surface parrot green, less yellowish green than in *verticalis*.

A male collected at Charco del Toro, Río Majé, eastern Province of Panamá on March 27, 1950, had the iris brown; maxilla black; mandible light neutral gray, darker toward base; tarsus, toes, and claws neutral gray; inside of mandible like exterior; tip of tongue horn color; rest of inside of mouth including basal part of tongue black; tongue deeply bifid.

A female collected March 31, 1951, on Cerro Agua at El Valle, Coclé, had the dorsal pteryla broad in the center of the back and interrupted posteriorly so that the lower end presents a broad "V."

Measurements.—Males (5 from Colón, Province of Panamá, and Canal Zone), wing 67.8-71.2 (69.5), tail 43.0-48.1 (45.2), culmen from base 17.9-20.0 (18.7, average of 4), tarsus 21.1-23.6 (21.9) mm.

Females (5 from Coclé, Province of Panamá, and Canal Zone), wing 65.0-71.0 (69.8), tail 39.8-46.9 (43.7), culmen from base 16.8-20.5 (18.1), tarsus 20.4-22.2 (21.5) mm.

Resident. Common in forest and tall second-growth woodland in the more humid areas on the Pacific slope from western Chiriquí to eastern Province of Panamá; in the Canal Zone it has been commonly recorded from both slopes. It also occurs in southwestern (Pacific slope) Costa Rica. Specimen records are few, since this bird is extremely difficult to collect as, when singing, it perches motionless in the tops of tall trees; fortunately it gives a distinctive three- or four-note whistle with what Chapman (My Tropical Air Castle, 1929, p. 240) calls "a tireless persistence." The few specimens in the Smithsonian collections include 1 collected by Arcé at Calobre in Veraguas and recent ones from El Valle in Coclé, Charco del Toro, and Cerro Chucantí (at 510 m on the northwest slope of Serranía de Majé) in the Province of Panamá; Cerro Galera, Albrook Air Force Base, and Barro Colorado Island in the Canal Zone; and the Peluca Hydrographic Station in

Colón. A male collected at Puerto San Antonio, Río Chepo (Griscom, Auk, 1933, p. 305) is in the Havemeyer Collection now at the Peabody Museum in New Haven. The American Museum has specimens from Santa Fé, Veraguas, and Cerro Azul, Province of Panamá.

I have encountered this shrike-vireo in Chiriquí at Puerto Armuelles, Buena Vista (750 m on the Río Escarrea), and at Santa Clara, 1080 m, near Cerro Picacho; in Coclé at the head of the Río Guabal (on the Caribbean slope) and at El Valle; in the Province of Panamá at Cañita, on Cerro Campana, and in Panamá Viejo; in Colón on the Río Boquerón at 240 m and at the Peluca Hydrographic Station; and in many places in the Canal Zone including Chiva Chiva, Gamboa, Juan Mina, and Barro Colorado Island.

Shrike-vireos stay in the densest leaves of the treetops, where their movements are so slow they are rarely noticed. It was not until March 1950, when I was in the Serranía de Majé, where they were common, that I finally succeeded in collecting 1 and was able to associate with a particular species the song I had heard so often. Once, at Chiva Chiva, I watched a shrike-vireo foraging. Its green color matched the leaves exactly, with an occasional flash of blue from the neck. It searched the branches like a vireo, but moved far more deliberately, sometimes hanging underneath a branch while it examined the bark. Presently it seized a good-sized caterpillar, held it under its toes against the branch, and pulled it apart in sections, shaking its head to dislodge fluid from its bill.

Although shrike-vireos sang constantly whenever I encountered them from late December through March, I found no evidence of breeding. Willis found a female building a mossy vireolike cup 14 m up as a male sang and watched, on May 15, 1966, in the Madden Forest Reserve, Canal Zone (Willis and Eisenmann, *Smiths. Cont. Zool.* no. 291, 1979, p. 25). This may be the first published information of the nesting of this species.

**SMARAGDOLANIUS EXIMIUS (Baird): Yellow-browed Shrike-Vireo,
Follajero-Cejiamarillo**

Vireolanius eximius Baird, 1866, *Rev. Amer. Birds*, 1, p. 398. ("Bogotá," Colombia.)

Vireolanius eximius mutabilis Nelson, 1912, *Smiths. Misc. Coll.*, 60, no. 3, p. 20. (Cana, 3,000 ft., eastern Panama.)

Large for a vireo; above bright green with light blue crown; superciliary and throat yellow; rest of undersurface light yellowish green.

Description.—Adult (sexes presumably alike), superciliary, spot at lower front of eye, and throat pale lemon yellow; lores blackish; crown light blue; rest of upper surface parrot green, slightly lighter on upper tail coverts; side of face and wing coverts green; primaries and secondaries black, with outer web edged green; tail green; undertail coverts greenish yellow; rest of undersurface dull green-yellow; edge of wing, underwing coverts, and edge of inner web of primaries and secondaries pale lemon yellow.

Measurements.—Type (female from Cana, Darién), wing 70.0, tail 44.6, culmen from base 18.1, tarsus 22.1 mm.

Resident. The only specimen known from Panamá is a female collected at Cana (900 m), Darién, by E. A. Goldman on June 11, 1912. Nelson described this as the type of a new subspecies, *mutabilis*, that was said to differ from *eximius* in having the supraloral part of the superciliary stripe broader, the forecrown greener, auriculars bordered with blue, yellow of throat changing abruptly into and contrasting with yellowish green of breast (however, there is a large patch of feathers missing from this area in the type), green of underparts paler, and undertail coverts brighter yellow. Blake (Check-list Birds World, vol. 14, 1968, p. 109) referred birds from Córdoba and Antioquia, Colombia, to *mutabilis*, but the series in the Smithsonian from this area is not separable from birds taken elsewhere in Colombia within the range of *eximius*. These specimens show that none of the characters of *mutabilis* are constant, the only possible distinguishing feature being the brighter undertail coverts of the type. Without additional specimens from Panamá, it would be rash to conclude that *mutabilis* is a valid subspecies. It certainly does not constitute a "connecting link" with *V. pulchellus viridiceps* as postulated by Hellmayr (Cat. Bds. Americas, pt. 8, 1935, p. 189), and for this reason it seems prudent to maintain *eximius* as a distinct, monotypic species.

Ridgely (*in litt.*) has seen this species on two occasions in eastern Darién; 2 seen separately on slopes of Cerro Quía (530, 600 m) on July 17, 1975, and 1 seen above Cana (670 m) on March 2, 1981. All 3 birds were foraging with mixed flocks in and just below the canopy. Ridgely never saw a bird sing, but believes that a shrike-vireo-like song heard repeatedly must have been this species. It was distinctly more single-noted than is typical for *pulchellus*, e.g., *pete-pete-pete*. Of interest was his failure on either trip to even hear shrike-vireos at low-land locales; they were not present at Cana itself, only above.

At Santa Fé, western Darién, on March 23 and 31, 1967, Eisenmann

heard, coming from high forest trees, a song that he believed was uttered by *Smaragdolanus*. It was usually a three-noted *pee-pee-pee*, but occasionally two-noted. So far as he knows, no shrike-vireo has been collected or reported seen in this section of Darién.

**VIREO GRISEUS NOVEBORACENSIS (Gmelin): White-eyed Vireo,
Vireo Ojiblanco**

Muscicapa noveboracensis Gmelin, 1789, Syst. Nat., 1 (2), p. 947. (In Noveboraco [= New York]; based on "Green Fly-catcher" of Pennant, 1785, Arctic Zool., 2, p. 389.)

Small; upper surface olive-green; yellow stripe from lores around eye; whitish wing-bars; undersurface white with yellow wash on sides.

Description.—Length 112-124 mm. Adult (sexes alike), stripe from above lores and eye-ring yellow; upper surface plain greenish olive or olive-green; wings dusky, with middle and greater coverts tipped yellowish white, forming two wing bars; primaries and secondaries narrowly edged with greenish, and tertials broadly edged yellowish white; tail dusky with outer web of feathers edged greenish; throat and breast white lightly suffused with gray; sides and flanks pale lemon yellow, rest of undersurface white; underwing coverts and inner web of underside of primaries and secondaries white.

Measurements.—Males (10 from New Jersey, Delaware, and Maryland, collected in May), wing 59.2-62.2 (61.2), tail 46.9-50.8 (48.5), culmen from base 9.9-11.9 (10.9), tarsus 17.5-19.7 (18.3) mm.

Females (10 from New Jersey, Maryland, and Virginia, collected in May), wing 59.0-63.0 (60.6), tail 46.4-52.5 (48.5), culmen from base 10.7-12.8 (11.5), tarsus 15.9-19.8 (18.4) mm.

Accidental. Known definitely in Panamá from 2 specimens collected in Bocas del Toro. One, USNM no. 483154, a female, was caught on February 7, 1963, in a mist net in a fruit grove at Punta Vieja on Isla Bastimentos by C. O. Handley and F. M. Greenwell. They noted that the skull was ossified, the ovary measured 5×3 mm, and the iris was white. The second specimen, USNM no. 486555, unsexed, also came from a mist net, at Almirante, on October 16, 1964 (Hicks, Condor, 1967, p. 90). This northern race of the White-eyed Vireo (breeding in eastern United States) normally winters south to Guatemala, northern Honduras, and western Cuba (A. O. U. Check-list of North American Birds, 1957, p. 467); Bocas del Toro is more than 640 km south of its usual southern limit.

VIREO CARMIOLI Baird: Yellow-winged Vireo, Vireo Aliamarillo

FIGURE 20

Vireo carmioli Baird, 1866, Rev. Amer. Birds, 1, p. 356. (Dota [= Santa María de Dota], San José, Costa Rica.)

Small; upper surface olive-green, with short yellowish eye stripe and broad yellowish wing bars; throat whitish, rest of undersurface yellowish.

Description.—Length 109-116 mm. Adult (sexes alike), upper surface plain greenish olive; short, pale yellowish stripe from upper part of base of maxilla past eye, and yellowish border of lower rim of eye, forming a partial eye-ring; spot between lower part of base of maxilla and front of eye dark gray; sides of head yellowish olive; wing dusky with tips of middle and greater coverts tipped yellowish, forming two wing bars, outer web of primaries and secondaries edged yellowish olive, and outer web of tertials edged yellowish white; tail black, feathers edged yellowish olive; throat whitish, tinged with olive yellowish; rest of undersurface light yellow tinged with olive on breast and sides; underwing coverts light yellow; inner edge of underside of primaries and secondaries white.

Immature, like adult but head and nape dark cinnamon.

A male taken February 24, 1965, at Volcán de Chiriquí, Chiriquí, had the iris reddish brown; maxilla and tip of mandible dull black; base of mandible dark neutral gray; tarsus, toes, and claws bluish neutral gray.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 64.0-67.5 (65.3), tail 44.7-49.6 (47.1), culmen from base 9.2-11.2 (10.4), tarsus 16.9-18.6 (18.1) mm.

Females (5 from Chiriquí and Costa Rica), wing 59.5-64.0 (62.0), tail 45.1-47.8 (46.6), culmen from base 9.9-10.5 (10.3, average of 4), tarsus 16.7-17.8 (17.3) mm.

Resident. Fairly common in western Chiriquí in very humid forest, chiefly between 2000-2670 m, although recorded from 900 to 3170 m. Resident also in Costa Rica. W. W. Brown, Jr., collected a male at Boquete (1350 m) on March 17, 1901 (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 59), but most of the localities from which this bird is known are higher—Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 553), for example, reported them collected by Mönniche at six localities around Volcán de Chiriquí on the Boquete side between 1590 and 2850 m. Two birds collected by Frank A. Hartman at Cerro

Copete (2100 m), above Boquete, are now at Ohio State University, and Davidson (Proc. Calif. Acad. Sci., ser. 4, vol. 23, 1938, p. 260) collected a male at Quiel (2340 m) above Boquete. I have collected *Vireo carmioli* on the west face of Volcán de Chiriquí at 2250 m, on Cerro Punta at 2100 m, and on Cerro Picacho at 2280 m.

FIGURE 20.—Yellow-winged Vireo, *Vireo Alamarillo*, *Vireo carmioli*.

Vireo carmioli is a bird of the high tree crowns, where I have sometimes watched one move slowly in typical vireo fashion and then become more active, almost like a warbler; the large broad head and small bill give this bird a curious appearance. Eisenmann (Condor, 1962, p. 505) reported only once seeing it as low as 13 m from the ground, but whether it normally nests that far from the ground is not yet known. On October 1, 1965, he saw 1 not 7 m up in a small roadside tree above Cerro Punta. The only nests that have been discovered are 2 found by Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, p. 131) in Costa Rica; both were in trees in pastures, 3 and 8 m from the ground. The diet seems to be insects and spiders gleaned from leaves and bark and, occasionally, picked from a leaf while the bird hovers before it. Sometimes it joins mixed species flocks of other insectivores.

These vireos seem to sing during much of the year; Skutch (*op. cit.*) has heard it in Costa Rica from early March to November. Ridgely (*in litt.*) has heard it in Panamá in January. In Panamá, Eisenmann (*op. cit.*) characterizes the song as a husky "cheéyah . . . cheéyou . . . chipcheewéé, repeated a few times, with a long pause between repetitions." Another song phrase or call is *peacheewit*.

As mentioned above, the only information on this species' nesting comes from Skutch's observations in Costa Rica. The 2 nests he found were of typical vireo construction, a cup hung between two slender horizontal twigs, built of lichen, moss, bark, and leaf fragments, and silk from insect cocoons and spider webs. The first nest was begun on May 21 (in Panamá specimens collected by Mönniche had enlarged gonads May 1-19 [Blake, *op. cit.*]) and the first egg was laid May 29. A second egg, which completed the clutch, was laid the next day. They were "white, with small, scattered dark spots on the broader end." Both parents incubated, but the nest was destroyed before the eggs hatched. The other nest Skutch found contained young in late June; they were brooded frequently by both parents and were fed larvae.

VIREO FLAVIFRONS Vieillot: Yellow-throated Vireo,
Vireo Gargantamarillo

Vireo flavifrons Vieillot, 1808, Hist. Nat. Ois. Amer. Sept., 1(1807), p. 85, pl. 54.
(United States [= eastern United States].)

Rather small; throat and breast bright yellow, rest of undersurface white; upper surface olive; yellow eye-ring; wings blackish with prominent white wing bars.

Description.—Length 117-131 mm. Adult (sexes alike), supra-loral stripe, eye-ring, throat, and breast bright lemon yellow; side of head, and most of upper surface yellowish olive; wings blackish, with middle and greater coverts tipped white, forming two bars, undersurface below breast white.

Measurements.—Males (10 from Panamá), wing 70.3-78.5 (75.2), tail 44.2-50.4 (48.0), culmen from base 11.7-12.5 (12.2), tarsus 17.6-19.2 (18.6) mm.

Females (10 from Panamá), wing 72.0-77.2 (74.8), tail 46.0-50.1 (48.3), culmen from base 11.1-13.2 (12.7, average of 9), tarsus 16.1-18.8 (17.6) mm.

Winter visitor from temperate North America, known to winter south to Colombia. Widespread and fairly common, in every province of the Republic. I have also found them on several islands off the Pacific Coast, including San José in the Pearl Islands, Taboga, Parida, and Cébacó; I first thought these vireos were simply passage migrants on the islands, but on January 18, 1965, I found 1 in a berry tree on Isla Cébacó, which suggests by the date and source of food that they may winter there. As evidenced from the collecting localities, the Yellow-throated Vireo is found primarily in the lowlands, but in Chiriquí I have also collected it near El Volcán on the Silla de Cerro Pando at

1500 m, and Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 553) mentions a male collected April 4, 1933, at Lérída (1650 m). Griscom's comments—"decidedly uncommon winter visitant" (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 364) and "few records south of western Panama" (Amer. Mus. Nov. no. 282, 1927, p. 7)—do not seem accurate on the basis of more recent collecting and observation. Ridgely (1976, p. 284) gives dates of occurrence from late October to early April. F. S. Blanton collected 2 males at Albrook Field in the Canal Zone on October 22, 1953, and the latest spring occurrence of which I know is the April 4 bird from Chiriquí mentioned above.

As a migrant and winter visitant in Panamá the Yellow-throated Vireo's habits are essentially the same as in their breeding areas to the north. They are slow moving even for a vireo, although they sometimes join groups of warblers moving through the trees. Willis (Living Bird, 1966, p. 205-206) observed 1 foraging near the ground on Barro Colorado Island on December 17, 1960, that ignored a nearby active swarm of army ants; he remarked that on Barro Colorado this vireo is usually found in the treetops. I have found them in mangrove swamps on San José, Pearl Islands, in open woodland along a quebrada in Jaqué, Darién, and in shade trees over coffee at Santa Clara (1260 m), Chiriquí. At this season they take fruit as well as insects; 1 I shot on Isla Parida, Chiriquí, had the stomach filled with two good-sized drupes.

Molt begins by January. A female I collected January 25, 1962, at Las Palmitas, Los Santos, was molting around the head; the incoming new feathers on the throat appeared very orange. A bird collected at the head of the Río Guabal, in Coclé, on February 28 that year was in molt and had not developed body fat; another bird collected February 28, 1965, at El Volcán, Chiriquí, also had no fat forming. Two birds that had just completed a molt and had no fat were collected at Santa Clara, Chiriquí, on March 17, 1954. I have collected specimens with heavy body fat on March 6, at El Potrero, Coclé, and March 17, at El Volcán. Ridgely (*op. cit.*) says its song is "Quite often heard, especially in spring." Eisenmann (*in litt.*) notes that this species gives a nasal snarl and a fast *chittittittity*, vocalizations also heard on the breeding grounds.

[VIREO SOLITARIUS (Wilson): Solitary Vireo, Vireo Solitario]

Muscicapa solitaria Wilson, 1810, Amer. Ornith., 2, p. 143, pl. 17, fig. 6. (Bartram's Woods, near Philadelphia, Pennsylvania.)

Vagrant. This species is included on the basis of three recent sight reports. At El Volcán in western Chiriquí, 1 was seen on March 17,

1972, by C. Leahy and R. Forster, another on January 16, 1974, by Leahy and Ridgely (Ridgely, 1976, p. 284). As the sightings were in exactly the same place they may have been of the same bird. Another bird was seen on January 24, 1977, near Fort San Lorenzo, Canal Zone, by R. Rodriguez (reported in Toucan, February 1977, p. 6, supplemented by a letter to Eisenmann). There are also recent sightings from Costa Rica. The race that normally occurs closest to Panamá is nominate *solitarius*, which breeds in eastern North America and winters south in Central America in Nicaragua.]

VIREO OLIVACEUS (Linnaeus): Red-eyed Vireo, Vireo Ojirrojo

Rather small; upper surface olive-green with gray crown and white eye-stripe; lower surface white.

Description.—Length 124-144 mm. Adult (sexes alike), crown gray bordered by narrow line of blackish; sides of face, rest of upper surface, including scapulars, and tail, grayish olive; green wing coverts, primaries, and secondaries dusky, with outer web of feathers edged yellowish olive; superciliary white, a narrow dusky gray stripe from bill through and behind eye; loreal region below superciliary blackish; undersurface white; undertail coverts, sides, and flanks often tinged with yellowish olive; edge of wing white; underwing coverts very light yellow; edge of inner web of primaries and secondaries white on underside.

The Red-eyed Vireo of North America is a common migrant throughout Panamá on its way to and from the Amazon Basin, where it spends the winter. It frequents clearings, second-growth woodland, and woodland borders. Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 366) wrote "I have yet to see any evidence to show that the Red-eyed Vireo winters with any regularity in any part of Central America," and Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 49), called it "a common migrant and occasional winter visitant in Panama, August 14-May 1, but chiefly seen in September and October, March and April." Migration continues well into November. To date, there are no winter specimens.

E. S. Morton (Eisenmann *in litt.*) saw a few on the Pacific slope of the Canal Zone in the final week of December 1970. Ridgely reports 1 seen well on January 9, 1974, in forest on Barro Colorado Island.

During both spring and fall the Red-eyed Vireo is "very abundant" at the banding station at Almirante (Loftin, Rogers, and Hicks, Bird-Banding, 1966, p. 41), often occurring in waves. In the spring of 1963, for example, Loftin and Olson (Carib. Journ. Sci., vol. 3, no. 4, 1963,

p. 194) banded Red-eyed Vireos at Almirante between April 8 and May 13. On most days no more than 6 were found in the nets, but on April 18-19, 10 birds were taken each day and on April 28-30 from 10 to 18 each day; after April 30 no more than 2 were netted each day.

The large number of birds netted at Almirante has provided opportunities to study the amount of energy expended by migrants. It is not known whether vireos reaching Panamá in fall have flown nonstop from the United States or have come from farther north in Central America. Rogers and Odum (Wilson Bull., 1966, p. 421) found that newly-arrived Red-eyed Vireos had depleted their fat reserves and some were believed to have lost some of their fat-free weight as well. In an earlier study, however, Rogers (Bird-Banding, 1965, p. 116) collected a vireo killed in an October rainstorm at Almirante and estimated that on the basis of its remaining available fat it could still have flown another 658 km. A male I collected at La Jagua, Province of Panamá, on March 20, 1961, was packed with fat.

While in Panamá, Red-eyed Vireos include fruit in their diet; from September to November 1968 Leck (Living Bird, 1971, p. 92) observed them repeatedly visiting a tree with mistletoe berries. In spring I have seen them moving through the trees with other migrant insectivores.

VIREO OLIVACEUS OLIVACEUS (Linnaeus)

Muscicapa olivacea Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 327; based mainly on "The red-Ey'd Fly-catcher, *Muscicapa oculus rubris*" of Catesby, 1731, Nat. Hist. Carolina, 1, p. 54, pl. 54, lower fig. (North America [= (South) Carolina].)

Characters.—Olive-green of upper surface darker than *caniviridis*, without grayish wash; pileum darker, mouse gray rather than olive-gray; undersurface with yellowish wash in sides and flanks.

Measurements.—Males (10 from northwest Canada and United States, collected in May and June), wing 77.2-83.0 (80.6), tail 45.2-57.2 (54.4), culmen from base 12.3-14.7 (13.4), tarsus 17.1-19.1 (17.8) mm.

Females (10 from northwest Canada and United States, collected in May and June), wing 75.0-79.8 (77.1), tail 48.0-53.6 (51.1), culmen from base 13.0-14.5 (13.6), tarsus 16.4-18.8 (17.7) mm.

Migrant and possibly winter visitant from the north. As a transient, Griscom (Bull., Mus. Comp. Zool., vol. 78, 1935, p. 364) called the Red-eyed Vireo common throughout. It has been recorded at sea level, on islands including Saboga, in the Pearl Islands (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1905, p. 154), and on Taboga (speci-

men in BMNH no. 1925.12.22.321), and at Almirante, Bocas del Toro, where it is one of the commonest migrants caught in the mist nets operated by the Gorgas Memorial Laboratory. The highest elevation at which it has been collected is 1590 m, at Lérica, Chiriquí (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 553). The Smithsonian has specimens from Jaqué, Darién; Chico, and La Jagua in the Province of Panamá; from Alajuela and Fort Clayton in the Canal Zone; and from Almirante, Bocas del Toro.

VIREO OLIVACEUS CANIVIRIDIS Burleigh

Vireo olivaceus caniviridis Burleigh, 1960, Auk, vol. 77, p. 214. (Moscow, Latah County, Idaho.)

Characters.—Olive-green of upper surface paler and with a gray wash; undersurface clearer white, with little or no yellowish olive on sides and flanks.

Measurements.—Males (10 from Idaho, taken in May and June), wing 80.5-83.2 (81.8), tail 56.1-60.2 (58.0), culmen from base 14.1-16.4 (15.5), tarsus 17.1-20.0 (18.5) mm.

Females (3 from Idaho, taken in July), wing 76.0-80.5 (78.3), tail 56.2-58.0 (57.2), culmen from base 14.7-14.8 (14.7), tarsus 18.5-19.4 (18.9) mm.

Migrant from the north. Burleigh's recognition of a separate race for Red-eyed Vireos from the arid northwestern United States, in Idaho, Washington, and Oregon, is not usually admitted (Blake, Checklist Birds World, 14, 1968, p. 122). Alan R. Phillips, however, considers this subspecies to be valid and has identified a male from the La Jagua Hunt Club, Chico, Province of Panamá, taken March 30, 1955, a female from the mouth of the Río Imamadó, Río Jaqué, Darién, taken March 30, 1947, and a female from Pacora, Province of Panamá, taken October 14, 1958 as *caniviridis*.

VIREO FLAVOVIRIDIS FLAVOVIRIDIS (Cassin): Yellow-green Vireo
Vireo Verdiamarillo o Julián Chiví

Vireosylva flavoviridis Cassin, 1851, Proc. Acad. Nat. Sci. Philadelphia, 5, p. 152.

(Panamá and San Juan de Nicaragua; restricted to San Juan de Nicaragua by Zimmer, 1941, Amer. Mus. Novit., no. 1127, p. 2.)

Vireo insulanus Bangs, 1902, Proc. New England Zool. Club, 3, p. 73. (Isla del Rey, Bay of Panamá.)

Rather small; crown medium gray; light gray superciliary; rest of upper surface bright olive-green; undersurface white, with flanks and undertail coverts yellow.

Description.—Adult (sexes alike), crown medium gray, sometimes with indistinct dusky margin; light gray superciliary; lores dull gray; rest of upper surface bright olive-green; sides of breast and flanks olive-yellow; undertail coverts bright sulphur or light lemon yellow; rest of undersurface white; edge of wing and underwing coverts bright sulphur yellow.

Juvenile, crown cinnamon-buff; whitish superciliary; rest of upper surface mainly olive-green; throat white; rest of undersurface very pale yellow.

A breeding male collected March 22, 1961, at La Jagua, Province of Panamá, had the iris light reddish brown; maxilla fuscous-brown; mandible dull ivory flesh color; tarsus and toes neutral gray. A female taken May 21, 1953, at Soná, Veraguas, had the iris light brownish orange; maxilla horn color; mandible light neutral gray; tarsus and toes dull neutral gray. The lighter iris seems definitely to be a sexual characteristic.

Measurements.—Males (10 from Panamá), wing 73.6-78.8 (76.7), tail 53.9-59.9 (56.7), culmen from base 14.2-16.3 (15.4), tarsus 16.9-18.1 (17.6) mm.

Females (10 from Panamá), wing 69.0-75.9 (71.7), tail 46.5-53.1 (49.5), culmen from base 13.0-15.2 (14.5), tarsus 17.1-18.6 (17.8) mm.

Resident. Common to abundant in woodland borders, clearings, cut-over areas, coastal scrub and mangroves, gardens, open woods, and second growth on the Pacific slope and on islands off the coast and in extensively cleared areas of the Canal Zone to the Caribbean slope. The Yellow-green Vireo is a widespread breeder on the entire Pacific slope of the Republic, except in Darién, where its status is uncertain (possibly only a transient). At higher elevations and humid lowlands it occurs only in cleared areas: W. W. Brown, Jr. (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 58) collected 4 at Boquete (1440 m), and Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 553) records it from three localities around the Volcán de Chiriquí at 1560 to 1620 m. In the western Azuero Peninsula, Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 117) found it as high as 900 m. Off the coast, the Yellow-green Vireo is very common on Isla Coiba and the Pearl Islands. On the Caribbean slope this species rarely appears away from cleared areas in the Canal Zone. Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 366) notes a female taken by von Wedel on September 3, 1929, at Permé, San Blas, and Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 333) records another Wedel speci-

men taken September 27, 1927, at Changuinola in the Chiriquí Lagoon region of Bocas del Toro. Loftin (*in litt.*) reports that in 1962 Yellow-green Vireos were taken rather regularly between September 7 and October 30 in the mist nets operated by the Gorgas Memorial Laboratory at Almirante, Bocas del Toro; presumably, these were migrants from farther north.

The Yellow-green Vireo is the only oscine that breeds in Central America and is definitely known to migrate to South America, where it spends a few months in the upper Amazon Basin. Its breeding range extends north to Mexico and southern Texas; undoubtedly the birds mentioned above from the Caribbean slope and also some from higher elevations on the Pacific slope are transients. Yellow-green Vireos usually have passed through or withdrawn from Panamá by late October, although in 1963 Loftin netted 1 at Ancón, in the Canal Zone, as late as November 17. Although there is some variation from year to year, usually by late December (December 20, 1970, at Fort Kobbe, Canal Zone [Morton, Auk, 1977, p. 99]) the first birds return to the Pacific Coast; in mid-January birds returning there are at their peak. Farther inland the peak is slightly later, and on the Caribbean slope it does not occur until mid-March. (In 1962 I observed a considerable flight at El Potrero, Coclé, as late as March 8, when I saw as many as a dozen birds gathered in one berry-bearing tree at the same time). Morton (*op. cit.*) suggests that the breeding season is timed to coincide with an abundance of fruit, which is available sooner on the dry Pacific Coast than it is farther inland or on the Caribbean slope. The withdrawal to South America is at a time when fruit is more abundant there than during the late rainy season in Panamá.

H. Loftin's banding data indicate that, despite migration, adults return to the area where banded: 2 banded at Curundu, Pacific slope in the Canal Zone on March 6 and 9, 1963, were recaptured on February 9 and 11, 1964, and the former again on April 2, 1966; 1 banded at San Francisco, Veraguas, on April 26, 1965, was recaptured May 5, 1969.

The taxonomy of the Yellow-green Vireo is disputed. Blake (Checklist Birds World, vol. 14, 1968, p. 123) treats *flavoviridis* as a race of *Vireo olivaceus*, as well as the South American *V. chivi* complex, although they differ in wing-formula and in color and there is no evidence of intergradation. Peters (Auk, 1931, p. 575-587) considered *V. flavoviridis* as a full species, with the races *insulanus* breeding in Panamá, nominate *flavoviridis* on the mainland north of Panamá, and *forreri* breeding in the Tres Marías Islands off the west coast of Mexico, whereas Blake identifies some of the breeding birds of Panamá as

flavoviridis and included part of the Mexican mainland in the breeding range of *forreri*. When I was in the Pearl Islands in 1944 the bird was common and I secured a series of 21 skins to check on the question of the supposed form *insulanus*, described by Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 73) from El Rey Island and later considered to be the bird of the Panamá mainland also. There is variation in depth of color among these, some being decidedly darker, but this seems to be entirely individual, for which reason *insulanus* was synonymized with *flavoviridis* (Wetmore, Smiths. Misc. Coll., vol. 106, no. 1, 1946, p. 54). Migrant individuals of *forreri* may be recognized by their much larger size, as for example a specimen from Socorré, Río Sinú, Córdoba, Colombia, taken by Carriker on April 25, 1949 (USNM no. 412462). No specimens of this race have yet been identified from Panamá, however.

Morton (*op. cit.*, p. 101) examined the stomach contents of 98 Yellow-green Vireos taken in Panamá and found that 89 percent of the birds specialized in either fruit or insects, with their stomachs containing 90 percent of one or the other; about half specialized in each, while the remaining 11 percent had stomachs containing equal portions of fruit and insects. Those specializing in insects had a far lower volume of food matter in their stomachs. The birds that filled up on fruit may be ones that learned the location of fruiting trees and visited them repeatedly, even when the trees were outside of their breeding territory. The plants from which Morton found the vireos taking fruit included, in order of decreasing occurrence in stomachs: *Miconia* sp., *Pithecolobium rufescens*, *Didymopanax morototoni*, *Pittoniotus tricantha*, *Guazuma ulmifolia*, *Lasiacis sorghoidea*. Two collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 16.6 and 17.7 g.

The arrival of the Yellow-green Vireo after its absence in South America is easy to detect, since it is a persistent singer, even through the hottest parts of the day. In tone and method of utterance the notes are like those of the Red-eyed Vireo, but somewhat more leisurely and slightly harsher in sound. Sometimes the phrases are shorter and the pauses in between longer than a Red-eyed Vireo's, and I have also heard the song so harsh that it sounded almost like a House Sparrow's. Morton (*op. cit.*, p. 98) found that after pairing, males sang less persistently but gave rapid, songlike phrases when moving toward females, who responded with a harsh chatter. In June and July singing increases somewhat, although often males were in molt and not associating with females. They also give a harsh, nasal *nywey* (Eisenmann, *in litt.*).

During the courtship season I have several times observed males posed with head and neck erect, crest raised, and tail stiffly spread. Chasing is also frequent among males. Skutch (Pacific Coast Avif., no. 34, vol. 2, 1960, p. 22) describes a female Yellow-green Vireo tending her nest while courted by an immature male that perched at the edge of the nest, swayed back and forth, and sang. In 1970 Morton found pairs on the Pacific slope of the Canal Zone beginning to nest in mid-January; they fledged young before any birds had even returned to the Caribbean coast, only 54 km away. On the Pacific Coast the last adults with dependent fledged young were seen on July 14.

The nest is a typical vireo construction. I found one at La Palma, Los Santos, on March 27, 1948, that was hung in a little fork 5 m from the ground. The outside was covered with lichen and spider webs. Skutch (*op. cit.*, p. 15) lists "small papery leaves of bamboo or grass, fibrous roots of epiphytes plucked from slender branches, and much cobweb" as the ingredients. The nest is built entirely by the female.

The clutch is usually three eggs. Major General G. Ralph Meyer found a nest on May 15, 1941, on the Gamboa Road near the Naval Station in the Canal Zone; the measurements of all eggs were 21×15 mm. Peters (*op. cit.*, p. 579) describes eggs of this species from Costa Rica as "white, speckled chiefly at the larger end with spots varying in color from a dark chestnut to an orange rufous, the chestnut predominating."

Skutch (*op. cit.*) observed that incubation is performed entirely by the female and requires 13 or 14 days. At hatching the nestlings have a few scattered tufts of very short down and their eyes are tightly closed. They are fed a diet of insects by both parents. By their fourth day pinfeathers have begun to push through, but the birds' eyes are still shut. On their eighth day of life the nestlings are feathered except on the head, and their eyes—brown rather than red—are fully open. At 11 days the young are well feathered and move restlessly in the nest, which they will leave within the next 3 days.

VIREO ALTILOQUUS (Vieillot): Black-whiskered Vireo, Vireo Barbinegro

Rather small; crown dull gray; rest of upper surface dull olive-green; superciliary whitish; dusky moustachial stripe; undersurface white; undertail coverts pale yellow.

Description.—Length 126-145 mm. Adult (sexes alike), crown brownish, usually without any dusky border; rest of upper surface dull olive-green; wing coverts, primaries, and secondaries dusky, with

outer webs edged light yellowish olive; tail olive, usually with outer webs edged light yellowish olive; superciliary whitish to pale grayish buff; sides of face grayish buff; thin line above superciliary, line through eye, and moustachial stripe dusky; sides and flanks pale yellowish olive to grayish olive-green; undertail coverts pale yellow; rest of undersurface white; edge of wing very pale yellow; underwing coverts yellowish white, edge of inner web of primaries and secondaries white on underside.

The Black-whiskered Vireo breeds in southern Florida, the Bahamas, and the islands of the Caribbean. Two races are migratory, wintering in the Amazon Basin of South America. In Panamá this vireo is known from 3 specimens and some recent sight reports. Ridgely (1976, p. 285) refers to "several recent sightings in Canal Zone: One at Achiote Road on September 29, 1968 (Ridgely); and one at Gatún Dam on January 29, 1970 (E. S. Morton)." The specimen records are discussed below.

VIREO ALTILOQUUS BARBATULUS (Cabanis)

Phyllomanes barbatulus Cabanis, 1855, Journ. f. Ornith., 3, p. 467. (Cuba.)

Characters.—Superciliary stripe pale and less buffy than in *V. a. altiloquus*; throat and chest purer white.

Measurements.—Males (10 from Florida and Cuba), wing 77.2-80.1 (78.5), tail 51.1-57.7 (55.8), culmen from base 14.7-17.1 (15.9), tarsus 15.1-19.5 (17.6) mm.

Females (9 from Cuba), wing 72.0-78.2 (74.5), tail 49.2-55.3 (52.4), culmen from base 13.1-16.3 (15.2), tarsus 16.1-18.7 (17.5) mm.

Accidental. This race breeds from the coast of southern Florida through the Florida Keys and Dry Tortugas to the Bahamas and Cuba, and winters in the Amazon Basin from northeastern Peru to north-central Brazil. Hasso von Wedel collected 1 (unsexed) at Puerto Obaldía, San Blas, on September 12, 1930, that Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 366) considered "unquestionably this subspecies." The specimen is now at the Museum of Comparative Zoology. Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 364) lists this form from the Canal Zone as well, on the basis of a specimen sent to Salvin from there by McLeannan; at the time of Griscom's writing that specimen had not been checked by him as to subspecies, but when I examined it at the British Museum in 1958 I found that, although in decidedly worn plumage, it agreed well with nominate *altiloquus*.

VIREO ALTILOQUUS ALTILOQUUS (Vieillot)

Muscicapa altiloqua Vieillot, 1808, Hist. Nat. Ois. Amer., September, 1 (1807), p. 67, pl. 38. (Jamaica, Santo Domingo, etc.; types from St. Thomas, Virgin Islands, *vide* Stenhouse, 1930, Novit. Zool. 35, p. 271.)

Characters.—Back brighter olive-green than in *V. a. barbatulus*; superciliary less pale, more grayish buff; throat duller, chest tinged with pale grayish olive-green.

Measurements.—Males (10 from Haiti), wing 73.2-87.5 (80.6), tail 48.7-57.5 (54.9), culmen from base 15.5-19.2 (17.0), tarsus 17.4-19.6 (18.2) mm.

Females (10 from Haiti), wing 74.2-81.0 (77.0), tail 44.5-55.5 (51.2), culmen from base 14.9-18.9 (16.6), tarsus 17.0-19.8 (18.3) mm.

Accidental. This race replaces *V. a. barbatulus* in most of the Greater Antilles and in the Virgin Islands; it winters mainly in northern South America, east to Guyana and south in Amazonia to lower Río Madeira. Two specimens of this race have been collected in Panamá. A male was sent by McLeannan to Salvin from the "Isthmus of Panamá" (Sclater and Salvin, Proc. Zool. Soc. London, 1864, p. 348); it is now BMNH no. 85.3.10.1. Another male was collected by Benson on August 31, 1926, at Guaval on the Río Calovévora, on the Caribbean slope of Veraguas and is now in the American Museum of Natural History (no. 246926).

**VIREO PHILADELPHICUS (Cassin): Philadelphia Vireo,
Vireo de Filadélfia**

Vireosylva philadelphica Cassin, 1851, Proc. Acad. Nat. Sci., Philadelphia, 5, p. 153, pl. 10, fig. 2. (Bingham's woods, near Philadelphia, Pennsylvania.)

Small; gray crown, dull olive back; white superciliary; undersurface mostly dull light yellow.

Description.—Length 107-122 mm. Adult (sexes alike), crown plain mouse gray; rest of upper surface grayish olive-green, slightly lighter on rump; superciliary white; loreal area below superciliary and spot behind eye dusky grayish; side of face pale olive; upper throat and lower abdomen whitish; rest of undersurface pale yellow, slightly deeper on breast; underwing coverts whitish.

A female taken March 1, 1962, at the head of the Río Guabal, Coclé, had the iris dark brown; maxilla and tip of mandible dark grayish brown; tip of mandible light neutral gray; base dull white; tarsus, toes, and claws dark neutral gray.

Measurements.—Males (10 from Panamá), wing 62.4-68.0 (66.3),

tail 42.1-48.1 (45.9), culmen from base 10.1-11.9 (10.9), tarsus 12.8-16.7 (15.6) mm.

Females (10 from Panamá), wing 61.0-69.2 (64.6), tail 38.1-45.5 (43.2), culmen from base 9.9-11.7 (10.6), tarsus 13.3-16.9 (15.4) mm.

Migrant from the north, and winter resident. Common in foothills and highlands of Chiriquí and Veraguas, rarer in lowlands of western and central Panamá. The farthest east in Panamá from which this species has been reported is in the Bayano River basin, on January 10, 1976 (J. J. Pujals, to Eisenmann). The Philadelphia Vireo is found in Panamá from October to mid or late April; usually it inhabits woodlands, where it often travels with mixed flocks of North American migrants especially warblers, but I have also found it in mangrove swamps on islands off the Pacific Coast. The highest elevation at which it has been collected is 1620 m, at Lérida, Chiriquí, by Mönniche (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 554) and at Quiel, near Boquete, by Benson, and there are numerous records from elsewhere in the highlands of Chiriquí and Veraguas. I have collected Philadelphia Vireos in Chiriquí at elevations from 1260 m at El Volcán and Santa Clara, to Concepción, 240 m, down to Las Lajas, Puerto Armuelles, and Punta Balsa, at or near sea level, and Isla Parida offshore.

In the Veragus highlands, Arcé collected the Philadelphia Vireo at Chitra (Salvin and Godman, *Biol. Centr.-Amer., Aves*, vol. 1 (pt. 14), 1881, p. 191) and Ridgely (*in litt.*) with F. Gary Stiles reports a "flock of at least 30 in woods along river below Santa Fé [1200 m.] in part assembled by Stiles' pygmy-owl hooting" on January 6, 1974. My only encounters with the Philadelphia Vireo in Veraguas have, in contrast, been on islands off the Pacific Coast—Cébaco, Gobernadora, Afuerita, and Coiba.

On the western side of the Azuero Peninsula, Aldrich and Bole (*Scient. Publ. Cleveland Mus. Nat. Hist.*, vol. 7, 1937, p. 118) found the Philadelphia Vireo "rather common in mixed flocks of arboreal North American migrants." Specimens at the Smithsonian from other provinces include birds from Almirante, Bocas del Toro; Santa María, Herrera; Pedasí, Los Santos; and Tigre, at the head of the Río Guabal, Coclé. Ridgely (1976, p. 285-286) mentions some recent reports by Eugene S. Morton of the Philadelphia Vireo in the Canal Zone: "one collected at Albrook Air Force Base on February 19, 1971; one seen at Madden Lake Scout Camp on February 26, 1971; one collected at Gatún Dam on April 4, 1971."

Like many insectivorous migrants from North America, the Philadelphia Vireo becomes more sociable out of the nesting season and more

flexible in its choice of habitat and food. It feeds extensively on insects, but at Isla Parida, Chiriquí, I took 2 on February 5, 1963, that had eaten small drupes. The specimen collected by Morton at Gatún Dam had in its stomach "red arils, green *Miconia* fruit; no insects," while that taken at Albbrook had "small beetles of several species and one small buprestid" (data on labels in American Museum of Natural History). On March 20, 1975, Morton and Eisenmann noted 2 in a *Bursera* tree with a variety of northern wood warblers in the light woodland of Farfan Road, southwestern Canal Zone.

Buskirk et al. (Auk, 1972, p. 619), when studying mixed species flocks near Cerro Punta, Chiriquí found that Philadelphia Vireos were present in at least 26 percent of the flocks they observed; the vireos were "joiners," but did not follow the flock from place to place. At the same locality Leck (Bird-Banding, 1975, p. 202) banded and weighed Philadelphia Vireos in 1968; he found that the average weight of 12 taken in March was 11.4 g and the next month 5 averaged 12 g. A bird that I took at Pedasí, Los Santos, on March 17, 1957, was not at all fat.

Ridgely (*in litt.*) observed a Philadelphia Vireo on Barro Colorado Island (March 13, 1979) with an antwren flock. He notes that in many areas this species seems to prefer coffee groves above all other habitats, especially where there are trees shading the coffee and where rank vegetation has grown up around the coffee bushes.

VIREO GILVUS (Vieillot): Warbling Vireo, Vireo de Capucha Chocolate

Muscicapa gilva Vieillot, 1808, Hist. Nat. Ois. Amer.; September 1, (1807), p. 65, pl. 34. (New York State.)

Small; crown brown; rest of upper surface olive-green; superciliary white; throat and breast white; rest of undersurface pale yellow.

Description.—Length 107-121 mm. Adult (sexes alike), crown olive-brown; rest of upper surface grayish olive to brownish olive-green, superciliary white; dusky brown postocular streak and loreal spot; facial area, throat, upper chest grayish, and white; rest of undersurface, edge of wing, and underwing coverts pale yellow or whitish.

Vireo gilvus, the Warbling Vireo of North America and Mexico, includes other forms through Central America and as far south as Bolivia and southeastern Peru. Blake (Checklist Birds World, 1968, p. 127-129) distinguishes 17 forms, all of which he puts in *V. gilvus*. Some consider the races south of Oaxaca, Mexico, distinct enough from northern *gilvus* to merit specific status under the name *leucophrys*, while others believe the races breeding from southern Mexico to Nica-

ragua are more closely allied to northern *gilvus* than to the forms from Costa Rica south.

Little is known of the biology of any of the southern races. Slud (Bull. Amer. Mus. Nat. Hist., 1964, vol. 128, p. 312), writing of *V. gilvus chiriquensis*, the bird of Costa Rica and western Panamá, says it generally occurs in small groups, in two's, or singly, high in trees or lower in second growth and thickets. Like other vireos it is a persistent singer. Eisenmann (Condor, 1962, p. 505-506) found the song like that of a northern Warbling Vireo, but shorter and less varied, with song phrases lasting 3 to 3.5 seconds and pauses in between of 3 to 5 seconds. Other vocalizations include a high thin *tsip*, sometimes *dzheep*; a *tsip*, *tit-tit-tit-tit*, given when moving about; and a sharp *zweéyoo*, *zweéyoo*, *zweéyoo*, given when gleaning, often hanging upside down.

Eisenmann (*op. cit.*) believes that *V. gilvus* has increased in Panamá with the clearing of forest.

VIREO GILVUS CHIRIQUENSIS (Bangs)

Vireosylva josephae chiriquensis Bangs, 1903, Proc. New England Zool. Club., 4, p. 9. (Boquete, 4000 ft, Volcán de Chiriquí, Panamá.)

Characters.—Back light grayish olive, contrasting with olive-brown crown; undersurface decidedly yellow.

Measurements.—Males (10 from Chiriquí), wing 59.5-67.5 (64.0), tail 43.3-49.6 (45.9), culmen from base 10.4-12.6 (11.6), tarsus 15.3-17.3 (16.5) mm.

Females (10 from Chiriquí), wing 59.0-66.0 (62.0), tail 40.7-47.5 (45.0), culmen from base 10.9-12.5 (11.9, average of 9), tarsus 15.4-17.6 (17.0) mm.

Resident. Common in forest borders, open woodland, and shrubby clearings in the highlands of western Panamá, and in Costa Rica. Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 364) gives its range in Panamá as "mountains of Chiriquí and Veraguas." Ridgely (1976, p. 286) includes western Bocas del Toro as well. W. W. Brown, Jr. (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 58) collected this species at Boquete and on the Caribbean slope of Volcán de Chiriquí between 1200 and 2100 m. Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 554) found it on Volcán de Chiriquí between 1560 and 1860 m. Ridgely found it at 1150-1200 m at Fortuna, Chiriquí, in 1976. Two specimens from Isla Cébaco and 1 from Isla Sevilla (both localities listed by Zimmer, Amer. Mus. Nat. Novit., 1127, 1941, p. 19), were collected by J. H. Batty, whose locality data has been shown to

be unreliable (Wetmore, Smiths. Misc. Coll., vol. 134, no. 9, 1957, p. 7). The specimens almost certainly come from Boquete, as did the remainder of Batty's series in the American Museum. The Smithsonian specimens all come from Chiriquí—at Quiel (1560 m) near Boquete, Santa Clara (1260 m), Cerro Punta, and El Volcán (1350 m).

My own experiences with this vireo have been limited. On March 7, 1954, I shot 1 from a little group of migrant warblers in high branches at the border of forest near El Volcán. At other times I have found it in forest undergrowth. Eisenmann (Condor, 1962, p. 505) noted that at Cerro Punta it "favors borders of streams, edges of clearings, and cut-over open woods, rather than heavy forest." In 1961 he found many singing in early April. My own observations were all in February and March of 1954 and 1955, when the notes I took made no mention of singing activity; I did remark, however, that a male collected March 22, 1954, was not breeding. The nest and eggs of the tropical forms of species have not been described.

So far as known, the Warbling Vireo is insectivorous. Sometimes while foraging they hang upside down while among the terminal twigs. They participate regularly in interspecific foraging flocks. In addition to my own and Eisenmann's observations of this species in mixed flocks, Buskirk et al. (Auk, 1972, p. 619) found that at Cerro Punta Warbling Vireos were part of 25 percent of all flocks observed, although they never followed the wandering birds for any distance. Leck (Bird-Banding, 1975, p. 202), who weighed 8 birds that were caught in mist nets at Cerro Punta during September and October of 1967 and another 8 the following March and April, found their average weight in "fall," i.e., after the breeding season (12.8 g), higher than in "spring" during the breeding season (11.7 g).

VIREO GILVUS DISSORS Zimmer

Vireo gilvus dissors Zimmer, 1941, Amer. Mus. Novit., no. 1127, p. 18. (Cerro Munchique, 7000 ft, west of Popayán, Colombia.)

Characters.—Crown grayer, not warm brown of *chiriquensis*; upper surface greener, less brown; undersurface paler, less yellow.

Measurements.—Males (10 from Colombia), wing 64.2-69.0 (65.9), tail 46.5-51.5 (48.6), culmen from base 10.9-13.9 (12.5), tarsus 16.2-17.3 (16.8) mm.

Females (10 from Darién and Colombia), wing 62.0-67.9 (65.5), tail 45.6-51.3 (47.7), culmen from base 11.8-12.9 (12.3), tarsus 15.2-17.3 (16.4) mm.

Resident. Known in Panamá from a single specimen, a female col-

lected on June 4, 1963, by Dr. Pedro Galindo at 1440 m, 6.4 km west of the summit of Cerro Malí, Darién. In Colombia this race—including Zimmer's form *disjunctus* (Olson, Proc. Biol. Soc. Wash, vol. 94, 1981, p. 363)—inhabits the entire extent of the western and central Andes. The specimen from Panamá has the pale undersurface typical of Colombian birds and the upper surface most like that of *dissors*, to which it was tentatively assigned (Olson, *ibid*).

**HYLOPHILUS DECURTATUS (Bonaparte): Lesser Greenlet,
Verdecillo Menor**

Very small; crown gray or yellowish olive; rest of upper surface yellowish olive-green; undersurface white, greenish yellow on flanks.

Description.—Length 89-100 mm. Adult (sexes alike), crown either medium gray (slightly mixed with yellowish olive) or all yellowish olive; rest of upper surface yellowish green; wing coverts green; remiges dusky, with primaries edged narrowly and secondaries broadly green; tail green; narrow supraloral stripe and eye-ring whitish; side of face light gray; sides of breast and flanks olive-yellow; rest of undersurface white; edge of wing and underwing coverts pale yellow; underside of inner web of primaries and secondaries edged yellow.

Immature, undersurface tinged with buffy.

The Lesser Greenlet is one of the commonest birds throughout the Republic, occasionally up to about 1800 m but is absent from drier scrubby or open areas on the Pacific lowlands of the eastern Azuero Peninsula, Coclé, and western Province of Panamá. It frequents forest and second-growth woodland, where it gleans insects and spiders from middle and upper level foliage in the active manner of a warbler. It is a gregarious bird, often traveling in small groups, and a regular member of interspecific flocks of insectivores. At Jaqué, Darién, I once saw 1 with a little flock of the antwren *Myrmotherula axillaris*. Eisenmann (Condor, 1962, p. 507) considers it an ecological replacement of *Vireo flavoviridis* in the lowland canopied forest. He adds, however, that both occur together in lighter woodland and forest borders.

The green-crowned populations of eastern Panamá, Colombia, and western Ecuador, sometimes considered a distinct species, *H. minor*, intergrade in central Panamá with gray-crowned *H. decurtatus*, of southern Mexico to western Panamá. In the extensive series at the Smithsonian, most gray-crowned *H. d. decurtatus* show at least some green edging to the crown feathers. In the Province of Panamá an example from Cerro Chame shows almost none, but series from Cerro

Campana and Río Indio show slightly more than average. In an old series from Gatún, Canal Zone, all but one are gray-crowned with variable green edging to the feathers; the exception is all green and has been identified as *H. d. darienensis*. Two specimens from Juan Mina, Canal Zone, are nearly intermediate, but tending more toward gray. In 2 from Cerro Azul, to the east, 1 is an intermediate and the other *darienensis*. A specimen from Pacora still shows a trace of gray, while those from Chepo eastward are all *darienensis*.

Ridgely (1976, p. 286) describes the call of this species as "a rapid musical phrase suggestive of a single phrase of the Yellow-green Vireo but even more monotonous, constantly repeated, typically *deedereét* or *itsacheét*." Eisenmann (Smiths. Misc. Coll. vol. 117, no. 5, 1952, p. 49) says the call is given at intervals of about 5 seconds. E. S. Morton (*in litt.* to Eisenmann) could find no constant difference between vocalization in the Canal Zone of birds with predominantly gray crowns and those on Cerro Azul with completely olive-green or mixed crowns. A series he collected shows every variation between green and gray crown; moreover, seeming pairs included differently colored individuals.

HYLOPHILUS DECURTATUS DECURTATUS (Bonaparte)

Sylvicola decurtata Bonaparte, 1838, Proc. Zool. Soc. London, 5 (1837), p. 118. (Guatemala.)

Hylophilus pusillus Lawrence, 1862, Ann. Lyc. Nat. Hist. New York, 7, p. 323. (Atlantic side of Isthmus of Panamá.)

Characters.—Crown gray.

A male taken February 18, 1966, at Puerto Armuelles, Chiriquí had the iris brown; maxilla except cutting edge fuscous-black; cutting edge and mandible pale neutral gray; gape dull honey yellow; tarsus, toes, and claws neutral gray; lower surface of toe pads dull honey yellow.

Measurements.—Males (10 from western Panamá), wing 50.8-54.4 (52.7), tail 32.6-38.9 (35.3), culmen from base 11.8-13.6 (12.7), tarsus 14.6-17.2 (16.3) mm.

Females (8 from western Panamá), wing 45.3-50.8 (47.7), tail 28.7-36.6 (32.5), culmen from base 11.7-13.8 (12.4), tarsus 15.2-16.8 (16.1) mm.

Resident. Common in lowland forest, second-growth woodland, and coastal mangrove forest recorded on Volcán de Chiriquí as high as 1800 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 554-555). Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 24) found it common in semi-deciduous coastal forest, be-

low 300 m, near Montijo Bay, Veraguas. On Barro Colorado Island in the Canal Zone, where the population is intermediate between nominate *decurtatus* and *darienensis*, Willis and Eisenmann (Smiths. Cont. Zool. no. 291, 1979, p. 26) found it "very common in the treetops, often the center of mixed flocks there or in groups of its own kind." The Smithsonian has specimens from several locations in Chiriquí, including Puerto Armuelles on the coast and El Volcán at 1320 m; from Bocas del Toro at Almirante and Isla Bastimentos; Soná and Puerto Vidal in Veraguas; Pedasí in Los Santos; El Valle and El Copé in Coclé; and Río Indio in Colón.

There is little information on the breeding of this bird in Panamá. E. A. Goldman's notes include the mention of a female "in breeding condition" taken at Gatún, Canal Zone, on April 26, 1911. Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 273) lists "male and young" collected at Gatún on June 25 and July 4, 1911. Fortunately, Skutch (Pacific Coast Avif., no. 34, 1960, pp. 29-34) has studied this race in Costa Rica. After living 20 years where Lesser Greenlets were abundant he found its nest in April of 1955. The nest was a deep cup attached by its rim to two diverging branchlets of a large muñeco (*Cordia*) tree, 4.5 m above the ground. The structure was mainly leaves, in strips or fragments, or whole if small, all held together and attached to the branches by fibers and cobweb, and lined with a sparse layer of vegetable fibers. Outside dimensions were 8.9 cm in height by 6.4 cm in diameter at the top; the interior was 4.5 cm in both diameter and depth. The eggs were not laid until a week after the nest was completed. The two eggs, laid a day apart, were "white, scarcely glossy, spotted and blotched with pale brown, heavily on the large end and sparingly elsewhere. They measured 17.5 by 13.5 and 18.3 by 13.5 millimeters."

Incubation took 16 days and when the young hatched they were devoid of down; the interior of their mouths was yellow. The young were periodically brooded by the female, but fed by both parents, who brought them insects and spiders. At 6 days of age the young had prominent pinfeathers, although still no down, and their eyes were partially open. Three days later feathers covered most of their bodies; at 12 days they left the nest, with 1 flying about 8 m in its first flight.

HYLOPHILUS DECURTATUS DARIENENSIS (Griscom)

Pachysylvia minor darienensis Griscom, 1927, Amer. Mus. Novit., no. 282, p. 7.
(Cape Garachiné, eastern Panamá.)

Characters.—Crown yellowish olive.

A male collected March 9, 1963, at Armila, San Blas, had the iris mouse brown; maxilla fuscous-black; mandible neutral gray; tarsus, toes, and claws bluish neutral gray.

Measurements.—Males (10 from Province of Panamá), wing 50.1-53.7 (51.7), tail 31.2-33.7 (33.2), culmen from base 11.4-13.8 (12.8), tarsus 15.1-16.9 (15.6) mm.

Females (10 from Province of Panamá and Darién), wing 47.0-52.8 (48.7), tail 26.1-35.4 (32.0), culmen from base 11.6-13.7 (12.6), tarsus 15.1-16.9 (16.0) mm.

Resident. Common and widespread in forest and second growth of eastern Panamá, found in Darién as high as 1000 m on Mount Sapo and 1200 m on Cerro Pirre. This race is also found in Colombia south on the Pacific Coast to Dagua Valley, and the upper Sinú and middle Magdalena Valleys. The Smithsonian collection includes specimens of "pure" *darienensis* from as far west as Utiwé, on the Río Colobre, in the Province of Panamá, and also from Chepo, Chimán, and Cerro Chucantí farther east in that Province. The collection also includes birds from Armila, San Blas, and Jaqué, Cana, and Tacarcuna Village in Darién.

Griscom (Amer. Mus. Novit. no. 282, 1927, pp. 7-8), when describing this race wrote that in habits and song it is like *decurtatus*. Two stomachs from Cana examined by E. A. Goldman held only insects: one had 3 ants 10%, caterpillar skin 10%, a large pale colored blattid 80%; the other had bits of a hymenopteran 2%, a small moth with 4 eggs 8%, a caterpillar 10%, bits of a small elaterid 5%, a small curculionid 5%, a beetle 5%, other coleopteran remains 5%, 3 pale colored blattids (with 1 egg case) 60%.

On February 22, 1950, I shot 3 Lesser Greenlets from a flock of 8 or 9 at Chimán; of these, 2 were barely grown. Nothing, however, is known of the breeding biology of this race.

HYLOPHILUS AURANTIIFRONS AURANTIIFRONS Lawrence:
Golden-fronted Greenlet, Verdecillo Frontidorado

Hylophilus aurantiifrons Lawrence, 1862, Ann. Lyc. Nat. Hist. New York, 7 (1861), p. 324. (Atlantic slope near Panama Railroad, hereby restricted to Frijoles, Canal Zone.)

Very small; forehead brownish yellow fusing into brown crown; rest of upper surface yellowish olive-green; throat whitish; rest of undersurface light yellow.

Description.—Length 98-107 mm. Adult (sexes alike), forehead yellow and olive-ocher, fusing into light olive-brown of crown; rest

of upper surface, including wing coverts and tail yellowish olive-green; remiges dusky, with all but outermost primary edged yellowish olive-green, narrowly on primaries, broadly on secondaries; eye-ring white; sides of face light buffy brown; throat buffy whitish, faintly streaked with very pale yellow; faint tinge of light brownish buff across chest fused with pale yellow of rest of undersurface; sides and flanks pale olive greenish; underwing coverts and inner web of underside of remiges edged pale yellow.

A female collected January 12, 1963, at Chiva Chiva, Canal Zone, had the iris mouse brown; base of maxilla light fuscous-brown; tip of culmen dull black; cutting edge of maxilla and mandible flesh color; tarsus and toes neutral gray.

Measurements.—Males (10 from Province of Panamá and Canal Zone), wing 51.7-55.6 (54.1), tail 39.5-43.8 (42.0), culmen from base 12.7-15.2 (13.8), tarsus 15.1-16.4 (15.8) mm.

Females (7 from Province of Panamá and Canal Zone), wing 48.6-53.5 (50.9), tail 34.5-42.6 (39.1), culmen from base 12.3-13.7 (13.1), tarsus 14.3-16.3 (15.4) mm.

Resident. Common on the Pacific slope, in Coclé (Aguadulce Salinas, Parita Bay), Herrera (southeast of Rincón) the Province of Panamá (Playa Coronado, Nueva Gorgona, Cerro Campana, Panamá City, Tocumen, Cerro Chame, Chico, Chepo) and in the Canal Zone (Río Velásquez, Pedro Miguel, Corozal, Fort Clayton) east to south-western Darién (Garachiné), extending into the Caribbean drainage of the Río Chagres to Culebra and Frijoles. It is also found on the Caribbean slope of northern Colombia; other races are found in eastern Colombia, Venezuela, and Trinidad.

The single specimen from which this bird was named was sent to Lawrence by John R. Galbraith and James McLeannan during the "winter" of 1860-1861. Lawrence states that "the greater part of this collection was made on the Atlantic side of Isthmus, as the investigation of this section occupied their time until the season was too far advanced to enable them to procure many species on the western slope, and in the vicinity of Panama." He then lists 6 species that were taken on the Pacific side. Since McLeannan is known to have collected in the vicinity of Frijoles, and since the bird is known to occur at that point through a specimen taken by Goldman, it seems appropriate to designate this place as the type locality. From present knowledge this is the farthest point to which the bird penetrates in the Atlantic drainage.

This small tropical vireo is found in open, thickety tree growth and scrubby vegetation, sometimes low down in the branches and sometimes

in the tops of the smaller trees, ranging from tree growth back of a mangrove swamp to the fringe of woodland bordering the course of streams, or the bases of hills rising in open savanna lands. I saw this species in shade trees in the clearings adjacent to the river, and Goldman in 1911 recorded one in partly cleared jungle near Frijoles. The birds move about rather actively, suggesting small warblers in their movements, but usually remain behind the cover of leaves. Once I found one in company with a little group of the Lesser Greenlet. The song is not loud, but is interesting, usually a repetition of two notes, the second being stressed. Eisenmann (Condor, 1962, p. 507) describes the song as "distinctly vireonine, resembling that of *H. decurtatus*, but it is even less varied, most often with a four-syllabled whistled phrase, sliding down at the end—*cheetsacheéyou* or *itsacheéyou*—and with two-to-five second pauses between each repetition." He reports also having heard a shorter *witsachéw*, and a more elaborate *itsocheet cheetsacheéyou*, less musical than the vocalizations of *H. decurtatus* or of *Vireo flavoviridis*. This species also has a nasal scold, much like that of *H. ochraceiceps*, *nyaah, nyaah, nyaah, nyaah*, given in excitement.

Eisenmann found the Golden-fronted Greenlet ecologically sympatric with *Vireo flavoviridis*, although much more restricted in range and habitat, but tending to keep lower and avoiding the more humid second-growth areas. He adds that, as to other greenlets, in localities and habitats where he has found this species in Panamá he has also found *H. flavipes viridiflavus*, and in localities with greater rainfall or better soil and taller tree growth or extensive woodland nearby (as in the Canal Zone and eastern Province of Panamá) he has also found *H. decurtatus*, which avoids the drier areas and favors forest, just as *H. aurantiifrons* avoids the more humid regions and favors scrub. E. S. Morton writes that in his experience, where the Golden-fronted Greenlet and the Lesser Greenlet occur together, they often are found in the same group, and, although their songs, while of similar style, are readily separable, they have very similar or identical alarm and agonistic notes.

On March 24, 1966, I watched 2 of these birds feeding on small berries at Chiva Chiva, Canal Zone. E. A. Goldman collected 1 at Corozal on June 15, 1911, whose stomach contained 2 or more ants 60%, arachnid remains 30%, jassoid fragments 10%. Two collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 9.6 and 10.1 g.

Eisenmann found a bird building a nest in a small tree on a grassy slope with bushy vegetation while another sang nearby on June 17, 1953, in the Juan Franco suburb of Panamá City.

HYLOPHILUS OCHRACEICEPS Sclater: Tawny-crowned Greenlet,
Verdecillo Coronileonado

Hylophilus ochraceiceps P.L. Sclater, 1859, Proc. Zool. Soc. London, 27, p. 375.
(Playa Vicente, Oaxaca.)

Very small; tawny brown; rest of upper surface brownish to olive; wings and tail russet; undersurface greenish yellow to olive-green.

Description.—Length 95-112 mm. Adult (sexes alike), tawny brown sometimes with a bit of yellow at base of lores; rest of upper surface from dark russet-brown to olive-green; wing coverts as back; remiges dusky, with outer webs edged tawny brown; tail tawny brown; upper throat grayish white; rest of undersurface olive yellowish (*bulumensis*) or breast yellowish brown fading to light greenish yellow on remainder of undersurface; edge of wing, underwing coverts, and underside of inner webs of remiges yellow.

The Tawny-crowned Greenlet is found from southeastern Mexico to northern Bolivia and Amazonian Brazil. Nine races are recognized, of which 3 occur in Panamá; the Panamanian forms differ from one another mainly in the color of the back, which ranges from distinctly brown to olive-green. This greenlet is an uncommon resident of forest and second-growth woodland in lowlands and foothills; it has been recorded as high as 1500 m in Chiriquí (Ridgely, 1976, p. 287). Eisenmann (Condor, 1962, p. 507) considers it more common in foothills than in the humid wooded lowlands. It inhabits dense undergrowth, rather than the higher levels in which the Lesser Greenlet moves; like other species of the genus, *H. ochraceiceps* is an active searcher for the small invertebrates that make up its diet. It often travels in pairs or family groups; it has been observed with various species of antwren and, in Belize, with Red-crowned Ant-Tanagers (*Habia rubica*) (Willis, Wilson Bull. 1960, pp. 104-105). Its voice is different from that of the other greenlets: Eisenmann (*op. cit.*) noted "a constantly uttered *nya-nya*, and a more vireonine *weng*," and Ridgely (*op. cit.*) mentions also "a rather long, slightly descending whistle."

HYLOPHILUS OCHRACEICEPS PALLIDPECTUS (Ridgway)

Pachysylvia ochraceiceps pallidipectus Ridgway, 1903, Proc. Biol. Soc. Washington, 16, p. 108. (Angostura, Cartago, Costa Rica.)

Characters.—Upper surface definitely brown, breast with considerable buffy tinge.

A female taken March 15, 1965, at El Volcán, Chiriquí, had the iris light grayish brown; maxilla fuscous-brown; mandible dull neutral gray becoming browner on the distal end of the gonys.

Measurements.—Males (7 from Chiriquí and Costa Rica), wing 52.0-59.0 (55.5), tail 40.8-44.8 (42.1), culmen from base 12.7-14.8 (13.7), tarsus 15.2-17.4 (16.7, average of 6) mm.

Females (6 from Chiriquí and Costa Rica), wing 50.3-57.0 (54.6), tail 39.9-46.0 (42.4), culmen from base 12.4-14.1 (13.4), tarsus 15.9-17.9 (16.9) mm.

Resident. Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 364), referring to this bird as nominate *ochraceiceps*, lists it for "Western Chiriquí (Pacific Slope)." Bangs (Proc. New England Zool. Club., vol. 3, 1902, p. 59) mentions a male collected by W. W. Brown, Jr., on the Caribbean slope of Volcán de Chiriquí, at 1200 m, on June 11, 1901. The only place I have encountered this race is at El Volcán, where on March 15, 1965, a pair flew into a mist net set at 1200 m at Palo Santo. Ridgely netted 2 (1 collected) on the upper Río Chiriquí (Fortuna Dam site) at 1200 m on March 4, 1976. The only Bocas del Toro report is of 1 mist-netted by Loftin's banders at Almirante on October 19, 1965; the bird was examined in the hand by Eisenmann and released. Beyond Panamá this race ranges to Honduras.

Skutch (Pacific Coast Avif. no. 34, 1960, pp. 35-38) has watched *H. o. pallidipectus* at its nest in Costa Rica, where the breeding season starts at least as early as March. The 2 nests Skutch found were 2 and 6.5 m off the ground; each was a typical vireo cup attached by cobwebs to a fork in a sapling. The nest he took apart for examination had an outer covering of moss, a layer of fine, light-colored bast fibers, a thick layer of long soft seed plumes, and a thin lining of more bast fibers. The 2 young in one nest observed by Skutch were brooded by the female and were fed insects by both parents. The parents seemed to feed the young less frequently than do Lesser Greenlets, and the young left the nest at 13 or 14 days of age, slightly later than do young Lesser Greenlets.

The only nest described from Panamá was found by Eisenmann (Condor, 1962, p. 507) near El Hato, western Chiriquí on July 13, 1949, but eggs had apparently not yet been laid; it was 1 m from the ground and covered on the outside by green moss.

HYLOPHILUS OCHRACEICEPS NELSONI (Todd)

Pachysylvia ochraceiceps nelsoni Todd, 1929, Proc. Biol. Soc. Washington, 42, p. 195. (Lion Hill, Panamá). New name for *P. o. brevipennis* Nelson, 1911, preoccupied by *Helina brevipennis* Giraud, 1852 = *Hylophilus decurtatus* (Bonaparte, 1838.)

Characters.—Upper surface brownish olive; less buffy below than

pallidipectus; more or less intermediate between that form and *bulunensis*.

A male taken February 22, 1963, at Armila, San Blas, had the iris grayish white; maxilla black; mandible neutral gray; tarsus and toes bluish dark neutral gray.

Measurements.—Males (7 from Veraguas, Province of Panamá, Canal Zone, and San Blas), wing 54.5-57.0 (56.1), tail 37.9-45.8 (40.5), culmen from base 13.5-14.5 (13.9), tarsus 15.1-16.5 (15.9) mm.

Females (6 from Veraguas, Province of Panamá, Canal Zone, and San Blas), wing 53.0-58.3 (55.6), tail 39.4-42.3 (40.7), culmen from base 12.2-15.2 (13.5), tarsus 15.1-17.0 (16.4) mm.

Resident. Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 365) lists *nelsoni* from the "Pacific slope, coastal forests of Veraguas to Río Chepo, Darién [= Province of Panamá]; rare." I have collected this race beyond Griscom's limits, at Cerro Chucantí (300 m), in the Serranía de Majé, eastern Province of Panamá, and at Armila, San Blas. The Smithsonian also has specimens from Lion Hill and from between Summit Gardens and Gamboa in the Canal Zone, and from Chepo, Province of Panamá. The Havemeyer collection, now in the Peabody Museum at New Haven, contains a male collected at Puerto San Antonio, on the Río Chepo.

E. A. Goldman's notes for May 1, 1911, when he was at Lion Hill, include the following: "A pair of these was seen and shot among low limbs of trees and rather thick jungle in fairly heavy forest. They were about 10 feet from the ground and were killed only about 15 feet apart. . . . They showed no breeding signs. Apparently a rare forest species." The pair I found at Armila was caught in a mist net set in heavy forest, and 2 that I took at Cerro Chucantí were in tall tree tops.

The American Museum collection contains a female (783985) collected January 23, 1964, by F. L. Chapman and E. Tyson in the Canal Zone 9.7 km north of Gamboa (Pipeline Road, Limbo Hunt Club) that contained an egg in the oviduct.

HYLOPHILUS OCHRACEICEPS BULUNENSIS Hartert

Hylophilus bulunensis Hartert, 1902, Novit. Zool., 9, p. 617. (Bulun, Esmeraldas, Ecuador.)

Characters.—Upper surface olive-green, undersurface olive yellowish, not yellow, with buff wash reduced.

A male taken February 1961 at Cerro Pirre, Darién, had the iris brownish gray; maxilla and tip of mandible dusky neutral gray; rest of bill, tarsus, and toes neutral gray.

Measurements.—Males (7 from Darién, and Colombia), wing 53.0-61.8 (58.2), tail 38.0-46.3 (42.6), culmen from base 13.2-16.8 (14.5, average of 6), tarsus 15.5-16.7 (16.4) mm.

Females (5 from Darién and Colombia), wing 50.5-55.9 (54.2), tail 40.2-43.4 (41.5), culmen from base 12.7-13.9 (13.2), tarsus 15.1-16.3 (15.9) mm.

Resident. This race is known in Panamá from extreme eastern Darién and San Blas. The Smithsonian has specimens from Darién taken at Jaqué, Cerro Pirre, Cana, and Tacarcuna Village. Bangs and Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 223) mention 3 collected at Mt. Sapo. Hasso von Wedel collected 2 females in San Blas at Obaldía and Ranchon that Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 366) says "agree with three specimens from Mt. Sapo on the Pacific slope of Darién, but are perhaps a trifle less yellow below." These locations are very close to Armila, where I collected a pair that are definitely referable to *nelsoni*, but as the Smithsonian also has specimens of *bulunensis* from the nearby Gulf of Urubá on the Caribbean coast of Colombia, it is possible that extreme eastern San Blas is an area where the two forms meet. In the Gorgas Memorial Laboratory collection are specimens taken on Cerro Quía, southeastern Darién, March 17, 1971, at 500 and 700 m.

E. A. Goldman examined the stomachs of 2 collected at Cana on June 6, 1912: 1 contained a locustid 25%, caterpillar remains (4 at least) 25%, 7 fragmentary ants 20%, 2 or more spiders including a ball of web 30%; the other contained a moth 8%, a lepidopterous cocoon 20%, ant remains 20%, arachnid remains 20%, a roach 32%.

HYLOPHILUS FLAVIPES Lafresnaye: Scrub Greenlet,
Verdecillo Rastrojero

FIGURE 21

Hylophilus flavipes Lafresnaye, 1845, Rev. Zool. [Paris], 8, p. 342. ("Bogotá," Colombia.)

Small; entire upper surface yellowish olive; throat grayish; breast greenish yellow; rest of undersurface yellow.

Description.—Length 105-117 mm. Adult (sexes alike), upper surface from crown to tail yellowish olive; wing coverts and secondaries yellowish olive; primaries blackish with outer webs edged yellowish olive; side of head light gray; chin dull white; throat and upper breast light yellowish olive, fading to light yellow on rest of undersurface.

This species is found in the Tropical Zone from southwestern Costa Rica to the lower Río Bayano, Province of Panamá; it appears again

in northern Colombia and ranges across Venezuela from the Orinoco Valley to the north coast, including Margarita Island, and the island of Tobago. The subspecies found in Panamá are separated widely from those of Colombia and Venezuela by the forest of Darién and the Atrato Basin.

The bird of Panamá is much brighter colored above and below than its more eastern (South American) relatives and in fact is so different that the decision to place it as a geographic race instead of a distinct species is more or less an arbitrary one, based on general similarity and its allopatric range.

FIGURE 21.—Scrub Greenlet, Verdecillo Rastrojero, *Hylophilus flavipes*.

HYLOPHILUS FLAVIPES VIRIDIFLAVUS Lawrence

Hylophilus viridiflavus Lawrence, 1862, Ann. Lyc. Nat. Hist., New York, 7 (1861), p. 324. (Atlantic slope near Panama Railroad, Canal Zone, Panamá, hereby restricted to Frijoles, Canal Zone.)

Hylophilus viridiflavus pallescens Davidson, 1932, Proc. Washington Biol. Soc., vol. 45, p. 168. (Concepción (1500 ft), Chiriquí, Panamá.)

Characters.—Undersurface light yellow.

A male collected January 15, 1955, at Juan Mina, Canal Zone, had the iris cadmium yellow, bill light hair brown; line of culmen fuscous; tarsus, toes, and claws light yellowish brown. A male collected March 24, 1961, at Chico, Panamá, had the iris pale yellowish white; maxilla except cutting edge mouse brown; mandible and cutting edge of maxilla

pale brownish white ("flesh color"); tarsus, toes, and claws light mouse brown. Another male, taken March 7, 1962, at El Potrero, Coclé, had the iris light buffy gray; line of culmen and side of mandible to rami dull brownish white; gonys and underside of mandible light brownish white; gape dull honey yellow; tarsus, toes, and claws pale brown.

Measurements.—Males (15 from Panamá), wing 54.5-58.3 (56.0), tail 44.8-49.8 (47.9), culmen from base 13.1-14.2 (13.6), tarsus 17.6-19.6 (18.7) mm.

Females (11 from Panamá), wing 52.0-54.4 (53.7), tail 44.3-48.0 (45.8), culmen from base 13.0-14.1 (13.5), tarsus 18.2-18.7 (18.5) mm.

Resident. The Scrub Greenlet is found through the Tropical Zone lowlands of the Pacific slope of Panamá up to 450 m elevation, but mainly lower, from the Costa Rican boundary through Chiriquí (Divalá, Bugaba, Concepción, David, base of Cerro Flores, San Félix), Veraguas (Soná, Río de Jesús, Santa Fé), Herrera (El Rincón), Los Santos (Monagre), Coclé (Natá), Panamá (Nueva Gorgona, Panamá, Chico, Puerto San Antonio on lower Río Bayano) through the Canal Zone to the Caribbean side (Corozal, Miraflores, Mount Hope, Juan Mina, Empire, Gatún), and adjacent eastern Colón (Colón, Portobelo). Ridgely (*in litt.*) saw 1 in a garden adjacent to the Panamonte Hotel in Boquete, Chiriquí (ca. 1000 m) on January 17, 1974; the bird was a full adult with a pale eye and pinkish bill. This race is also found in southwestern Costa Rica.

In fresh plumage these greenlets are bright yellow-green above and even brighter yellow below, but these vivid colors fade quickly, especially on the upper surface where they become decidedly grayish. The breast and abdomen also become paler. The general appearance then is surprisingly different. It is this that has led to an attempt to separate another race in western Chiriquí under the name *pallescens* (M. E. McClellan Davidson, Proc. Biol. Soc. Washington, vol. 45, 1932, p. 168). At first it appeared that this was valid, but as more specimens were assembled it became evident that the birds are uniform in character throughout the mainland of Panamá. Those of Los Santos and of Colón are similar in every way to a long series of others.

This greenlet is most frequent as an inhabitant of growths of low scrub, but finds second growth and more open forest also to its liking. The thorny thickets and other fairly open stands of low trees and bushes of the savanna areas are especially suited to its needs and here it is fairly common. On the eastern side of the Azuero Peninsula I

recorded it only near the sea in northeastern Los Santos but it is probable that it ranges near the coast down to Punta Mala since the entire region contains suitable habitat. Without much doubt it has increased in abundance on the Atlantic slope of the Canal Zone and in adjacent Colón through the clearing of heavy forest and the appearance of low second growth that covers neglected or abandoned fields. In the early period it was a rare bird in this section. McLeannan seems to have taken few (possibly only 3 in addition to the type) as in his day the Caribbean slope where he worked was mainly heavily forested. It thus seems reasonable to establish the restricted type locality as Frijoles. Galbraith, who assisted in the collecting when the type was secured, noted that it was rare.

These greenlets are found in the higher thickets and in low trees, more rarely in higher tree tops. Their movements usually are slow and deliberate, with birds pausing quietly to look about. The head often appears large in proportion to the size of the body, so that in profile they sometimes suggest a miniature peppershrike. Occasionally they are more active, somewhat like little warblers, flying up to examine the underside of leaves, and then may be more difficult to follow. The pale-colored eye is the outstanding character that identifies them when they are near at hand. Eisenmann (Condor, 1962, p. 507) describes a distinct whistle, "usually of two notes, repeated interminably, which varies somewhat individually or seasonally. Usually to my ear the call is *towheé*, *towheé*, *towheé*, *towheé*, repeated unchangingly from five to twenty or more times, without pause."

It is usual to find this greenlet in pairs, less frequently in groups of 3 or 4 individuals that I have supposed might be family parties. Breeding pairs were collected in southern Veraguas. On August 16, 1974, Eisenmann saw a fully grown fledgling being fed in a residential suburb of Panamá city. I have no other information regarding their nesting. Eisenmann (*op. cit.*) says that in the Pacific Coast of Panamá "this species is ecologically and geographically sympatric with both *Hylophilus aurantiifrons* and *Vireo flavoviridis*. It seems more tolerant of humid conditions than *aurantiifrons* and less so than *flavoviridis*, as it occurs in scrubby cleared areas of the rainy Caribbean slope, but in my experience on the mainland, it avoids forest borders. Generally does not forage as high as *flavoviridis*."

The stomach of a bird collected by E. A. Goldman on May 24, 1911, at Portobelo, Colón, contained remains of more than 4 spiders 75%, a small hymenopteran fragment 3%, jaw and abdomen of a small black earwig 4%, a blatted ootheca 3%, bits of elytra of a metallic appearing

buprestid 3%, 25 seeds of Melastomaceae 5%. Another collected February 14, 1912, at Empire contained one hairy and one smooth caterpillar skin, both small 20%, 10 seeds of *Panicum* sp. and other vegetable fragments 80%. Of several taken by Strauch (Bull. Brit. Orn. Club, 1977, p. 64), 5 males ranged in weight from 11.3 to 13.0 g, and 6 females from 11.4 to 13.7 g.

HYLOPHILUS FLAVIPES XUTHUS Wetmore

Hylophilus flavipes xuthus Wetmore, 1957, Smiths. Misc. Coll., 1943 (9), p. 85. (Isla Coiba, Panamá.)

Characters.—Undersurface much darker, more buffy (instead of yellow), sides darker; darker green above than *H. f. viridiflavus*; bill heavier. Immature darker above and below, with wash of ochraceous-orange on abdomen.

Measurements.—Males (7 from Isla Coiba), wing 55.8-58.3 (57.5), tail 47.0-50.9 (48.4), culmen from base 14.3-15.0 (14.7), tarsus 17.9-19.0 (18.6) mm.

Females (6 from Isla Coiba), wing 54.4-56.7 (55.9), tail 45.2-49.3 (47.8), culmen from base 14.6-16.1 (15.1), tarsus 18.2-19.4 (18.6) mm.

Resident. On Isla Coiba these were among the more common of the small birds, though seen infrequently because they ranged among screening leaves and creepers. During my visit from January 6 to February 6, 1956, they were found in the scrub growths back of the beaches and at the borders of mangroves, and came also into the brushy *rastrojo* of old fields, habitats similar to those inhabited by other forms of the species in mainland localities. On Coiba, I found that they also lived in the high crown of the inland forest, though it was near the end of my stay before I verified this, owing to the difficulty to detecting small birds in such situations. They move actively among the leaves and twigs, almost as quickly as wood warblers, and when seen often appear very close at hand. Occasionally I found them feeding on small drupes of fruiting trees. The yellowish-white iris of the adult birds is often apparent as they climb and hop among the smaller branches. The darker colored immature birds have dark eyes. The song, given in low tones, usually has three similar notes, *sweet, sweet, sweet*, which are easily imitated by whistling.

The birds of Coiba are much darker than the nearby mainland race and the bill is heavier at the base than in *viridiflavus* in addition to being slightly longer.

Eisenmann and E. S. Morton in October 1965 and Ridgely in early April 1976 found them also within tall forest areas of Coiba, but only in lower growth. The notes heard were essentially as on the mainland.

Family PARULIDAE: Wood Warblers, Reinitas

Forty-eight species of wood warblers have been found in Panamá. This total includes 34 North American migrants, mostly from the eastern half of the continent, that winter in Panamá or pass through on their way north or south. Some are extremely common, especially in the periods from September to early November and again in March and April, while others are known from only a single or very few records and are still accorded hypothetical status. One species, the Yellow Warbler (*Dendroica petechia*) has both migrant and resident populations. Many of the migrant and wintering species join mixed flocks of endemic birds, but some others become relatively sedentary while in Panamá and have been shown to maintain a territory. There is a strong correlation between winter territoriality and retention of the "spring" plumage; the warblers that have a less boldly marked basic plumage are the ones that usually join mixed-species flocks. Many of the North American species that are primarily insectivorous in the breeding season consume considerable amounts of fruit in Panamá.

Most of the resident wood warblers of Panamá are found in the highlands: the three species of *Geothlypis* resemble *G. trichas* of North America in behavior; a *Vermivora* and a *Parula* are highly arboreal, usually foraging high in trees; the redstarts of the genus *Myioborus* usually range in the lower levels of the forest; and the 5 species of *Basileuterus* are found in forest undergrowth. Two wood warblers inhabit the borders of streams and rivers rather like the waterthrushes (*Seiurus*) of North America: *Basileuterus fulvicauda* is widespread in the lowlands and foothills, and the Zeledonia, *Zeledonia coronata*, is rare and local in forest streams in the highlands of Chiriquí and Veraguas. Although *Zeledonia* has in the past been placed in its own family, Sibley (Postilla, no. 125, 1968, pp. 1-12) and Raikow (Bull. Carnegie Mus. Nat. Hist. no. 7, 1978, p. 28) have shown that it is an aberrant parulid.

KEY TO SPECIES OF PARULIDAE

1. Throat or most of undersurface bright orange or yellow.....	2
Undersurface without bright orange or yellow.....	31
2. Throat black, gray, or dusky.....	3

- Throat not black, gray, or dusky. 7
3. Throat color similar to that of side of face. 4
Side of face bright yellow.
male Hooded Warbler, *Wilsonia citrina*, p. 302
4. All tail feathers greenish. 5
Central tail feathers black, outer ones white.
Slate-throated Redstart, *Myioborus miniatus*, p. 308
5. White eye-ring incomplete or absent. 6
Complete white eye-ring.
Connecticut Warbler, *Oporornis agilis*, p. 290
6. Wing length minus tail length equal 10-18 (13) mm.
Mourning Warbler, *Oporornis philadelphia*, p. 291
Wing length minus tail length equals 2-10 (6.5) mm.
MacGillivray's Warbler, *Oporornis tolmiei tolmiei*, p. 293
7. Undersurface streaked with brown or black. 8
Undersurface without streaking. 14
8. Streaking black or dusky. 9
Streaking bright reddish brown.
Yellow Warbler, *Dendroica petechia*, p. 259
9. Belly white or buffy. 10
Belly yellow. 12
10. Undertail coverts white. 11
Undertail coverts yellow.
Palm Warbler, *Dendroica palmarum palmarum*, p. 283
11. Upper surface blue-gray.
Yellow-throated Warbler, *Dendroica dominica*, p. 278
Upper surface black or grayish brown.
Blackburnian Warbler, *Dendroica fusca*, p. 276
12. Rump yellow. 13
Entire upper surface gray.
Canada Warbler, *Wilsonia canadensis*, p. 305
13. Side of face gray or black, large white patch on nearly all tail feathers.
Magnolia Warbler, *Dendroica magnolia*, p. 269
Side of face bright brown, small amount of white on outer tail feathers.
male Cape May Warbler, *Dendroica tigrina*, in alternate plumage, p. 271
14. Upper surface blue or slate gray. 15
Upper surface greenish or yellowish. 18
15. Most of undersurface yellow. 16
Throat and breast bright orange, rest of undersurface gray.
Flame-throated Warbler, *Vermivora gutturalis*, p. 254
16. Blackish band across breast.
Collared Redstart, *Myioborus torquatus*, p. 311
Undersurface without band.
Tropical Parula, *Parula pitiayumi*, p. 256
17. Wing coverts unmarked. 18
Middle and greater wing coverts tipped white.
Blue-winged Warbler, *Vermivora pinus*, p. 251
18. Entire crown yellowish, brown, or streaked. 19
Crown without streaking, yellowish, or brown. 21

19. Crown brown or streaked..... 20
 Crown bright yellowish, contrasting with rest of upper surface.
 Prothonotary Warbler, *Protonotaria citrea*. p. 248
20. Crown brown.
 Rufous-capped Warbler, *Basileuterus rufifrons*. p. 321
 Crown with two wide black stripes.
 Golden-crowned Warbler, *Basileuterus culicivorus godmani*. p. 316
21. Forecrown yellow, contrasting with rest of crown..... 22
 Forecrown green, gray, or black..... 23
22. Outer tail feathers with large white patches.
 female Hooded Warbler, *Wilsonia citrina*. p. 302
 No white on tail feathers.
 Wilson's Warbler, *Wilsonia pusilla*. p. 303
23. Large, 150 mm or more.
 Yellow-breasted Chat, *Icteria virens virens*. p. 301
 Smaller, 135 mm or less..... 24
24. Superciliarly indistinct or absent..... 25
 Prominent yellow superciliary.
 Kentucky Warbler, *Oporornis formosus*. p. 289
25. Black lores or mask..... 26
 Side of face yellowish, gray, or light brown..... 29
26. Black extensive on side of face..... 27
 Black confined to lores and area beneath eye.
 Gray-crowned Yellowthroat, *Geothlypis poliocephala ridgwayi*. p. 299
27. Most of crown gray.
 male Masked Yellowthroat, *Geothlypis aequinoctialis chiriquensis*. p. 296
 Crown not extensively gray..... 28
28. Forecrown black, bordered by grayish white band.
 male Common Yellowthroat, *Geothlypis trichas*. p. 294
 Most of crown black, becoming green on hind crown.
 male Olive-crowned Yellowthroat, *Geothlypis semiflava bairdi*. p. 298
29. Entire undersurface yellow..... 30
 Belly buff.
 female Common Yellowthroat, *Geothlypis trichas*. p. 294
30. Much of crown and side of head gray.
 female Masked Yellowthroat, *Geothlypis aequinoctialis chiriquensis*. p. 296
 Crown and side of head yellowish green.
 female Olive-crowned Yellowthroat, *Geothlypis semiflava bairdi*. p. 298
31. Basal half of tail feathers light orange, yellow, or buff..... 32
 Tail feathers entirely dark or with white patches extending to distal end. . 33
32. Basal half of all innermost tail feathers orange or yellow.
 American Redstart, *Setophaga ruticilla*. p. 306
 Basal half of all tail feathers buff.
 Buff-rumped Warbler, *Basileuterus fulvicauda*. p. 325
33. Throat entirely black, brown, or gray..... 34
 Throat light colored or streaked..... 38
34. Throat and upper breast contrasting with rest of undersurface..... 35
 Entire undersurface dark gray.

Zeledonia, *Zeledonia coronata*. p. 330

35. Throat black or gray..... 36
 Throat brown.
 male Bay-breasted Warbler, *Dendroica castanea* in alternate plumage. p. 280
36. Crown green or yellow..... 37
 Upper surface blue.
 male Black-throated Blue Warbler, *Dendroica caerulescens*. p. 271
37. Wing coverts tipped bright yellow.
 Golden-winged Warbler, *Vermivora chrysoptera*. p. 250
 Wing coverts tipped white.
 adult male Black-throated Green Warbler, *Dendroica virens*. p. 275
38. Crown boldly streaked..... 39
 Crown with fine streaks or unstreaked..... 43
39. Crown streaks black with brown, buff, or green..... 40
 Crown streaks black and white.
 Black-and-white Warbler, *Mniotilta varia*. p. 246
40. Undersurface unstreaked..... 41
 Undersurface white with dark streaks on breast and flanks.
 Ovenbird, *Seiurus aurocapillus*. p. 284
41. Central crown stripe buff or greenish..... 42
 Central crown stripe reddish brown.
 Black-cheeked Warbler, *Basileuterus melanogenys*. p. 318
42. Undersurface buff and white.
 Worm-eating Warbler, *Helmitheros vermivorus*. p. 249
 Undersurface greenish and yellow.
 Three-striped Warbler, *Basileuterus tristriatus*. p. 313
43. Upper surface unstreaked..... 44
 Upper surface with fine streaks..... 51
44. Yellow or yellow-green rump contrasting with rest of upper surface..... 45
 No contrasting rump..... 46
45. Rest of upper surface brownish, throat white.
 female or immature Yellow-rumped Warbler,
Dendroica coronata coronata. p. 271
 Rest of upper surface greenish, throat finely streaked.
 female or basic plumage male Cape May Warbler, *Dendroica tigrina*. p. 271
46. Undersurface heavily streaked..... 47
 Undersurface with little or no streaking..... 48
47. Superciliary pure white, undersurface whitish, culmen of male
 14.4-16.9 (15.5), of female 14.2-16.4 (15.5) mm.
 Louisiana Waterthrush, *Seiurus motacilla*. p. 288
 Superciliary buffy or dull white, undersurface usually tinged pale yellow,
 culmen of male 12.0-14.1 (13.2), of female 12.0-13.9 (13.1) mm.
 Northern Waterthrush, *Seiurus noveboracensis*. p. 286
48. Wing coverts prominently tipped white..... 49
 Wing coverts not tipped white..... 50
49. Upper surface yellowish green.
 female or immature Black-throated Green Warbler, *Dendroica virens*. p. 275
50. Base of primaries white.
 female Black-throated Blue Warbler, *Dendroica caerulescens*. p. 271
 Base of primaries unmarked.
 Tennessee Warbler, *Vermivora peregrina*. p. 252

51. Crown bright green or with patch of yellow..... 52
 Crown dull green, blue, or black..... 53
52. Rump yellow.
 adult male Yellow-rumped Warbler, *Dendroica coronata coronata*, p. 271
 Rump streaked green and black.
 Chestnut-sided Warbler, *Dendroica pensylvanica*, p. 278
53. Crown blue or black..... 54
 Crown green..... 55
54. Crown blue.
 adult male Cerulean Warbler, *Dendroica cerulea*, p. 275
 Crown black.
 male Blackpoll Warbler, *Dendroica striata* in alternate plumage, p. 282
55. Undertail coverts white.
 female or male in basic plumage Blackpoll Warbler,
 Dendroica striata, p. 282
 Undertail coverts buffy.
 female or male in basic plumage Bay-breasted Warbler,
 Dendroica castanea, p. 280

**MNIOTILTA VARIA (Linnaeus), Black-and-white Warbler,
 Reinita Trepedora**

FIGURE 22

Motacilla varia Linnaeus, 1766, Syst. Nat., ed. 12, vol. 1, p. 333. (Hispaniola.)

Small; striped black and white.

Description.—Length 108-125 mm. Adult male, crown black with white stripe down center; back and scapulars black, streaked white; rump and upper tail coverts black; middle and greater wing coverts black, tipped white, forming two wing bars; remiges dusky black, tertials edged with white; tail black with white patch on inner web of outer three pairs of rectrices; superciliary white; side of face black; moustachial stripe white; throat black; sides of breast, flanks, and undertail coverts striped black, rest of undersurface white.

Adult female, like male but with throat, side of face and most of undersurface white.

Measurements.—Males (10 from eastern North America, taken in April), wing 67.0-72.0 (69.4), tail 45.9-49.7 (47.4), culmen from base 11.1-13.7 (12.5), tarsus 15.2-17.2 (16.4) mm.

Females (10 from eastern North America, taken in May), wing 62.0-68.0 (65.1), tail 45.6-48.6 (46.8), culmen from base 11.8-13.3 (12.6), tarsus 16.3-17.7 (16.9) mm.

Migrant and winter visitor from the north. The winter range is from the southern United States through the West Indies, Middle America, and northwestern South America to Venezuela and Ecuador.

Fairly common, arrives in Panamá as early as August 24 (Arbib and Loetscher, Auk, 1935, p. 327), with some remaining until early April (April 4, 1911, Lion Hill, Canal Zone, specimen; April 5, 1976, Pipeline Road, Canal Zone, Ridgely); commonest as a migrant in September through mid-October and March. The Black-and-white Warbler is found throughout the Republic in winter, although less numerous east of the Canal Zone; it is commonest in the lowlands, but I have seen it as high as 1560 m at Cerro Punta, Chiriquí. It has also been found on Taboga and Uravá Islands and on San José on the Pearl Islands; the British Museum of Natural History has a specimen collected October 25, 1924, at sea in the Gulf of Panamá.

FIGURE 22.—Black-and-white Warbler, Reinita Trepedora, *Mniotilta varia*, male.

As a migrant and winter visitor the Black-and-white Warbler behaves just as it does in the north, climbing the trunks and main branches of trees in search of insects. Buskirk et al. (Auk, 1972, p. 619) found that at Cerro Punta Black-and-white Warblers will join the local interspecific flocks of insectivorous birds, but will not travel with them for any distance. I have also seen them with other migrant warblers. Skutch (A Naturalist in Costa Rica, 1971, p. 104) found that in Costa

Rica Black-and-white Warblers maintain territories during the winter and may sing while driving away intruders. In Panamá an individual banded by H. Loftin September 7, 1963, at Almirante, Bocas del Toro was recaptured there on October 7, 1963, and January 8, 1964. One collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 10.3 g.

**PROTONOTARIA CITREA (Boddaert): Prothonotary Warbler,
Reinita Protonotaria**

Motacilla citrea Boddaert, Tabl. Planch. enlum., 1783, p. 44. (Louisiana.)

Small; bright orange-yellow with gray wings and tail.

Description.—Length 111-125 mm. Adult male, head, nape, and entire undersurface except undertail coverts bright orange-yellow; back yellowish olive-green, changing to bluish gray on rump and upper tail coverts; scapulars yellowish olive-green; wing coverts bluish gray; alula black with outer web broadly edged white; remiges black with outer web edged bluish gray and inner web edged white; rectrices gray with white patch on inner web of all but central pair; undertail coverts white; edge of wing yellow; underwing coverts white.

Adult female, like male, but crown and hindneck as well as upper back yellowish olive-green; yellow on undersurface less orange.

Measurements.—Males (10 from Panamá), wing 67.1-73.8 (70.8), tail 39.6-50.8 (45.9), culmen from base 13.1-14.7 (13.8), tarsus 15.6-18.6 (17.3) mm.

Females (10 from Panamá), wing 64.0-70.1 (67.0), tail 42.3-51.1 (45.0), culmen from base 12.9-15.3 (13.8), tarsus 14.6-18.7 (17.5) mm.

Migrant and winter visitor from the north. It winters from southern Mexico to northern Colombia and Venezuela, and casually to Ecuador, the Guianas, and West Indies. Found throughout the Tropical Zone in wet localities, common in the lowlands in mangrove swamps and in thickets along streams, mainly those of larger size, but when in migration these warblers may appear along the smaller tributaries in the mountain foothills to at least 300 m (Quebrada Cauchero, Serranía de Majé, Province of Panamá, March 6, 1950). Most arrive from the north in September—the earliest report is August 1 (Eisenmann, Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 50)—and are present until the middle of March, a few remaining later. Ridgely has found it as late as March 20, in 1979 at El Volcán, Chiriquí. The Prothonotary Warbler has been found on Isla Coiba, Taboga, Taboguilla, and Uravá, and on San José, Rey, and Pacheca Islands in the Perlas group.

The main migration periods are September to mid-October and early February to mid-March; during the spring migration period nearly all the birds I collected were heavy with fat. For the most part, this species leaves Panamá relatively early. In areas where they are common in mid-winter, such as Juan Díaz, Province of Panamá, they have already decreased markedly by the beginning of March: in 1976 Ridgely found more than 40 there on January 24, but only 2 on March 10. They may remain more numerous later westward; Ridgely found more than 30 in mangroves at Estero Rico, western Chiriquí, on March 6, 1976.

During migration, Prothonotary Warblers range from mangrove thickets to at least 30 m up in trees in swampy woods. On March 3, 1948, I saw dozens feeding in flowering trees at El Rincón, Herrera. They feed commonly in *Erythrina* trees around Tocumen and elsewhere in the Canal Zone during January and February; often they are with Tennessee Warblers, orioles, and other species. On February 5, 1955, at Isla Taboga, at dusk over 100 descended on a group of trees; they were noisy and easy to approach, but were gone the next morning (F. O. Chapelle *in litt.* to Eisenmann). The weights of 3 collected by Burton (Bull. Brit. Orn. Club, 1975, p. 85) range from 12.4 to 13.5 g.

**HELMITHEROS VERMIVORUS (Gmelin): Worm-eating Warbler,
Reinita Gusanera**

Motacilla vermvora Gmelin, Syst. Nat., vol. 1, pt. 2, 1789, p. 951. (Philadelphia, Pennsylvania.)

Small; crown striped buff and black; rest of upper surface olive-green; undersurface cream buff.

Description.—Length 112-131 mm. Adult (sexes alike), crown striped light olive-buff and black; rest of upper surface, tail, and wing coverts olive-green; black line through eye; superciliary pale buff; side of head and upper breast olive-buff; flanks grayish olive; throat and rest of undersurface buffy white; underwing coverts buffy white.

Measurements.—Males (10 from eastern North America, taken in April), wing 67.0-73.0 (69.6), tail 43.7-55.4 (49.4), culmen from base 13.9-15.6 (15.2), tarsus 17.0-19.3 (18.0) mm.

Females (10 from eastern North America, taken in April and May), wing 64.1-70.5 (66.9), tail 43.2-53.7 (48.0), culmen from base 13.2-15.8 (14.4), tarsus 16.8-18.6 (17.6) mm.

Winter visitor from the north. Uncommon but regular in west, rarer eastward; recorded east to the Canal Zone (Barro Colorado Island) and eastern Province of Panamá (Puerto San Antonio, on the Río Bayano), the southern limit of its winter range. Several of the records

are from the Subtropical Zone forests of Chiriquí, at Santa Clara, Barriles, and Peña Blanca, above Boquete. Arcé obtained it in Veraguas at Santa Fé and Chitra. I have 1 from El Uracillo, on the Caribbean slope of Coclé, and there is 1 in the British Museum collected by McLeannan along the Panama Railroad. Specimens have been taken from October 12 (1938, Peña Blanca, Chiriquí) to March 16 (1954, Santa Clara, Chiriquí; 1927, Puerto San Antonio, Panamá) and April 8 (1963, Almirante, by Olson). Netting at Almirante extends early and late dates from September 24, 1964, to April 17, 1965 (D. Hicks), and an extreme date of April 23, 1963 (Loftin, *Carib. Journ. Sci.*, 1963, p. 154).

A Worm-eating Warbler banded October 21, 1963, at Almirante, Bocas del Toro, was recaptured there on January 8, 1964 (Loftin et al., *Bird-Banding*, 1966, p. 41). Another individual caught in a mist net on the Chiva Chiva Road in the Canal Zone on December 15, 1968, weighed 12.9 g.

**VERMIVORA CHRYSOPTERA (Linnaeus): Golden-winged Warbler,
Reinita Alidorada**

Motacilla chrysoptera Linnaeus, *Syst. Nat.*, ed. 12, vol. 1, 1766, p. 333. (Philadelphia, Pennsylvania.)

Small; crown yellow; yellow patch on wings; rest of upper surface gray; face and throat black or gray; undersurface white.

Description.—Length 107-120 mm. Adult male, superciliary and cheek patch white; crown bright yellow; a large black patch covering orbital area and ear coverts; stripe on side of face white; most of middle and greater wing coverts, forming a large yellow patch; tail gray with extensive white patch on inner web of outer three pairs of rectrices; throat black; sides of breast and flanks light gray, rest of undersurface white; underwing coverts white.

Adult female, like male, but crown sometimes tinged with olive-green; rest of upper surface varying from entirely gray to heavily suffused with olive-green; areas of face and throat that are black in male are gray in female.

Measurements.—Males (10 from Panamá), wing 55.5-65.8 (61.3), tail 44.4-51.7 (48.4), culmen from base 12.2-13.8 (12.9), tarsus 15.6-17.9 (16.7) mm.

Females (10 from Panamá, Costa Rica, and Colombia), wing 57.0-61.2 (58.4), tail 42.7-51.9 (46.6), culmen from base 11.8-13.9 (12.4), tarsus 15.5-18.6 (17.1) mm.

Migrant and winter visitor from the north. It winters from Guate-

mala to central Colombia and northern Venezuela. Fairly common in the Tropical and Subtropical Zones, primarily recorded from the mountains of Chiriquí, where it has been collected as high as 2310 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 63), and in the Canal Zone (Barro Colorado Island, Lion Hill, Juan Mina). In Bocas del Toro the Golden-winged Warbler has been collected at Cocoplum (Chapman, Auk, 1931, p. 121) and at Almirante (Loftin and Olson, Carib. Journ. Sci., vol. 3, no. 4, 1963, pp. 194-195). On March 10, 1961, I took a male with no fat at Tacarcuna Village, Darién. Ridgely (*in litt.*) found as many as 12 above Santa Fé, Veraguas, on January 4, 1974.

In Panamá this species is most often noted while on migration, from mid-September to early November and late March to mid-April. The extreme dates are September 19 (Eisenmann, Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 51) and April 18 (Loftin and Olson, *op. cit.*).

Buskirk et al. (Auk, 1972, p. 619), studying mixed species flocks at Cerro Punta, Chiriquí, found that Golden-winged Warblers were long-term followers in these flocks, although rarely were more than 1 or 2 individuals part of a flock. Ridgely notes that it usually occurs in forest canopy or at its edge and almost always with mixed flocks. This species often feeds by probing in clusters of dead leaves hanging from branches.

There seem to be no reports from the drier parts of the Pacific slope lowlands from western Province of Panamá, southern Coclé, and the Azuero Peninsula, and few east of the Canal Zone. Eisenmann and others have observed it occasionally on Cerro Campana and Cerro Azul, and he and Morton saw 1 on Isla Coiba on October 9, 1964.

VERMIVORA PINUS (Linnaeus): Blue-winged Warbler, Reinita Aliazul

Certhia pinus Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 187. (Philadelphia, Pennsylvania.)

Small; crown and undersurface bright yellow; most of upper surface bright olive-green; wings and tail gray.

Description.—Length 103-115 mm. Adult male, crown lemon yellow; black line through eye; rest of upper surface bright olive-green; wings gray with middle and greater coverts tipped white, forming two wing bars; tail gray with large white patches on inner web of outer three pairs of rectrices; undertail coverts white; rest of undersurface lemon yellow; underwing coverts white.

Adult female, like male, but crown duller, often greenish; line through eye paler; undersurface sometimes tinged with green.

Measurements.—Males (10 from New Jersey, taken in May), wing 58.3-62.5 (60.1), tail 43.3-47.9 (46.5), culmen from base 11.3-12.5 (11.9), tarsus 16.0-18.0 (17.1) mm.

Females (10 from New Jersey, taken in May), wing 55.0-59.0 (56.6), tail 42.2-46.6 (44.3), culmen from base 10.6-12.7 (11.7), tarsus 15.9-17.8 (16.8) mm.

Winter visitor from the north. This species normally winters from southern Mexico south to Nicaragua; in Panamá it is a rare visitant infrequently recorded in the western Caribbean lowlands, both slopes of the Canal Zone, where it was first recorded on December 30, 1942, at Caño Saddle on the northwestern shore of Gatún Lake (Imhof, Auk, 1950, p. 256), and in the Province of Panamá as far east as Chepo, where it has been collected once, March 7, 1927 (Griscom, Auk, 1933, p. 306). The Smithsonian has a specimen collected at Almirante, Bocas del Toro, on January 17, 1961. The Blue-winged Warbler has been found in Panamá between mid-October and late March. An individual of the hybrid form known as "Brewster's Warbler" was seen at Volcán Lakes, Chiriquí, on January 13, 1977, by A. Greensmith (Toucan, vol. 4, no. 2, 1977, p. 6). N. G. Smith (*in litt.* to Eisenmann) noted a bird with "no mask, whitish below with yellow breast patch" on the Siri Grande, Bocas del Toro, on January 8, 1964.

**VERMIVORA PEREGRINA (Wilson): Tennessee Warbler,
Reinita Peregrina**

Sylvia peregrina Wilson, Amer. Orn., vol. 3, 1811, p. 83, pl. 25, fig. 2. (Banks of the Cumberland River, Tennessee.)

Small; upper surface mostly bright olive-green; undersurface mostly white.

Description.—Length 103-113 mm. Adult (sexes alike), crown and hindneck bright olive-green, sometimes partially replaced by gray in birds from February or later; rest of upper surface bright olive-green, more yellowish on rump and upper tail coverts; tail blackish, edged bright olive-green; superciliary white or yellowish white; undersurface white or suffused to greater or lesser degree with greenish yellow; undertail coverts white; underwing coverts white.

Measurements.—Males (10 from Panamá), wing 60.5-65.2 (62.8), tail 40.3-45.3 (42.8), culmen from base 10.3-11.9 (11.2), tarsus 15.4-18.1 (16.7) mm.

Females (10 from Panamá), wing 57.2-64.1 (62.0), tail 37.8-46.9 (41.2), culmen from base 10.6-12.3 (11.4), tarsus 14.1-17.2 (16.3) mm.

Migrant and winter visitor from the north. Winters from southern Mexico to Colombia and Venezuela. Very common in the Tropical and Subtropical Zones on both Atlantic and Pacific slopes of Panamá east through Chiriquí (especially in the mountains), Veraguas, and Bocas del Toro; fairly common farther east. The species has been recorded on Isla Coiba, Taboga and Taboguilla islands, and San José, Saboga, and El Rey (San Miguel) islands in the Perlas Archipelago. Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 123) found the Tennessee Warbler to be the most abundant of all the North American migrants on the western slope of the Azuero Peninsula. This species is more tolerant of conspecifics than are most wintering warblers. Early on the morning of March 19, 1957, on the Río Oria, in southern Los Santos, I flushed a migrant flock of more than 100 from the edge of a stream where they had come down to drink. They flew in a fairly close formation, like goldfinches, and swarmed through the trees.

In addition to insects, nectar is an important food of Tennessee Warblers in winter. Tramer and Kemp (Auk, 1979, pp. 186-187) describe how in Costa Rica individual birds defend from conspecifics as large a section as they can of a flowering *Erythrina* tree. Morton (pers. comm.) has observed similar behavior in Panamá. Skutch (pers. comm. to Ridgely) has found the Tennessee Warbler the only parulid to come to his bird feeder. When foraging for insects, the birds are found from open lawns to forest canopy, usually in groups.

Tennessee Warblers are present in Panamá from mid-September until late April. Ridgely and J. Pujals saw 1 at Ft. Sherman, Canal Zone, on May 1, 1976. Six were banded at the Gorgas Memorial Laboratory Station at Almirante, Bocas del Toro, between April 18-24, 1963 (Loftin and Olson, Carib. Journ. Sci., vol. 3, no. 4, 1963, p. 195). Recaptures of birds at Almirante show that some spend several weeks or possibly the entire winter there; an individual banded on October 21, 1963, was recaptured there on February 25, 1964 (Loftin et al., Bird-Banding, 1966, p. 41). Another banded at Almirante on October 21, 1964, was recaptured there the following year on October 20, 1965 (Loftin et al., Bird-Banding, 1967, p. 151). One collected by Burton (Bull. Brit. Orn. Club, 1975, p. 85) at Jaqué, Darién, weighed 7.5 g.

The record by Murphy (Fish and Wildlife Service Spec. Sci. Rep Fisheries, no. 279 [mimeo], 1958, p. 110) of the Nashville Warbler, *Vermivora ruficapilla*, near Coiba and off the Gulf of Panamá in November 1956 refers to the Tennessee Warbler, the notes having been placed inadvertently under the wrong heading.

[**VERMIVORA RUFICAPILLA** (Wilson): Nashville Warbler,
Reinita Cabecigris]

Sylvia ruficapilla Wilson, 1811, Amer. Ornith., 3, p. 120, pl. 27, fig. 3. (Near Nashville, Tennessee.)

An individual of this species was reported seen at Santa Clara, Chiriquí, on January 2, 1980, by P. E. Donohue and J. Van Os (Ridgely, *in litt.*). The normal winter range is from southern Texas and Mexico to Guatemala.]

VERMIVORA GUTTURALIS (Cabanis): Flame-throated Warbler,
Reinita Gargantirroja

Compsothlypis gutturalis Cabanis, 1860, Journ. f. Ornith., 8, p. 329. (Irazú, Costa Rica.)

Small; throat and breast bright orange; upper surface gray with black triangular patch on back.

Description.—Length 106-116 mm. Adult (sexes alike), entire upper surface slate gray except for black triangular patch on upper back; primaries blackish with outer web narrowly edged slate gray; secondaries blackish on inner web, slate gray on outer web; rectrices blackish with outer web edged slate gray; lores and side of face blackish; throat and breast rich orange to cadmium orange (sometimes almost flame scarlet) flanks light gray; rest of undersurface white.

Juvenile, upper surface olive-gray with blackish triangular patch on back; wings and tail dusky, with narrow buffy tips to upper wing coverts; lores and face dusky; narrow, buff postocular stripe; chin and throat orange-yellow, fading to buff on abdomen.

A female taken March 2, 1965, at Volcán de Chiriquí, Chiriquí, had the iris dark brown; base of gonys and lower margin of mandibular rami dull orange-yellow; rest of bill black; tarsus and toes dull mouse brown; claws somewhat darker brown.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 61.4-65.1 (63.2), tail 43.6-52.0 (47.6), culmen from base 12.3-13.8 (13.0), tarsus 16.2-18.1 (17.3) mm.

Females (10 from Chiriquí and Costa Rica), wing 57.0-65.0 (60.4), tail 42.8-50.7 (46.2), culmen from base 10.6-13.1 (12.4), tarsus 16.0-17.6 (16.8) mm.

Resident. Fairly common in forest and forest borders of western Chiriquí (Volcán de Chiriquí, Cerro Punta, and Boquete), where it has been collected between 1560 and 3090 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 557-558). Of the specimens collected by Mönniche at the elevations given by Blake, "well over half" were taken be-

low 1800 m. This species is also found in the mountains of Costa Rica. Four specimens from January and February 1902 labeled by Batty, Brava Island, Chiriquí, and Cébaco Island, Veraguas, are certainly erroneously marked (Eisenmann, Auk, 1950, p. 364).

The Flame-throated Warbler feeds in typical warbler fashion, moving quickly through the branches of shrubs and trees in search of insects; it ranges from treetops to lower levels at woodland edges and shrubby clearings. It often hangs down from pendant leaves that it examines carefully. Buskirk et al. (Auk, 1972, p. 619), studying inter-specific foraging flocks at Cerro Punta, considered this species a long-term follower in such flocks, although rarely were more than 2 individuals part of any flock. Ridgely (1976, p. 292) describes the song as "a weak dry buzz, *zeeeeoo*." Mr. and Mrs. Rodman Ward (*in litt.* to Eisenmann) reported seeing this species on April 3, 1959, at 2300 m on Cerro Punta and watched 1 as it uttered a buzz *zeeee-u* (slightly inflected at the end), and heard (without seeing the singer) a very high-pitched buzzy *tsip-i-tsip-i-tsip-i-tee*. Eisenmann has heard only call notes such as *tsip*; *tick, tick*; or *dück dück*.

Nothing is recorded about the nesting habits of this bird in Panamá, but Skutch (Nutt. Orn. Club, no. 7, 1967, pp. 137-143) has studied it in detail in Costa Rica, where he found them nesting from mid-March through June. Half the nests Skutch found were well up in trees, between 6 and 25 m from the ground, and half were in niches on grassy banks. All the nests, whether terrestrial or arboreal, though not roofed, were well covered by growing vegetation, either by dense grass or moss or by epiphytes or broad-leafed bromeliads on trees. The nest, built entirely by the female, is made primarily of green moss and liverworts; some fine plant fibers and horsehair may be used in the lining, but even here green moss predominates. One nest measured by Skutch was 8 cm in height by 10 or 12 cm in diameter; the cavity was 5 cm in diameter by 3 cm deep. In every case that Skutch could determine, the clutch was 2 eggs, these vary in pattern from unspotted white to faintly and finely sprinkled with brown over the entire surface. Measurements of 4 eggs were from 16.2×12.9 to 19.0×13.1 mm.

Incubation is done exclusively by the female and takes approximately 16 days. The young hatch with orange-pink skin and long but sparse gray down. Their mouth lining is yellow on the marginal regions and pink or pale red in the more central and deeper regions, unlike the mouth linings of most passerine nestlings, which are uniform yellow or yellow-orange. The young are fed small green caterpillars by both parents and leave the nest at approximately 13 days.

[PARULA AMERICANA (Linnaeus): Northern Parula, Reinita Norteña

Parus americanus Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 190. (South Carolina.)

There are two recent sightings of this species, both from Galeta Island, Canal Zone: one was found there by J. Pujals and others on January 21, 1976, the other was seen on March 4, 1977, by Pujals and S. Stokes (Ridgely, *in litt.*). Both appeared to be adult males. Pujals reports that on March 4, 1977, when he saw the Northern Parula, he also saw a Palm Warbler (*Dendroica palmarum*), a species whose tropical winter range is also mainly in the West Indies. The Northern Parula normally winters in Florida, the West Indies, Mexico, and Central America south to Nicaragua.]

PARULA PITIAYUMI (Vieillot): Tropical Parula, Reinita Mariquita

Sylvia pitiayumi Vieillot, 1817, Nouv. Dict. Hist. Nat., ed., 11, p. 276. (Paraguay.)

Very small; upper surface dull, dark blue; most of undersurface rich yellow with throat and breast brownish orange.

Description.—Length 88-110 mm. Adult (sexes alike), lores, sides of head dull indigo blue to bluish slate gray, except for triangular olive-green patch in center of back; extent, if any, of white tipping on middle and greater wing coverts varying geographically; rectrices black with outer webs edged blue and broad subterminal patch of white on the inner web of two outermost pairs; throat and breast deep orange-ochraceous; sides and flanks blue; rest of undersurface to undertail coverts rich lemon yellow; undertail coverts white; underwing coverts white.

Parula pitiayumi is one of the most widely distributed of the tropical warblers, although its range is discontinuous and the bird is often absent from humid lowland forest areas; it breeds from southern Texas south through Mexico, Central America, Panamá, and in South America from Colombia to the Guianas, Peru, Bolivia, Uruguay, and northern Argentina. Fourteen races are recognized, of which 3 occur in Panamá—*speciosa* in lower highlands and foothills of western Panamá, *cirrho* on Isla Coiba off Veraguas, and *nana* in the lowlands and lower foothills of eastern Province of Panamá and Darién. In Panamá, the Tropical Parula is a bird of tall forest, but elsewhere, in southern Texas and eastern Venezuela and the chaco of southern South America, for example, it inhabits low, dry woodlands, and in the Cauca Valley of Colombia it lives in semi-arid cultivated valleys with scattered trees. It is a very active feeder, reminiscent of the Northern Parula. It often feeds in flowering trees. I have sometimes seen them with flocks of

migrant warblers. The song, in Chiriquí "a buzzy trill, typically *tsip-tsip-tsip-tsip-tsip-tsip-tsip-tsip-tsip*, with variations" (Ridgely, 1976, p. 292), is delivered throughout the day, and through many months of the nonbreeding season, when most other birds are silent.

PARULA PITIAYUMI SPECIOSA (Ridgway)

Compsothlypis pitiayumi speciosa Ridgway, 1902, Auk, 19, p. 69. (Boquete, Chiriquí, Panamá.)

Characters.—Sides of face blackish; lower throat and breast orange-ochraceous; abdomen yellow; one short white wing bar or spot formed by tipping on the greater wing coverts.

A male collected March 22, 1965, at El Volcán, Chiriquí, had the iris dark brown, cutting edge of maxilla and mandible light yellow; rest of maxilla black; tarsus dull brown; toes dull honey yellow; claws dull grayish brown.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 49.0-55.0 (52.0), tail 36.7-41.0 (38.5), culmen from base 9.6-11.5 (10.5), tarsus 15.0-16.9 (15.9) mm.

Females (9 from Chiriquí), wing 48.0-49.9 (49.0), tail 34.9-38.8 (36.9), culmen from base 9.6-11.1 (10.3, average of 8), tarsus 14.6-16.4 (15.4) mm.

Resident. Fairly common in forests in the lower highlands of Chiriquí and in the foothills of Veraguas and Herrera. W. W. Brown, Jr. (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 63) collected it at Boquete, Chiriquí between 1000 and 1350 m, and Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 558) found it at various localities on the Volcán de Chiriquí between 1560 and 1920 m. An unusual record is the specimen taken by J. W. Batty on Brava Island, off the coast of Chiriquí on January 28, 1902, but like many Batty specimens this is probably erroneously labeled (Eisenmann, Auk, 1950, p. 364). In Veraguas and Herrera it has been recorded from 450 to 600 m; Arcé collected it in Veraguas at Colobre (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1, (pt. 6), 1880, p. 120).

Nothing has been published on this species' nesting behavior in Panamá, but Skutch (Nutt. Orn. Club, no. 7, 1967, pp. 143-146) has found a nest of *P. p. speciosa* in Costa Rica. On May 6, 1964, he observed a female carrying material to a cushion of green moss about 10 m up on a nearly vertical branch of a tree in a grove near heavy forest; the nest was within the cushion of moss, with a round entrance on the side. Skutch never saw the eggs from this nest, but mentions that in Trinidad they have "an almost glossless white ground . . . [and are] spotted

and blotched with deep or pale chestnut, forming a more or less distinct cap on the broader end." Three weeks after discovery, the nest contained 3 well-feathered nestlings in the entrance; both parents were bringing them green caterpillars, a small, green, grasshopper-like insect, and tiny white protein corpuscles from a *Cecropia* tree.

Ridgely (*in litt.*) reports that on June 7, 1969, he found a nest near El Volcán. It was on the underside of a moss-covered limb, "burrowed into the moss," about 10 m up in a roadside tree, in a patch of humid woodland, 5.1 km below El Volcán, on the highway. Some grass and twigs projected from the nest.

PARULA PITIAYUMI CIRRHAE Wetmore

Parula pitiayumi cirrhae Wetmore, 1957, Smiths. Misc. Coll., 134 (9), p. 88. (Isla Coiba, Panamá.)

Characters.—More deeply colored above and below than *P. p. speciosa*; green patch on back very small; sides of face blackish-blue; throat lemon chrome; lower breast and abdomen orange, continuous with chest color; conspicuous white spot on greater wing coverts.

Measurements.—Males (4 from Isla Coiba), wing 52.4-58.5 (55.8), tail 39.2-41.7 (40.8), culmen from base 12.1-12.8 (12.5), tarsus 15.7-17.8 (16.8) mm.

Females (2 from Isla Coiba), wing 53.5-54.7 (54.1), tail 39.2-39.8 (39.5), culmen from base 11.7-12.6 (12.2), tarsus 16.7-16.8 (16.8) mm.

Resident on Isla Coiba. On three occasions during my visit to Isla Coiba in 1966 I saw pairs of these birds moving quickly among leafy twigs in the high branches of tall forest trees, so high above the ground that they were barely within gunshot. Except for their restless movements they would never have been detected in the shaded light of these forest haunts. Only occasionally did they appear briefly in silhouette against some tiny opening that led to the open sky. Probably they were fairly common, as the forest cover of the entire great island was suited to their needs.

During a short stay (October 8-10, 1965) Eisenmann and E. S. Morton found the Coiba birds common in all woodland, usually in pairs between 1 and 8 m up in trees, on the border of woods or partly cut-over forest. None were singing. On Ridgely's visit (April 9-14, 1976) he found the birds singing very persistently and saw them at all levels in the forest.

PARULA PITIAYUMI NANA (Griscom)

Compsothlypis pitiayumi nana Griscom, 1927, Amer. Mus. Novit., no. 282, p. 8.
(Cape Garachiné, eastern Panamá [= Darién].)

Characters.—Smaller than *P. p. speciosa*; sides of face same color as crown, lighter than in *P. p. speciosa*.; two white wing bars formed by tipping on middle and greater wing coverts.

Measurements.—Male (1 from Darién), wing 49.0, tail 36.8, culmen from base 10.6, tarsus 15.0 mm.

Female (1 from Darién, the type), wing 47.2, tail 31.7, culmen from base 10.4, tarsus 14.2 mm.

Resident. Local, but in some areas common in the lowlands and lower foothills of eastern Province of Panamá ("hills just east of Chepo, on road from Platanares to Jesús María, eastward; common in Bayano River valley" (Ridgely, 1976, p. 292) and in Darién, where it is known from Garachiné, the type locality, and from Cana, where R. R. Benson collected a "breeding" female in the spring or summer of 1928 (Griscom, Bull. Mus. Comp. Zool., vol. 69, 1929, p. 183). Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 367) assigned this race to the "Arid Tropical Zone," although Cana is in fact humid. Nothing is recorded of its breeding in Panamá or in northwest Colombia, where it also occurs. In mid-January 1975 Ridgely twice observed pairs feeding fledged young on middle slopes of Cerro Quía (500-670 m). Ridgely also found this species at Cana, where they were uncommon, but has not seen it in the lowlands of Darién.

The birds from the Bayano River basin have been assumed to be *nana*, although specimens have not been collected.

**DENDROICA PETECHIA (Linnaeus): Yellow Warbler,
Reinita Mangletera**

FIGURE 23

Motacilla petechia Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 334. (Barbados.)

Small; mostly bright yellow, more greenish on upper surface; male of resident races with entire head and upper breast reddish brown, chest, and sides streaked reddish brown; males of migrant races have reddish brown only as streaks on breast, chest, and sides.

Description.—Length 110-117 mm. Adult male of resident races, entire head, throat, and breast reddish brown (in *jubaris* mixed with yellow); rest of upper surface yellowish green, slightly lighter on rump; wing feathers dusky blackish, edged lemon yellow; on remiges

edge of inner web also lemon yellow; rectrices dusky blackish, edged yellow on outer web with much of inner web also yellow; rest of under-surface and underwing coverts yellow, with fine reddish brown streaks on chest and flanks. Adult male of migrant races, similar, but brown of head and throat replaced with yellow, bright on crown; reddish brown streaking begins at breast.

FIGURE 23.—Yellow Warbler, Reinita Mangletera, *Dendroica petechia*, a male of the *erithachorides* (Mangrove Warbler) group.

Adult female, like male, but paler, duller yellow throughout, and reddish brown areas absent or fainter and reduced.

Immature, like female, but paler.

The Yellow Warbler is the only member of its family represented in Panamá by both migrant and resident races. *Dendroica petechia* comprises three groups of subspecies that were once considered separate species: the yellow-headed *aestiva* group (Yellow Warbler), which is mainland North American in distribution and chiefly migratory, the chestnut-capped *petechia* group (Golden Warbler) of the West Indies, most of coastal Venezuela and Cozumel Island, and the chestnut-hooded *erithachorides* group (Mangrove Warbler) of both coasts of Central and South America to Peru on the Pacific side and to the Paraguaná Peninsula of Venezuela on the Atlantic side. Except when they occur on relatively small islands, birds of the *petechia* and *erithachorides* groups are usually confined to coastal mangrove swamps. Migrants are widely distributed in the lowlands in semi-open areas and gardens, as well as in mangroves.

Recent works (e.g., Lowery and Monroe, in Peters, Check-list Birds World, vol. 14, 1968, pp. 14-20) include the *erithachorides* and *aestiva* groups in the species *petechia*. Large series of specimens from Panamá and Colombia recently studied by Olson (Proc. Biol. Soc. Wash., vol. 93, no. 2, 1980, pp. 473-480) corroborate this treatment. The Yellow Warblers on the Pacific Coast from Panamá to Peru exhibit a gradation in plumage characters from birds of the chestnut-hooded *erithachorides* group to those resembling the chestnut-capped *petechia* group. The subspecies on the Galápagos and Cocos Island is presumably derived from the *erithachorides* group, but is convergently similar to the West Indian birds.

The song, behavior, and diet of the resident races of the Yellow Warbler are similar to those of North American forms, except that, as noted, the former are usually confined to mangroves. The stomach of a resident individual collected in the Canal Zone by E. A. Goldman on May 30, 1911, contained 2 blunt caterpillar jaws 5%, 3 entire spider eggs parasitized by a hymenopteran, and fragments of others 35%, a tipulid 12%, head of a hymenopteran 1%, moth remains 1%, 14 heads and other remains of ants 30%, a small chrysomelid 1%, weevil remains 1%, 4 beetles (Nitidulidae, *Colastus*?) 5%, other coleoptera 9%. Apparently these birds breed somewhat irregularly: of 2 adult males I collected at La Honda, Los Santos, in March 1948, 1 was singing and in full breeding condition, while the other, like it in plumage, had the testes small.

The migrant races of the Yellow Warbler are very common in the lowlands of both slopes and on the islands off the Pacific Coast, as well as inland. They are found in a variety of habitats from forest border to mangrove to gardens and grassy areas at the edge of taller vegetation. They often deliver *chip* or *tsip* notes, but I have never heard a migrant or wintering Yellow Warbler sing in Panamá; Skutch (A Naturalist in Costa Rica, 1971, p. 104), however, has found individuals maintaining a winter territory from which they may sing while driving away intruders. A male of one of the migrant races collected by E. A. Goldman at Cana, Darién on March 19, 1912, contained 1 *Leptostylus* sp. 25%, 2 small cerambycids 2%, 1 elatrid 2%, 3 minute calandrids 4%, another beetle 2%, bits of a membracid 2%, caterpillar remains 25%, an arachnid and 1 egg 3%, 12 ants 30%, 2 other Hymenoptera 5%.

In the Canal Zone, Eisenmann considers the migratory Yellow Warbler, during the months of the northern winter, the fourth most common parulid, exceeded in numbers only by the Bay-breasted, Chestnut-sided, and Tennessee Warblers.

H. von Wedel (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 333) collected a migrant female at Almirante, Bocas del Toro, on August 13, 1928, and L. L. Jewel (Auk, 1913, p. 428) recorded it at Gatún, Canal Zone, on May 12, 1912. Most migrants do not arrive before late August, and depart by late April. A Yellow Warbler banded at Almirante on November 11, 1962, was recaptured there 9 weeks later, on January 9, 1963 (Loftin, Bird-Banding, 1963, p. 220).

Mr. M. Ralph Browning has very kindly identified the migrant Yellow Warblers from Panamá now in the Smithsonian collections.

DENDROICA PETECHIA AMNICOLA Batchelder

Dendroica aestiva amnicola Batchelder, 1918, Proc. New England Zool. Club, 6, p. 82. (Curslet, Newfoundland.)

Characters.—"Similar to *D. a. aestiva*, but stated to differ in the male sex by darker green, less yellowish—between warbler green and sulphine yellow—back; more restricted and duller yellow of the forehead; narrower as well as duller, citron yellow rather than strontian yellow, edges to the remiges; and on average less richly colored underparts with darker chestnut streaks; female duskier, less yellowish above. . . . distinguished [from *rubiginosa*] by the yellow forehead contrasting with the green of the back." (Hellmayr, Field Mus. Nat. Hist. Zool. Ser., vol. 13, pt. 8, 1935, p. 365.)

The race *amnicola* breeds from north-central Alaska to central Labra-

dor and south to central Alaska, northeastern British Columbia and across Canada to south-central Quebec, Newfoundland, and the Magdalen Islands; it winters from southern Baja California and central Mexico south to Peru, Colombia, and French Guiana.

The 17 specimens of this race in the Smithsonian Institution collected in Panamá were taken on the Pacific slope from San Félix, Chiriquí, to La Jagua in eastern Province of Panamá, and on the Caribbean slope from Almirante, Bocas del Toro, to Juan Mina, Río Chagres, Canal Zone. I also have specimens from Isla Cébaco and Isla Coiba, off the Pacific Coast of Veraguas. M. E. Davidson collected a female at Puerto Armuelles, Chiriquí, on November 27, 1929 (California Academy of Science no. 32798).

DENDROICA PETECHIA RUBIGINOSA (Pallas)

Motacilla rubiginosa Pallas, 1811, Zoogr. Rosso-Asiat., 1, p. 496. (Kodiak Island, Alaska.)

Characters.—Similar to *aestiva*, but slightly smaller and much duller in color. Adult male darker and dull olive-green above, the pileum concolor with the back or else becoming slightly more yellowish on forehead (very rarely distinctly yellowish on forehead and forepart of crown); wing edgings less conspicuous, mostly yellowish olive-green, sometimes inclining to yellow on greater coverts. Adult female darker and duller olive greenish above, duller yellow below. (Ridgway, U.S. Nat. Mus., Bull. 50, pt. 2, 1902, p. 514)

This race breeds on the west coast of North America from southern Alaska to western British Columbia. It winters from Mexico to Panamá. Five specimens from Panamá were taken at Pedasí, Los Santos, and La Jagua and Chimán, Province of Panamá, on the Pacific slope, and at Juan Mina, Río Chagres, Canal Zone, and Puerto Obaldía, San Blas, on the Caribbean slope. All were females or immature males. M. E. Davidson took a female at Puerto Armuelles, Chiriquí, on November 27, 1929 (California Academy of Science no. 32799) and Griscom identified specimens from Almirante, Bocas del Toro, as belonging to this race (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 333).

DENDROICA PETECHIA AESTIVA (Gmelin)

Motacilla aestiva Gmelin, 1789, Syst. Nat., 1 (2), p. 996. (City of Quebec, Canada.)

Characters.—Upper surface more decidedly olive-green, the upper tail coverts with less yellow; streaks on chest and sides much broader than in other races.

The race *aestiva* breeds from southeastern Alberta across Canada to Prince Edward Island and Nova Scotia and south to central southern Montana, central Oklahoma, northern Arkansas, central Alabama, central Georgia, and central South Carolina. It winters from central Mexico to Peru and northern Brazil.

Nineteen specimens of *aestiva* in the Smithsonian collection from Panamá were all from the Pacific slope, from Puerto Armuelles, Chiriquí, through Los Santos and Herrera to El Llano on the Río Bayano, Province of Panamá, and El Real, Darién. Four were taken on Isla Coiba, Veraguas, and 1 on Isla de Cañas, in the Pearl Islands Archipelago. One at Buena Vista, Chiriquí, was at 690 m. A male in the British Museum (no. 85.3.8.387) was taken by Arcé in 1868 at Calovévora, Veraguas, on the Caribbean slope. Of the several taken in March, only 1 male showed extensive streaking.

Ralph Browning has found that 2 Yellow Warblers from Panamá in the Smithsonian collection are from a distinctive population from Nebraska that is characterized by more heavy streaking than in *aestiva*, *morcomi*, or *sonorana*, more intense yellow on the undersurface, and, on the upper surface, it is usually paler than all other races except *sonorana*. This population may merit description as a new subspecies. The 2 Panamá specimens are USNM no. 386476, a male taken at Jaqué, Darién, on April 8, 1946, and USNM no. 457705, a female from Ft. Clayton, Canal Zone, taken September 22, 1953.

DENDROICA PETECHIA MORCOMI Coale

Dendroica aestiva morcomi Coale, 1887, Bull. Ridgway Ornith. Club, no. 2, p. 82. (Fort Bridger, Utah [= Wyoming].)

Dendroica aestiva brewsteri Grinnell, 1903, Condor, 5, p. 72. (Palo Alto, California.)

Dendroica aestiva ineditus Phillips, 1911, Auk, 28, p. 85. (Matamoros, Tamaulipas, Mexico.)

Characters.—Slightly larger than *aestiva*, duller (less yellow) green coloration; breast streaking heavy.

This race breeds from western Washington, central British Columbia, and eastern Montana south to southern California and northwestern Baja California across to northwestern Texas. It winters from Baja California to Ecuador, northern Colombia, Venezuela, and French Guiana. Three specimens from Panamá are all males: USNM no. 461264 from San Félix, Chiriquí, February 21, 1956; no. 533282 from Punta Balsa, Chiriquí, February 25, 1966; and no. 462376, from Pedasí, Los Santos, March 9, 1957.

Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 367) recorded the subspecies *sonorana* from Veraguas and the Canal Zone but there are no specimens from Panamá identified as *sonorana* in either the Museum of Comparative Zoology (*vide* R. A. Paynter, Jr.) or the American Museum of Natural History (*vide* W. E. Lanyon). Nor are there any specimens of this subspecies in the extensive Smithsonian holdings of migrant *D. petechia* from Panamá. *D. a. sonorana* breeds in the southwestern United States and northern Mexico and reputedly winters as far south as Colombia and Ecuador, so it might be expected to occur in Panamá. This remains to be confirmed, however.

DENDROICA PETECHIA AEQUATORIALIS Sundevall

Dendroica petechia aequatorialis Sundevall, 1870, Öfv. K. Sv. Vet.-Akad. Forh., 26 (1869), p. 609. (Panamá City.)

Characters.—Male with crown, cheeks, and throat uniform brown, but of a lighter shade than in *aithocorys*, upper breast streaked with yellow.

A male collected at Chico, Province of Panamá, on March 24, 1961, had the iris wood brown; maxilla fuscous; base of mandibular rami across base of gonys dull buffy brown, rest of mandible dull neutral gray; tarsus and toes dull honey yellow; claws mouse brown.

Measurements.—Males (10 from Province of Panamá), wing 59.8-63.5 (62.5), tail 43.6-48.8 (47.1), culmen from base 11.1-13.0 (12.0), tarsus 17.3-18.8 (18.2) mm.

Females (10 from Province of Panamá), wing 58.5-62.5 (59.6), tail 39.3-49.3 (45.6), culmen from base 11.5-13.3 (12.2), tarsus 17.1-18.7 (17.9) mm.

Resident. Common but somewhat local on the Pacific Coast of the Province of Panamá and on the Pearl Islands. On the mainland it is usually found in mangroves, but occasionally in other vegetation adjacent to salt water. They are, for example, widespread on the fortified islands of Ft. Amador, in scrub and low dry woods. In 1944, however, on San José and Pedro González islands in the Pearl Archipelago, I found that Yellow Warblers were distributed widely through the higher forest growths. This is probably due to the absence of competing small insectivores such as are found on the mainland. On San José I recorded them away from the shore, mainly in the taller trees near or over water, but on Pedro González they were common over the forested hills far from any such habitat. Because of the heavy vegetation they were more evident along the shores, as elsewhere they remained con-

cealed in the leaves 20 to 25 m from the ground. In various places small trees with thin, light green leaves grew along the shore, often projecting out from rocky ledges or sandy banks over the tide line. These were favorite haunts, as were open-branched trees growing at the tops of higher, steeper bluffs. A male I collected on San José on February 19 was in breeding condition.

As Thayer and Bangs (Bull. Mus. Comp. Zool., vol. 46, 1905, pp. 155-156) noted, males from the Pearl Islands sometimes have the yellow portions of the plumage replaced with orange; there are 2 such males from San José in the Smithsonian collection. Some of the adult males from Majé, on the mainland, show traces of yellow in the cheeks, perhaps an indication of intergradation with the race *jubaris*.

The songs of *aequatorialis* in Panamá City (heard at a mangrove islet near Old Panamá on July 16, 1950) reminded Eisenmann of that of *aestiva* in New York, and were of two types, both rather sweet: *chee*, *chee*, *chee*, *wíchoo-éécha*, with variants, and a more ringing *sweet*, *sweet*, *sweet*, *chéw*, *chíchoo cheéoo*. Calls were *chip* (or *chit*) and a fast *chitchitchitchit*.

DENDROICA PETECHIA AITHOCORYS Olson

Dendroica petechia aithocorys Olson, 1980, Proc. Biol. Soc. Wash., 93(2), pp. 474-475. (5 miles east of La Honda, near Los Santos, Los Santos Province, Panamá.)

Characters.—Compared to *aequatorialis*, male with brown portions darker, upper breast not streaked with yellow; females of both races variable, but *aithocorys* generally with more streaking below than *aequatorialis*.

A male collected at Puerto Aguadulce, Coclé, on March 11, 1962, had the iris light dull reddish brown; maxilla and tip of mandible fuscous-black; base of mandible dull neutral gray; tarsus and toes light buffy brown; claws neutral gray. A female taken the same day had the cutting edge of maxilla and mandible dull light neutral gray; rest of maxilla fuscous-black; tarsus and toes and claws dull brown. Another male collected at Aguadulce on January 18, 1963, had the iris dark brown; maxilla fuscous-black; basal half of gonys dull flesh color; rest dull gray; tarsus and toes dull verona brown; claws dark mouse brown; underside of toes dull honey yellow.

Measurements.—Males (10 from western Panamá), wing 59.3-66.0 (63.6), tail 45.6-51.1 (48.6), culmen from base 12.2-13.9 (12.9), tarsus 17.7-19.3 (18.5) mm.

Females (10 from western Panamá), wing 58.5-65.5 (61.1), tail 43.3-48.4 (46.7), culmen from base 11.8-13.6 (12.7), tarsus 16.2-19.6 (18.1) mm.

Resident. Common in mangroves on the Pacific Coast of western Panamá from at least as far west as Puerto Armuelles, Chiriquí, east as far as Puerto Aguadulce, Coclé, and on Isla Coiba off the coast of Veraguas. On Coiba this species is confined to the coastal mangroves; in this it differs from populations on other islands in Panamá that are often found in tall forest far from salt water. In the Aguadulce area of Coclé there is some intergradation with *aequatorialis*.

At Puerto Aguadulce on July 4, 1952, Eisenmann saw at least 5 in the coastal mangroves. A male, accompanied by a female, sang a very fast *tit-tit-tit-tit-téé*.

The population on Isla Bolaños and possibly Isla Parida, Chiriquí, about 45 km southeast of David, may merit recognition. A male and 2 females collected on Isla Bolaños are like *aithocorys* in plumage, but are evidently larger (Olson, Proc. Biol. Soc. Wash., vol. 93, no. 1, 1980, p. 475). Yellow Warblers are also found on nearby Isla Parida, but none have been collected there.

DENDROICA PETECHIA IGUANAE Olson

Dendroica petechia iguanae Olson, 1980, Proc. Biol. Soc. Wash., 93(2), pp. 475-476. (Isla Iguana, Los Santos Province, Panamá.)

Characters.—Male nearest *aithocorys*, but brown of head much darker, less rufescent; green of dorsum darker, less yellowish, breast and particularly the lower belly more densely streaked with chestnut; yellow of underparts and tail darker, appearing dingy and greenish. Female like *aithocorys*, but tending to be more heavily streaked, yellow of underparts dingier, as in the male.

Measurements.—Males (7 from Isla Iguana), wing 61.6-67.4 (65.0), tail 47.2-52.9 (50.1), culmen from base 12.4-14.4 (13.4), tarsus 17.1-19.8 (19.1) mm.

Females (4 from Isla Iguana), wing 61.5-62.6 (62.0), tail 47.4-49.2 (47.8), culmen from base 12.2-12.9 (12.5), tarsus 17.8-20.0 (19.0) mm.

Resident. Found only on Isla Iguana, Los Santos, a small island probably less than 1 km² in area, lying approximately 6 km from the mainland, about 7 km east-northeast of Pedasí and 18 km north of Punta Mala, on the eastern coast of the Azuero Peninsula (7°38'N, 80°W). Iguana is the only offshore island along the eastern and south-

ern coasts of the Azuero Peninsula. Considering that, with the possible exception of birds from Isla Bolaños, mentioned earlier, none of the island populations of Yellow Warblers in Panamá have differentiated from those of the mainland, it is rather surprising to find that those of Isla Iguana are so distinct. Even in the field their more greenish coloration is noticeable.

The fauna of Isla Iguana is dominated by a great nesting colony of Magnificent Frigatebirds (*Fregata magnificens*) interspersed with Brown Pelicans (*Pelecanus occidentalis*). During my visit in February 1957, the Yellow Warbler was the only abundant small bird on the island, where it ranged everywhere, from the tall bunch grass above the rocky shore to the scrub forest inland. I saw them hopping about on bare rocks above the high-tide mark in early morning, and 15 or 20 ranged about the outdoor kitchen near the house, where they came out familiarly on low perches, as well as higher among the leaves of the trees. In the forest I found them often examining tufts of leaves almost among the frigatebirds perched in the branches. Many were in pairs, and males sang occasionally, though they were not breeding.

DENDROICA PETECHIA ERITHACHORIDES Baird

Dendroica erithachorides [sic] Baird, 1858, in Baird, Cassin, and Lawrence, Rept. Expl. Surv. R.R. Pacific, 9, p. 283. (Cartagena, Colombia.)

Characters.—Males with rufous rather than hazel on head and throat, where it is less extensive than in other races; streaks on chest wider.

Measurements.—Males (8 from Bocas del Toro), wing 63.0-69.5 (66.5), tail 48.7-56.1 (51.5), culmen from base 11.5-14.7 (13.2), tarsus 19.2-20.7 (19.3) mm.

Females (6 from Bocas del Toro and Province of Panamá), wing 60.0-65.7 (63.6), tail 44.3-52.9 (49.1), culmen from base 12.0-13.7 (12.6), tarsus 18.6-21.4 (19.8) mm.

Resident. Common on the entire Caribbean coast of Panamá from Almirante, Bocas del Toro, west beyond the border to Magdalena, Colombia. On Isla Escudo de Veraguas, I found Yellow Warblers scattered through the taller trees, where they were fairly common, though each of the 4 I took on a visit in March 1958 appeared to be alone. On Escudo this species was not restricted to the limited growths of mangroves found near the sea, as is the case on the mainland, but ranged throughout the forest growth, as appears to be its regular habit when found on small islands.

This series from Escudo and Almirante Bay agree fully with type

material of this race, which is interesting since specimens from Limón, Costa Rica, about 100 km to the north belong to the race *D. p. bryanti*.

DENDROICA PETECHIA JUBARIS Olson

Dendroica petechia jubaris Olson, 1980, Proc. Biol. Soc. Wash., 93(2), p. 478. (Nuquí, Dept. Chocó, Colombia, 5°40'N.)

Characters.—Compared with *aequatorialis*, male with brown portions of plumage lighter, more tawny; throat and chin either suffused with, or distinctly streaked with yellow; cheeks and lores suffused with yellowish, contrasting with the darker crown, so that birds appear distinctly capped, as opposed to *aequatorialis*, in which the entire head is brown; belly less streaked with brown, appearing more brightly yellow.

Measurements.—Males (10 from Darién and Colombia), wing 60.6-67.5 (65.0), tail 45.6-50.8 (48.5), culmen from base 11.4-14.0 (12.9), tarsus 17.9-19.8 (19.2) mm.

Females (10 from Darién and Colombia), wing 56.9-64.7 (61.0), tail 42.9-50.0 (46.1), culmen from base 11.7-13.6 (12.3), tarsus 17.2-20.1 (18.8) mm.

Resident. Found in mangroves on the coast of Darién and south along the Pacific Coast of Colombia, at least to Buenaventura, Valle del Cauca. In March and April of 1946 I found them common at Jaqué, Darién. Males were singing and in breeding condition. In ascending the Río Jaqué I noted that the Yellow Warblers were found only where there were mangroves.

Eisenmann noted 2 chestnut-headed birds on March 29, 1967, at Isla Boca Grande in the upper Gulf of San Miguel, Darién, but most of the Yellow Warblers seen there appeared to be of the migratory *aestiva* group.

**DENDROICA MAGNOLIA (Wilson): Magnolia Warbler,
Reinita Pechirrayada**

Sylvia magnolia Wilson, Amer. Orn., vol. 3, 1811, p. 63, pl. 23, fig. 2. (Fort Adams, Mississippi.)

Small; crown gray; back olive-green; tail black with large white patches; undersurface yellow, sometimes with black streaks.

Description.—Length 104-117 mm. Adult male, crown and nape gray, back light yellowish olive, increasingly marked with black in March and April; rump pale lemon yellow; upper tail coverts black; primary coverts black; middle and greater secondary coverts tipped white, forming a broad white patch; remiges blackish with outer web edged light gray, inner web edged white; rectrices black, all but central

pair with large white patch on basal half of inner web; side of face gray, with lores, forehead, and malar region becoming black by March, and lower and upper rims of eye and stripe behind eye beginning to appear in February, prominent by March; undertail coverts white, rest of undersurface bright yellow with black streaks beginning at breast, becoming increasingly prominent after February; underwing coverts white.

Adult female, as male but duller, with black on back fainter or absent, black on face absent, and streaks on undersurface fewer or absent.

Measurements.—Males (10 from the breeding range, taken in June and July), wing 57.5-61.8 (59.8), tail 45.2-51.1 (48.4), culmen from base 8.4-11.3 (10.0), tarsus 16.1-17.8 (17.1) mm.

Females (10 from the breeding range, taken in May, June, and July), wing 55.1-58.7 (56.8), tail 43.1-48.5 (46.1), culmen from base 8.7-11.3 (10.3), tarsus 16.1-18.1 (17.5) mm.

Winter visitor from the north. Uncommon, but regular in very small numbers at least on the Caribbean slope. The Magnolia Warbler has been recorded on migration in Bocas del Toro at Almirante, where 2 were banded on October 21, 1962 (Loftin, *Carib. Journ. Sci.*, vol. 3, no. 1, 1963, p. 67) and 1 was taken at Cocoplum on November 5, 1927 (Chapman, *Auk*, 1931, p. 121). One of the birds banded at the Gorgas Memorial Laboratory station at Almirante on October 21, 1972, was recaptured there 5 weeks later on December 7 (Loftin, *Bird-Banding*, 1963, p. 220). McLeannan forwarded 2 specimens from what became the Canal Zone to Salvin (Salvin and Godman, *Biol. Centr.-Amer., Aves*, vol. 1 (pt. 9), 1881, pp. 129-130); these are now in the British Museum. Lawrence (*Ann. Lyc. Nat. Hist. New York*, vol. 7, 1861, p. 322) records it as taken in the same area by McLeannan and Galbraith, and I secured 2 females at Juan Mina in the Canal Zone, on January 12 and 17, 1955. There are several recent sightings from eastern Province of Panamá as far east as the Bayano River valley (Ridgely, 1976, p. 293), and I saw 1 at Jaqué, Darién, on March 29, 1946. This species is usually found at low levels in second-growth woodland, where it often forages with mixed flocks. Ridgely (*in litt.*) has found them in mangroves.

In 1977 Magnolia Warblers were recorded on the exceptionally late dates of May 27 (Achiote Road, Canal Zone, N. G. Smith) and May 28 (Majé Island, Bayano River, C. Lowe) (*Toucan*, vol. 4, no. 7, 1977, p. 2). Smith observed that other northern migrants, including *Seiurus noveboracensis*, *Icterus galbula*, 3 species of swallow, *Coccyzus americanus*, and *C. erythrophthalmus*, remained very much later than usual.

He attributed this to an exceptionally extended dry season, with "no rains until late May."

[DENDROICA TIGRINA (Gmelin): Cape May Warbler, Reinita Altigrada]
Motacilla tigrina Gmelin, 1789, Syst. Nat., 1 (2), p. 985. (Canada.)

Winter visitant from the north. Very rare, known only from recent sight records in Chiriquí, Bocas del Toro, and the Canal Zone. Ridgely (1976, p. 294) lists 5 sight records: "one at Almirante, Bocas del Toro, on February 2 and 10, 1958 (Wetmore); one at Changuinola, Bocas del Toro, on December 7, 1962 (Eisenmann); one below Volcán, western Chiriquí, on January 20, 1970 (P. Alden); one bright male at Summit Gardens, Canal Zone, on February 2, 1973 (Ridgely, Eisenmann, C. Leahy, J. Gwynne); and one male at Volcán, Chiriquí, on January 15, 1974 (C. Leahy and Ridgely)." More recent sightings include March 6, 1976, a female at Estero Rico, in western Chiriquí below Divalá (Ridgely); December 5, 1976, Bayano River Research Station, eastern Province of Panamá (A. Greensmith, Toucan, vol. 4, no. 2, 1977, p. 6). Mason (Auk, 1976, p. 168), reviewing the status of this species in Middle America, where it is generally considered a vagrant, concludes that "the Cape May Warbler is an infrequent winter visitor or winter resident in much of Middle America and that its status may have changed in the past two decades."]

**[DENDROICA CAERULESCENS (Gmelin): Black-throated
Blue Warbler, Reinita Azulosa]**

Motacilla caerulescens Gmelin, 1789, Syst. Nat., 1(2), p. 960. (Santo Domingo.)

Vagrant. This species is included on the basis of 1 sight record of a male near Gatún Locks (besides the French Canal), Canal Zone, on January 14, 1973, by D. Engelman, James Smith, N. Gale, and A. Ramirez (Ridgely, 1976, p. 294). The normal winter range of *D. caerulescens* is the Bahamas, Greater Antilles, islands of the western Caribbean, and, less commonly, northern Central America, and northern Colombia and northern Venezuela.]

**DENDROICA CORONATA CORONATA (Linnaeus): Yellow-rumped
Warbler, Reinita Coroniamarilla]**

Motacilla coronata Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 333. (Philadelphia, Pennsylvania.)

Small; upper surface gray or light brown, with rump and crown yellow; undersurface white with yellow on flanks.

Description.—Length 113-131 mm. Adult male, crown and back dark gray, with central crown feathers yellow near base, more or less exposed, and black streaks on back; rump pale lemon yellow; upper tail coverts black, edged gray; lesser wing coverts black tipped gray; middle and greater coverts black tipped white, forming two bars; remiges dusky blackish with outer webs thinly edged gray; rectrices blackish with white spots on inner webs of outer three pairs; lores and ring around eye white, sometimes obscured; side of face gray; under-surface white, with fine black streaks on breast and flanks, and pale lemon yellow patch on upper flank; underwing linings white.

Adult female, like male, but gray of head and back replaced by grayish brown.

Measurements.—Males (10 from Panamá and Mexico), wing 69.8-75.1 (72.2), tail 52.1-60.5 (56.0), culmen from base 9.4-12.3 (11.1), tarsus 17.0-18.6 (18.0) mm.

Females (10 from Panamá), wing 66.0-71.8 (68.6), tail 48.1-56.5 (53.4), culmen from base 9.2-11.7 (10.4), tarsus 17.3-18.3 (17.9) mm.

Winter visitor from the north. Fairly common, at times locally abundant in the western half of the Republic in the Tropical and lower Subtropical Zones; much less common eastward. In Panamá the Yellow-rumped Warbler, while found in more open woodlands and in shrubbery about houses, also feeds regularly on the ground in pastures, cultivated fields, and along the borders of lagoons. In the Chiriquí highlands and about Almirante and Changuinola in Bocas del Toro, I have found them spread over lawns, attracted by swarms of leaf-hoppers, and elsewhere have noted them in flooded areas or about other bodies of water where gnats were abundant. Charles Handley relates that he has seen these birds hawking insects in the surf at the shore of Isla Bastimentos, Bocas del Toro; the warblers were catching something at the edge of the water; then darting up just out of reach of the surf, not alighting at any time except on branches of nearby bushes.

This species has been recorded from November 7, in 1927, at Cocolum, Bocas del Toro (Chapman, Auk, 1931, p. 121) to March 20, when in 1958 I saw 1 at the La Jagua Gun Club, east of Pacora in the Province of Panamá. I have collected many at Santa Clara and El Volcán, Chiriquí, Almirante and Changuinola, Bocas del Toro, and Cerro Campana, Panamá. Loftin and Olson (Carib. Journ. Sci., vol. 3, no. 4, 1963, p. 195) mention 1 seen at Tonosí, Los Santos, on March 8, 1963, and W.W. Brown, Jr., collected a female on San Miguel in the Pearl Islands on February 23, 1904 (Thayer and Bangs, Bull. Mus.

Comp. Zool., vol. 46, 1905, p. 156). A further eastern record on the Caribbean slope is one I saw at Mandinga, in the Comarca de San Blas, on January 27, 1957. Ridgely (*in litt.*) saw a Yellow-rumped Warbler in flowering Erythrinas and on the ground in clearings at the Cana, Darién, gold mine on February 28 and March 3, 1981.

From January 13 to February 15, 1958, this was one of the most abundant birds in the Almirante-Changuinola region. Following the latter date, there was a definite decrease, though the species remained common until the end of February. A week later there were few about, and the last one was noted on March 10. This abundance seems to have been related to severe cold that year in the north, since friends at Almirante reported to me that none of these warblers were about in the winter months of 1958-59.

As Ficken and Ficken (Bird-Banding, 1966, pp. 273-279) noted, the Yellow-rumped Warbler is one of the few members of its family to form flocks of conspecifics in the nonbreeding season. At 840 m on Cerro Campana I have seen groups of a dozen or more move across the slopes, many of them coming up the ravines from the lowlands and advancing to the higher levels.

The only sighting of the race *D. c. auduboni* in Panamá was made by R. Forster and Ridgely (*in litt.*), who found 1 bird near Volcán, Chiriquí, on February 5-6, 1976. The bird was with a typical nominate *coronata*, so direct comparisons were possible; among other things, the prominent pale yellow throat was obvious, as was its distinctive call, a fast *whit* rather than the sharper *tchek* of nominate *coronata*.

**[DENDROICA TOWNSENDI (Townsend): Townsend's Warbler,
Reinita de Townsend]**

Sylvia townsendi J. K. Townsend (ex. Nuttall MS), 1837, Journ. Acad. Nat. Sci. Philadelphia, 7, p. 191. (Forests of Columbia River.)

Vagrant from the north. This species is included on the basis of 3 sight reports. A male seen repeatedly at Nueva Suiza in the highlands of western Chiriquí on November 19-30, 1967, by T. V. Heatley and V. M. Kleen (Ridgely, 1976, p. 295). On March 21, 1979, J. Baird and Ridgely (*in litt.*) photographed a bright female near Volcán, Chiriquí. The bird was in a small grove of exotic cypresses, and was seen there again the next day. On March 21 Baird and Ridgely also saw an adult male Townsend's Warbler on the Boquete Trail above Cerro Punta, at 2100 m. The normal winter range is from California south to Nicaragua. There are also a number of sight reports from Costa Rica.]

**DENDROICA VIRENS (Gmelin): Black-throated Green Warbler,
Reinita Verdosa**

Motacilla virens Gmelin, 1789, Syst. Nat., 1(2), p. 985. (Philadelphia, Pennsylvania.)

Small; upper surface green; sides of head yellow; throat black; rest of undersurface white.

Description.—Length 104-117 mm. Adult male, crown, back, and rump yellowish olive-green, slightly more yellowish on rump; upper tail coverts black, broadly edged gray; wings black, with middle and greater coverts tipped white, forming two bars, and remiges edged gray on outer web and white on inner web; outer two pairs of rectrices white with narrow blackish stripe on inner side of outer web, next pair blackish with white spot on outer web, remaining pairs blackish or black with outer web edged gray; lores, superciliary, and sides of head and neck bright yellow; throat, breast, and flanks black, with feathers often tipped white until February; rest of undersurface white, with abdomen tinged yellow; underwing coverts white.

Female and immatures, like adult male but green of upper surface slightly duller and black on undersurface less extensive.

Measurements.—Males (10 from the breeding range, taken in May, June, and July), wing 60.0-65.8 (62.4), tail 45.0-51.3 (48.2), culmen from base 9.3-11.6 (10.8), tarsus 12.8-18.8 (16.5) mm.

Females (10 from the breeding range, taken in May, June, and July), wing 57.0-61.7 (59.6), tail 44.6-51.4 (47.5), culmen from base 9.8-11.3 (10.6), tarsus 14.5-17.7 (16.6) mm.

Migrant and winter visitor from the north. Common in the foothills and highlands of Chiriquí and Veraguas, less regular but at times still common in the hill country of central Panamá; in the lowlands it occurs only as a transient. Mönniche (Blake, Fieldiana: Zool, vol. 36, no. 5, 1958, p. 558) collected this species on the Volcán de Chiriquí between 1500 and 2700 m; I have found it in this area at the same elevations, and at Santa Clara at 1260 m. Farther east, I have found Black-throated Green Warblers at El Cope in Coclé, at La Campana (60 m) in the Province of Panamá, and at Cerro Malí, Darién, where on March 1, 1964, I shot one at 1260 m on the south fork of the Río Pucro. In the Canal Zone this species is "rather rare" (Ridgely, 1976, p. 295): Lawrence (Ann. Lyc. Nat. Hist. New York, vol. 7, 1861, p. 293) reported that McLeannan collected it on the Atlantic side near the Panama Railroad, but Willis and Eisenmann (Smiths. Contrib. Zool. no. 29, 1979) do not record it from Barro Colorado Island.

Black-throated Green Warblers have been reported in Panamá from

mid-September until mid-April; most are found between late September and late March. Buskirk et al. (Auk, 1972, p. 619), in studying mixed-species flocks at Cerro Punta, Chiriquí, considered *D. virens* a "joiner" but not a follower of the flocks led by permanent residents. I have often seen them in the flocks of migrant warblers. They are usually found in second-growth woodland, borders, and clearings.

[**DENDROICA OCCIDENTALIS** (Townsend): Hermit Warbler,
Reinita Coronada

Sylvia occidentalis J.K. Townsend, 1837, Journ. Acad. Nat. Sci. Philadelphia, 7, p. 190. (Forests of Columbia River.)

This species is included on the basis of several recent sight reports. An adult male was seen at Nueva Suiza in the highlands of western Chiriquí on December 22, 1973, by Dana Gardner and again in the exact same locality on January 15, 1974, by Ridgely and C. Leahy (Ridgely, 1976, p. 296). In 1976 an adult male was seen again at this locality on January 15-16 (J. J. Pujals) and March 6 (J. Greenberg) (Eisenmann, Ridgely *in litt.*). The normal winter range is from Mexico to Nicaragua.]

DENDROICA CERULEA (Wilson): Cerulean Warbler, Reinita Cerulea

Sylvia cerulea Wilson, 1810, Amer. Ornith., 2, p. 141, pl. 17, fig. 5. (Philadelphia, Pennsylvania.)

Small; upper surface light blue (male) or bluish green (female); undersurface white or tinged yellow.

Description.—Length 101-112 mm. Adult male, upper surface grayish blue, brighter on crown; a few fine black streaks on hindneck and back; rump light gray; upper tail coverts black, tipped light gray; lesser wing coverts black, tipped blue; middle and greater wing coverts black, tipped white, forming two bars; remiges black, with outer web edged gray; rectrices black, with white on inner web extensive on outer pair, decreasing to a thin edge on innermost pair, and outer webs edged blue; black line from lores through eye; side of face light gray; undersurface white with narrow black band across upper breast and fine black streaks on sides.

Adult female, crown bluish green; side of face and rest of upper surface light bluish olive-green, slightly lighter on rump; lesser wing coverts light green; middle and greater wing coverts black, tipped whitish, forming two bars; remiges black with outer web edged bluish olive-green and inner web edged white; rectrices as in male but blue

on outer web replaced by light bluish olive-green; lores, superciliary, and entire undersurface white, extensively tinged pale dull yellow; underwing coverts white.

Measurements.—Males (10 from the breeding range, taken in May), wing 62.5-69.5 (66.2), tail 40.5-45.5 (43.3), culmen from base 10.3-12.4 (11.3), tarsus 14.8-16.7 (15.9) mm.

Females (10 from the breeding range, taken in May), wing 61.0-65.0 (62.6), tail 39.9-44.1 (41.7), culmen from base 10.2-11.9 (11.2), tarsus 14.5-16.6 (15.8) mm.

Migrant from the north. Uncommon. While this species winters in South America from Colombia and Venezuela south to Bolivia, and undoubtedly passes in part through Panamá, I have seen only 7 specimens. The species is, however, hard to collect and passes through Panamá very quickly. The British Museum has 2 skins from Calovévora, Veraguas, taken by Arcé, and 3 others attributed to McLeannan, and therefore taken in the Canal Zone. One in the American Museum of Natural History is also from McLeannan. There is 1 in the Museum of Comparative Zoology collected on Isla del Rey (San Miguel), March 15, 1904, and 1 in the Smithsonian that Perrygo and I collected on Taboga Island, March 23, 1952.

Ridgely (1976, p. 296) considers the Cerulean Warbler an "uncommon fall and rare spring transient (late August-early October; mid-to late March; one report from November 4) . . . Only winter report is a sighting of a male on Cerro Campana on January 1, 1969 (Ridgely). . . . Usually arrives in small 'waves' in September when small groups may be encountered." In early April 1976 Ridgely (*in litt.*) recorded 1 to 3 individuals per day at three different localities in the Canal Zone, with the maximum being 3 (2 males and a female) on the Pipeline Road on April 3. Extreme dates known to Eisenmann are August 20, 27, and April 3, 14.

**DENDROICA FUSCA (Müller): Blackburnian Warbler,
Reinita Gargantianaranjada**

Motacilla fusca P.L.S. Müller, 1776, *Natursyst.*, suppl., p. 175. (French Guiana.)

Small; upper surface mainly black (grayish olive in female); throat and breast bright orange.

Description.—Length 106-120 mm. Adult male, upper surface black, with small light orange patch in center of crown and two yellowish white stripes on back; wings black, with middle coverts broadly and greater coverts narrowly tipped white, forming a patch; primaries and

outer secondaries with yellowish white on edge of outer web, and innermost secondaries with white on edge of outer web; three outer pairs of rectrices white, tipped black, next pair black with white patch on inner web, remaining pairs black; lores, superciliary, side of neck, throat, and upper breast light orange, becoming bright orange in February; side of face and line through eye black; lower breast and rest of undersurface fading to pale orange-yellow; black stripes on side of breast and on sides.

Adult female, upper surface grayish olive, streaked black, with small yellowish white patch in center of crown, often obscured; wings black, with middle and greater coverts tipped white, forming two bars; remiges with outer web edged grayish olive; rectrices black with white patch on inner web of outer three pairs; lores and superciliary buff-yellow; side of face grayish olive; throat and upper breast from buff-yellow to light orange; rest of undersurface white, tinged buff, with a few black streaks on sides of breast and sides; underwing coverts white.

Immature, like female, but paler.

Measurements.—Males (10 from the breeding range, taken in May), wing 64.0-69.0 (67.4), tail 44.6-48.2 (46.4), culmen from base 10.2-11.6 (11.1), tarsus 15.9-18.3 (17.4) mm.

Females (10 from the breeding range, taken in May), wing 62.0-65.2 (63.8), tail 43.5-47.6 (45.7), culmen from base 10.7-12.2 (11.3), tarsus 16.4-18.3 (17.2) mm.

Migrant and winter visitor from the north. Fairly common transient throughout on migration; a few winter in the highland forest of Chiriquí. In some years it is more common as a winter resident in Chiriquí, equaling Black-throated Green Warblers in numbers. As a migrant the Blackburnian Warbler has been recorded in fall from early September until November 17 (Eisenmann, *Smiths. Misc. Coll.*, vol. 117, no. 5, 1952, p. 51 and in spring from March 5, at Garachiné, Darién, in 1927 (Griscom, *Amer. Mus. Nov.* no. 282, 1927, p. 10) to April 28, at Mt. Sapo, Darién, in 1941 (Bond and de Schauensee, *Acad. Nat. Sci. Philadelphia*, Mon. no. 6, 1944, p. 42). I have also found this species at El Volcán and Santa Clara in Chiriquí during February. It has been recorded as well from San José, Saboga, and Viveros in the Perlas Archipelago and at sea 96 km south of the Pearl Islands (specimen in the British Museum, taken October 24, 1924, by H. J. Kelsall). Some individuals may winter in the Darién highlands. *D. fusca* is usually seen in middle and high tree levels where it is often a part of mixed flocks of migrant warblers.

A Blackburnian Warbler killed in a heavy rainstorm at Almirante, Bocas del Toro, on October 13, 1963, weighed 9.41 g and had an estimated 1.37 g of fat reserves, which might have enabled the bird to fly another 900 km (Rogers, Bird-Banding, 1965, pp. 115-116).

**[DENDROICA DOMINICA (Linnaeus): Yellow-throated Warbler,
Reinita Gargantamarilla]**

Motacilla dominica Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 334. (Hispaniola.)

Vagrant. This species is included on the basis of 3 sight reports: a well-marked male that I observed for several minutes on February 3, 1958, at Almirante, Bocas del Toro, where it was feeding in a flowering tree with other warblers and orioles; a bird seen by C. Leahy, J. Gwynne, Ridgely, and Eisenmann on February 2, 1973, at Summit Gardens, Canal Zone (Ridgely, 1976, p. 296) (This bird was photographed, but the subspecies was not determinable); and a bird seen by J. Baird and R. Forster on Cerro Azul, Province of Panamá, on January 28, 1978 (Ridgely, *in litt.*). The white lores and short bill characteristic of *D. d. albilora* were observed on the last-mentioned bird. *D. a. albilora* winters rarely south to Costa Rica.]

**DENDROICA PENNSYLVANICA (Linnaeus): Chestnut-sided Warbler,
Reinita de Lados Castaños]**

Motacilla pensylvanica Linnaeus, Syst. Nat., ed. 12, vol. 1, 1766, p. 333. (Philadelphia, Pennsylvania.)

Small; upper surface bright yellowish green; undersurface white, with, on male, chestnut stripe on side of breast and sides.

Description.—Length 106-118 mm. Adult male, crown and back olive-yellow, with some black streaking on back, becoming more extensive in March, when crown becomes bright yellow; rump black with feathers edged olive-yellow; upper tail coverts black, edged gray; wing coverts blackish, with lesser coverts tipped olive-yellow, middle and greater ones tipped white, tinged yellow, forming two bars; remiges blackish, edge of outer web of primaries gray, edge of outer web of secondaries olive-yellow; rectrices blackish with large white patch on inner web of outer two pairs; lores and side of head and neck gray until March, when lores, superciliary, and side of face in front of eye become black and rest of side of face becomes white; orbital ring white; undersurface white, with chestnut on sides becoming more extensive by

March, when it is found on sides of breast also; underwing coverts white.

Female and immatures, as male, but crown and back usually remaining olive-yellow; side of face remaining gray, and chestnut only on sides, often absent entirely.

Measurements.—Males (10 from Panamá), wing 61.2-66.5 (64.2), tail 45.7-50.6 (48.3), culmen from base 10.7-11.9 (11.2), tarsus 16.0-18.6 (17.3) mm.

Females (10 from Panamá), wing 56.1-61.0 (59.2), tail 43.6-48.8 (46.0), culmen from base 10.5-11.3 (10.9), tarsus 15.8-18.0 (17.0) mm.

Winter visitor from the north. Very common in the lowlands and less common in the highlands of Chiriquí; reported as common east through the mountains of Veraguas (Santa Fé, Chitra), ranging east through the Canal Zone to western San Blas (Mandinga) and eastern Province of Panamá (Chico, Chepo). In the lowlands it is found widely, from Puerto Armuelles and Divalá, Chiriquí; Paracoté, southern Veraguas; Almirante, Bocas del Toro; and El Uracillo, on the Caribbean slope of Coclé; to the Canal Zone. It is not reported to date from the eastern side of the Azuero Peninsula. I noted 2 on Isla Coiba January 12 and 29, 1956, and Ridgely (*in litt.*) saw 1 there on April 13, 1976. E. A. Goldman wrote in his notes that in 1911 this was the "most abundant North American warbler in the northern half of the Canal Zone from January 12 until April 18 when the last specimen obtained was taken at Gatún." It decreases considerably after March. In Darién there are "few" records (Griscom, Bull. Mus. Comp. Zool., vol. 78, 1935, p. 368).

The earliest record for Panamá is September 7 (Willis and Eisenmann, Smiths. Contrib. Zool., no. 291, 1979, p. 26); Ridgely (*in litt.*) has found individuals as late as April 25 (1980, Changuinola, Bocas del Toro) and May 1 (1976, Ft. Sherman, Canal Zone). Evidently many individuals remain in the same locality for several months—of those banded by Loftin et al. (Bird-Banding, 1966, p. 41) at Curundu, in the Canal Zone, 1 banded December 8, 1963, was taken at the same locality February 9, 1964. Another banded at Curundu December 3, 1963, was recaptured there April 2, 1966 (Loftin et al., Bird-Banding, 1967, p. 151).

The Chestnut-sided Warbler is found most often in second-growth woodland, clearings, and edges, often in groups with other migrant warblers.

In a banding study at Almirante, Rogers and Odum (Auk, 1966, p. 418) found that Chestnut-sided Warblers arriving there in fall had exhausted their migratory fat reserves and had lost some weight from the breast muscles. The fat-free weight of 20 was 6.8-9.1 (8.0) grams. One collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 10.2 g.

Chestnut-sided Warblers (*vide* E. S. Morton) molt much ahead of Bay-breasted Warblers, with which they often associate in Panamá, and by mid- or late March are already in full breeding plumage. They are often seen with other passerines feeding on the fruit of the abundant *Miconia argentea*. Usually a mixed feeding aggregation of parulids will include only 1 Chestnut-sided Warbler.

Eisenmann reports that birds seen in Panamá usually carry the tail diagonally cocked above the back, and sometimes jerk it nervously. The wings are often carried drooped below the body.

**DENDROICA CASTANEA (Wilson): Bay-breasted Warbler,
Reinita Pechicastaña**

Sylvia castanea Wilson, Amer. Orn., vol. 2, 1810, p. 97, pl. 14, fig. 4. (Pennsylvania.)

Small; upper surface green (grayish with brown crown in males after February); undersurface buff, sometimes with brown on throat and sides.

Description.—Length 111-130 mm. Male, September through February, crown and upper back light yellowish olive, finely streaked with black; lower back, rump, and upper tail coverts gray; wings black, with lesser coverts tipped gray, middle and greater coverts tipped white, forming two bars, remiges with inner web edged white, outer web of primaries 9-4 edged gray, outer web of rest of remiges light yellowish olive; rectrices black with large white spot on inner web of outer two pairs; lores and orbital ring white; side of head light yellowish olive; undersurface white, tinged buff, most heavily on abdomen and undertail coverts; flanks sometimes russet; underwing coverts white.

Male, March and April, forecrown, side of head, including area all around eye, and chin, black; hindcrown and nape russet; upper back streaked black and warm buff; side of neck warm buff; throat, breast, sides, and flanks russet; rest of undersurface buffy white; lower back, rump, wings, and tail as above.

Female, like September-February male; in March and April sometimes with russet on crown, throat, and breast.

Measurements.—Males (10 from Panamá), wing 69.9-77.0 (73.7),

tail 48.0-55.1 (52.2), culmen from base 11.1-12.1 (11.6), tarsus 17.7-19.0 (18.2) mm.

Females (10 from Panamá), wing 65.0-75.1 (69.7), tail 47.0-53.8 (50.0), culmen from base 10.3-12.8 (11.6), tarsus 16.0-18.7 (17.1) mm.

Migrant and winter visitor from the north. Common. Found on the Pacific slope from eastern Veraguas, the mountain area of Coclé (El Valle), and western Province of Panamá (Cerro Campana) eastward, being especially common in the Bayano River Valley of eastern Panamá Province and in Darién; it has not been recorded from Chiriquí. On the Caribbean side it ranges throughout the Republic from western Bocas del Toro to eastern San Blas. Mainly found in the Tropical Zone, it is recorded in the lower edge of the Subtropical Zone at El Valle, and on Cerro Campana. In the Perlas group it has been recorded from the islands of San José, Isla del Rey, and Saboga.

The first Bay-breasted Warblers arrive in Panamá in mid-September (Ridgely, 1976, p. 297), although few are seen before October. Molt of adults takes place in March; immature birds seem to molt slightly later. By April, numbers of Bay-breasted Warblers have decreased in Panamá. The latest date for which the species is recorded in Panamá is May 1, when in 1969 G. Tudor saw 1 at Cerro Azul, Province of Panamá. On March 18 and 19, 1957, I found a considerable migration through the forest along the lower Río Oria west of the southeastern tip of the Azuero Peninsula. While D. Hicks netted this species almost daily at Almirante, Bocas del Toro, during October 15-26, 1964, he caught none there on the following spring migration (March through April 1965), suggesting different routes on the southward and northward flights (Eisenmann *in litt.*). N. G. Smith reports seeing one at Almirante during the "last week of March" 1965.

The Bay-breasted Warbler is the commonest wintering warbler in the forests of central Panamá, especially on the Caribbean slope. Its numbers are often underestimated, as the birds are usually in forest canopy or high in woodland and easily overlooked. Central and eastern Panamá are the centers of its notably small wintering range. Its population may have increased in the 1970's in response to spruce bud-worm outbreaks in its breeding area. In Panamá it feeds largely on the fruit of *Miconia argentea* and of *Bursera*, two common small trees. Ridgely (*in litt.*) estimated 60 Bay-breasted Warblers on the Achiote Road, Canal Zone, March 18, 1980, and 50 at Ft. Sherman the next day.

A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) in Province of Panamá (location not given) weighed 11.4 g.

DENDROICA STRIATA (Forster): Blackpoll Warbler, Reinita Coroninegra
Muscicapa striata J.R. Forster, 1772, Phil. Trans. vol. 62, art. 29, read June 18 and 25), pp. 406, 428. (Fort Severn, Ontario.)

Small; both sexes in basic plumage, dull yellowish green streaked with black on upper surface; undersurface white, tinged yellow, sometimes slightly streaked with black. Adult male in alternate plumage, streaked black and white.

Description.—Length 115-126 mm. Adult male in basic plumage, side of head and upper surface olive-green, becoming gray on rump and upper tail coverts, and finely streaked with black, especially on crown and upper back; wing coverts blackish, with middle and greater ones tipped white, forming two wing-bars; remiges blackish, with outer webs edged olive-green; tertials edged whitish; rectrices blackish with white patches on webs of outer two pairs; undersurface white, tinged yellow on sides of throat, across breast, and on sides and flanks, and finely streaked with black on sides and flanks; underwing coverts white.

Adult male in alternate plumage, crown black; nuchal band streaked black and white, rest of upper surface light gray, becoming brownish on rump and upper tail coverts; upper back streaked with black; wings and tail as in basic plumage; side of head and undersurface white, with a broad black streak running from chin, along side of throat, to side of breast; sides and flanks streaked with black.

Adult female in basic plumage, like male in basic plumage, but with less streaking on back, often absent from crown, and yellow tinge more extensive on undersurface.

Adult female in alternate plumage, like male in basic plumage.

Measurements.—Males (10 from North America, taken in May), wing 69.5-75.5 (72.5), tail 48.5-52.7 (50.1), culmen from base 11.1-12.6 (12.1), tarsus 17.1-19.6 (18.8) mm.

Females (10 from North America, taken in May), wing 68.0-73.0 (69.5), tail 47.3-50.7 (48.1), culmen from base 11.5-12.4 (12.0), tarsus 18.2-19.6 (18.9) mm.

Accidental. There is an adult male specimen in full spring plumage in the British Museum marked as taken in Panamá by McLeannan that was received in the Tweedale Collection with no further data. The form of the skin, in the arrangement of wings and feet and the manner in which the bill is closed, is typical of the method employed by McLeannan, so that there is no reason to doubt the locality. This collector's activities centered along the line of the Panamá Railroad, mainly on the Atlantic slope near the former station of Lion Hill (now covered

by Gatún Lake). The record, therefore, is to be attributed to the Canal Zone (see Wetmore, Auk, 1958, pp. 467-468). This species migrates through the West Indies and is only of accidental or, at most, casual occurrence in Middle America.

Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 51) describes 2 sight reports for this species on Barro Colorado Island: "Dr. A. A. Allen writes that November 6, 1944, he observed one 'close enough so that I had no trouble seeing the light-colored legs and white under tail coverts.' Mrs. G. G. Fry writes that on February 8 and 9, 1950 she heard a song which she recognized as that of this species, and that one of the members of her party, Mrs. L. J. Francke, saw the bird and said it was a male in spring plumage." Ridgely comments, however, that some autumn Bay-breasted Warblers have the characters Allen noted and that in February Blackpoll Warblers are not in "spring plumage" or likely to be singing. On October 19 and 29, 1964, individuals identified as this species by D. L. Hicks were banded and released at Almirante, Bocas del Toro (Ridgely, 1976, p. 297). There are 2 recent sightings from Costa Rica, in December 1977 and January 1975 (Stiles and Smith, Brenezia, vol. 17, 1980, p. 151), and a specimen was collected there by F. G. Stiles in "fall" of 1980 (*in litt.* to Eisenmann).

**DENDROICA PALMARUM PALMARUM (Gmelin): Palm Warbler,
Reinita del Palmar**

Motacilla palmarum Gmelin, 1789, Syst. Nat., 1(2), p. 951. (Santo Domingo.)

Small; upper surface brown; undersurface buffy with fine brown streaks, yellow on undertail coverts and sometimes on throat.

Description.—Length 109-126 mm. Adult (sexes alike), crown and back olive-brown, finely streaked with darker brown; forecrown becoming russet by March; rump and upper tail coverts yellow; wing coverts blackish brown, tipped buffy brown; remiges blackish brown, with outer web of primaries narrowly edged yellow, and outer edges of secondaries broadly edged buffy brown; rectrices blackish brown with large white patch on inner web of outermost pair and small white patch on next pair; superciliary whitish, becoming yellow by March; orbital ring whitish; undersurface whitish or olive-buff, finely streaked with brown on breast and sides of throat; undertail coverts lemon yellow; throat becomes lemon yellow by March, rest of undersurface sometimes tinged yellow as well.

Measurements.—Males (10 from the breeding range, taken in May

and July), wing 61.0-67.1 (64.4), tail 46.2-53.2 (49.9), culmen from base 10.3-11.9 (11.3), tarsus 18.3-19.6 (19.1) mm.

Females (10 from the breeding range, taken in May and July), wing 59.4-62.1 (61.0), tail 46.1-49.3 (47.6), culmen from base 10.8-11.8 (11.2), tarsus 18.3-19.7 (19.1) mm.

Winter visitor from the north. Rare. This species was not known from Panamá before 1965. The normal winter range is south to Honduras and northeastern Nicaragua. It is found more rarely to Costa Rica. On March 15, 1965, a male was collected by Dr. A. Diaz near Tocumen, on the Pacific slope about 32 km east of Panamá City, Province of Panamá. The specimen is now in the Smithsonian. Hicks et al. (Condor, 1967, p. 319) erroneously list the date as October 14. Other sight records led Ridgely (1976, p. 297) to describe the Palm Warbler as "a rare but probably regular winter visitor in small numbers on Caribbean slope of Canal Zone and savannas of eastern Panamá Province . . . mid-November-mid-March . . . usually on or very near the ground. In Canal Zone, prefers lawns in residential areas."

**[DENDROICA DISCOLOR (Vieillot): Prairie Warbler,
Reinita de la Pradera]**

Sylvia discolor Vieillot, 1808 or 1809, Hist. Nat. Ois. Amer. Sept., 2 (1807), p. 37, pl. 98. (United States and Greater Antilles.)

This species is included on the basis of a sight report of 1 at Volcán, Chiriquí on January 23, 1973, found by Richard Brownstein and Walter George. Brownstein (*in litt.* to Wetmore, June 25, 1974) informs me that they observed the bird for 10 minutes as close as 7 m; they did not, however, supply any details of plumage. The Prairie Warbler normally winters in Florida, the West Indies, and, in very small numbers, from Yucatán to Nicaragua, mainly on islands off the Caribbean coast, and on islands off the north coast of South America. There are also some recent sight reports from Costa Rica (Stiles and Smith, Brenezia, vol. 17, 1980, p. 15).]

SEIURUS AUROCAPILLUS (Linnaeus): Ovenbird, Reinita Suelera

Medium size; upper surface mostly light yellowish olive with orange-brown central crown stripe; undersurface white, streaked with black.

Description.—Length 130-138 mm. Adult (sexes alike), side of head and entire upper surface, including wing coverts, light yellowish olive, with broad central crown stripe of orange-brown, bordered by narrow

blackish stripes; remiges dusky, edged light yellowish olive; rectrices light yellowish olive; eye-ring white; undersurface white with narrow blackish streak on side of throat and blackish streaks across breast and down sides and flanks; underwing coverts white, tinged yellow.

The North American Ovenbird is a fairly common migrant and winter resident in western Panamá, becoming uncommon to rare to the east. In Darién it has been recorded only twice (Griscom, Bull. Mus. Comp. Zool., vol. 78, 1935, p. 368). I have always found it in dry forest, but it has been collected from sea level to 2900 m, on Volcán de Chiriquí (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 62).

The Ovenbird has been found in Panamá from late September until April 25 (Loftin and Olson, Carib. Journ. Sci., vol. 3, no. 4, 1963, p. 195). There are numerous recapture records from the Gorgas Memorial Laboratory banding station at Almirante, Bocas del Toro. A particularly notable one is of a bird banded there October 13, 1963, and recaptured April 23, 1965, and again on October 17, 27, and 28, 1965 (Loftin et al., Bird-Banding, 1967, p. 151). Another study done at Almirante found the weight of 87 fall migrant Ovenbirds to range from 12.9-19.0 (15.74) g and that the birds had exhausted their migratory fat reserves (Rogers and Odum, Wilson Bull., 1966, p. 418). Willis (Living Bird, 1966, p. 206) noted that on Barro Colorado Island, Canal Zone, where the Ovenbird is rare, it normally ignores army ants. There it has been recorded from October 18 to March 31 (Willis and Eisenmann, Smiths. Contrib. Zool. no. 291, 1979, p. 26).

Two subspecies have been identified as occurring in Panamá, *aurocapillus* and *furvior*.

SEIURUS AUROCAPILLUS AUROCAPILLUS (Linnaeus)

Motacilla aurocapilla Linnaeus, 1766, Syst. Nat., ed. 2, 1, p. 334. (Pennsylvania.)

Seiurus aurocapillus canivirens Burleigh and Duvall, 1952, Wilson Bull., 64, p. 39. (Margaret, Fannin County, Georgia.)

Characters.—Upper surface more greenish; central crown stripe more yellowish.

Measurements.—Males (10 from the breeding range, taken in May), wing 73.3-80.6 (78.0), tail 52.7-58.5 (56.7), culmen from base 13.2-15.0 (13.8), tarsus 19.3-23.7 (20.9) mm.

Females (10 from the breeding range, taken in May), wing 69.5-77.2 (73.4), tail 51.3-57.6 (53.9), culmen from base 12.7-14.7 (13.5), tarsus 19.3-22.1 (20.9) mm.

Migrant and winter visitor from the north. The Smithsonian has 7

Panamanian specimens of this race: 4 were collected in the Chiriquí highlands, 1 at Almirante, Bocas del Toro, and 1 each from Isla Cébaco and Isla Gobernadora in the Golfo de Montijo off the Pacific Coast of Veraguas.

SEIURUS AUROCAPILLUS FURVIOR Batchelder

Seiurus aurocapillus furvior Batchelder, 1918, Proc. New England Zool. Club, 6, p. 81. (Near Deer Pond, Newfoundland.)

Characters.—Upper surface browner than in nominate race; streaking on undersurface heavier and blacker; flanks darker.

Measurements.—Males (10 from the breeding range, taken in May, June, and July), wing 76.5-82.0 (79.0), tail 54.6-58.1 (56.7), culmen from base 12.5-15.5 (14.0), tarsus 20.9-23.2 (21.8) mm.

No specimens of females were available for measurement.

Migrant and winter visitor from the north. This very weakly differentiated race breeds exclusively in Newfoundland, Canada. Panamá appears to be the southern limit of its winter range. At least 2 specimens in the collections of the Smithsonian from Panamá have been identified as *furvior*: 1 taken October 18, 1962, at Almirante, Bocas del Toro, and the other taken March 10, 1952, at Chilar, Colón.

SEIURUS NOVEBORACENSIS (Gmelin): Northern Waterthrush,
Reinita Arrollera del Norte

Motacilla noveboracensis Gmelin, 1789, Syst. Nat., 1(2), p. 958. (Louisiana and New York.)

Small; upper surface olive; undersurface yellowish, streaked with olive.

Description.—Length 121-138 mm. Adult (sexes alike), upper surface, including wings and tail, olive; superciliary, broken eye-ring, and sometimes stripe on forehead, buffy white; side of face and stripe through eye olive; throat white, rest of undersurface buffy yellow, streaked olive except on center of abdomen; underwing coverts light olive-brown.

Measurements.—Males (10 from Panamá), wing 68.8-77.9 (74.8), tail 46.8-54.7 (51.3), culmen from base 12.0-14.1 (13.2), tarsus 19.4-21.8 (21.1) mm.

Females (10 from Panamá), wing 69.5-75.0 (71.6), tail 45.1-53.1 (49.4), culmen from base 12.0-13.9 (13.1), tarsus 19.8-22.1 (20.7) mm.

Migrant and winter visitor from the north. Very common through-

out in the lowlands of both slopes, particularly in mangroves and near water, both running and still. I have also seen them among the jumbled rocks along the beach on San José in the Pearl Islands, where they are common throughout the group, and on the ocean beach at Isla Gobernadora, Veraguas. In migration they are encountered away from water as well, on the paths in dry woods, and in the highlands. On Volcán de Chiriquí, Mönniche (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 559) collected Northern Waterthrushes as high as 1590 m during October, and W. W. Brown, Jr. (Bangs, *Proc. England Zool. Club*, vol. 3, 1902, p. 62) collected a male at Boquete (1200 m) on March 27, 1901. Eisenmann saw 1 above Cerro Punta, Chiriquí at approximately 2100 m on September 19, 1958. Northern Waterthrushes arrive in Panamá in late September and most depart by late April. Extreme dates known to Eisenmann (*in litt.*) are September 11 to May 13 (both Ft. San Lorenzo, Canal Zone). In the exceptionally long dry season of 1977, however, N. G. Smith saw 2 together at Summit Gardens on May 26 and June 2; several other northern migrants also remained late. At Almirante, Bocas del Toro, in the southward migration of 1964, 15 were netted on September 29 and 16 on October 10; the following spring numbers netted were much fewer, not exceeding 2 or 3 in any one day between March 21 and April 23 (D. L. Hicks *in litt.* to Eisenmann).

Banding results suggest that many of the individuals that do not continue on to South America are highly sedentary while in Panamá; Loftin et al. (*Bird-Banding*, 1966, p. 42) banded a Northern Waterthrush in the Canal Zone October 5, 1963, that was recaptured there on February 9, 1964. One banded at Almirante, November 10, 1962 was retaken there January 7, 1963, and again on October 14, 1963, indicating that some individuals return to the same wintering area in subsequent years, as they have been shown to do in Venezuela (Schwartz, *Living Bird*, 1964, pp. 169-184). Of the 65 birds banded by Loftin and his associates in the Canal Zone and the 338 banded at Almirante in 1963 and 1964, there were 5 repeats in the Canal Zone and 15 at Almirante. In another banding study at Almirante, Rogers and Odum (*Wils. Bull.*, 1966, p. 418) weighed 165 Northern Waterthrushes, which ranged between 10.5-19.2 (14.69) g, and found that, unlike several other migrant species, including the Ovenbird, the waterthrushes had not exhausted their fat reserves.

Willis (*Living Bird*, 1966, p. 207) observed individuals picking at insects flushed by swarms of army ants on Barro Colorado Island; however, the birds were never persistent swarm followers. The weights of 7 collected by Burton (*Bull. Brit. Orn. Club*, 1975, p. 85) ranged

from 13.2 to 16.0 g. A female taken at Fort Sherman, Canal Zone, by G. V. N. Powell (*in litt.* to Eisenmann) weighed 18 g.

**SEIURUS MOTACILLA (Vieillot): Louisiana Waterthrush,
Reinita Arrollera de Louisiana**

Turdus motacilla Vieillot, 1808, Hist. Nat. Ois. Amer. Sept., 2 (1807), p. 9, p. 65. (Kentucky.)

Small; upper surface olive-brown; undersurface white, streaked olive-brown across breast and sides.

Description.—Length 129-141 mm. Adult (sexes alike), upper surface, including wings and tail, line through eye, and side of face, olive-brown; superciliary white, extending to nape; line around lower portion of eye, moustachial stripe, and undersurface white, becoming buffy on abdomen and undertail coverts, and with olive-brown streaks on breast and sides; underwing coverts buffy brown.

Measurements.—Males (9 from Panamá, Costa Rica, and Colombia), wing 80.1-83.4 (82.2), tail 44.6-54.4 (50.4), culmen from base 14.4-16.9 (15.5), tarsus 21.5-22.7 (22.2) mm.

Females (9 from Panamá), wing 72.5-82.2 (77.5), tail 46.7-54.7 (50.0), culmen from base 14.2-16.4 (15.5, average of 8), tarsus 21.3-23.1 (22.4) mm.

Migrant and winter visitor from the north. Uncommon as a migrant, chiefly in mid-August to September and in March, when it may be found throughout the Republic, and rather rare as a winter resident, mostly in highlands of Chiriquí. The Louisiana Waterthrush prefers running water. The first to arrive in Panamá appear by early August—long before any Northern Waterthrushes—and some linger into early April (Ridgely, 1976, p. 298). Most have left Panamá by mid-March; later sight reports may be misidentified Northern Waterthrushes. The latest known report from Panamá is a specimen netted at Almirante, Bocas del Toro, April 3, 1965 (D. L. Hicks, Univ. Georgia coll.). Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 559) collected a female at 1650 m on the Volcán de Chiriquí. On the Pearl Islands W. W. Brown, Jr., (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1905, p. 156) collected 1 on San Miguel on March 18, 1904, and I saw 1 on San José on March 7, 1946.

If the absence of fat can be taken as an indication that a bird is not yet migrating, then individuals I collected at the Peluca Hydrographic Station in the Province of Panamá on February 21, 1961, and on the south fork of the Río Pucro on Cerro Malí, Darién, on March 2, 1964, were winter residents. On Barro Colorado Island, Willis (Living Bird,

1966, pp. 206-207) found this species an "uncommon winter resident" that ignored swarms of army ants when they passed by.

**OPORORNIS FORMOSUS (Wilson): Kentucky Warbler,
Reinita Hermosa**

Sylvia formosa Wilson, 1811, Amer. Ornith., 3, p. 85, pl. 25, fig. 3. (Kentucky.)

Small; upper surface yellowish olive, with black markings on head; undersurface bright yellow.

Description.—Length 114-126 mm. Adult male, forecrown black, with feathers often tipped gray; line from bill to eyebrow and continuing around rear of eye to lower rim, yellow; lores, side of face, and side of throat black; rest of upper surface, including tail, yellowish olive; primaries dusky, with outer webs edged yellowish olive; rest of wing yellowish olive; undersurface yellow, with yellowish olive sometimes extending from sides to flanks; bend of wing and underwing coverts yellow.

Adult female, as male, but black areas of head less extensive, often replaced by dusky brown.

Measurements.—Males (10 from Panamá), wing 66.0-71.5 (68.7), tail 45.3-53.3 (48.7), culmen from base 10.4-13.3 (12.0), tarsus 19.4-22.7 (21.4) mm.

Females (9 from Panamá, Costa Rica, and Colombia), wing 64.0-69.6 (65.9), tail 43.3-48.7 (47.2), culmen from base 11.6-13.2 (12.3), tarsus 19.9-22.9 (21.8) mm.

Migrant and winter visitor from the north. Fairly common, but inconspicuous, throughout in forest and second-growth woodland, where it inhabits thickets of shrubbery, similar to its northern breeding habitat. Although during migration it occurs in the highlands, where it has been collected by W. W. Brown, Jr., as high as 2310 m, near Boquete, Chiriquí, on February 22, 1901 (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 62), most wintering individuals are found in the lowlands (Ridgely, 1976, p. 299). The Kentucky Warbler has been recorded in Panamá from September 4 (Willis, Living Bird, 1966, p. 207) to April 28, (Loftin and Olson, Carib. Journ. Sci., vol. 3, no. 4, 1963, p. 195).

Banding results indicate that individuals wintering in Panamá are highly sedentary and faithful to a site, returning in subsequent years. One banded at Almirante, Bocas del Toro, on October 14, 1963, was retaken there February 25, 1964, and another banded there October 12, 1963, was taken again October 29, 1964 (Loftin et al., Bird-Banding, 1966, p. 42). In the Canal Zone, a Kentucky Warbler banded near the

Gamboa horse stables October 22, 1964, was retaken there March 5, 1965, and 1 banded on the Pipeline Road near Gamboa November 7, 1964, was recaptured there October 21, 1965. One banded by Karr (Bird-Banding, 1971, p. 299) on the Chiva Chiva Road, Canal Zone, on December 14, 1968, was recaptured 100 m from the same spot on January 27 and 28, 1971.

Willis (Living Bird, 1966, pp. 207-208) found that Kentucky Warblers were regular followers of army ant swarms on Barro Colorado Island. They usually stay ahead or to the side of the ants, but often associate with them for more than 5 minutes at a stretch. If 2 individuals are near a single group of ants they usually stay at different ends of the swarm. When not searching for insects flushed by ants, Kentucky Warblers often associate with or follow Spotted Antbirds (*Hylophylax naeviioides*) or with wandering mixed flocks. On March 15, 1955, at El Volcán, Chiriquí I saw 1 with a moving flock of warblers; probably all were migrants. One collected by Burton (Bull. Brit. Orn. Club, 1975, p. 85) weighed 13.5 g. Ridgely (1976, p. 299) points out that this species and the Ovenbird are the only 2 North American migrant warblers that regularly inhabit the interior of mature forests in winter; they are, therefore, more sensitive to habitat destruction than most other wintering species, which usually inhabit more or less disturbed areas when in Panamá.

Raikow's (Bull. Carnegie Mus. Nat. Hist. no. 7, 1978, p. 35) myological studies have confirmed the traditional separation of the genus *Oporornis* from *Geothlypis*, into which the former had been placed by Lowery and Monroe (Check-list Birds World, vol. 14, 1968, p. 38).

**OPORORNIS AGILIS (Wilson): Connecticut Warbler,
Reinita de Connecticut**

Sylvia agilis Wilson, 1812, Amer. Ornith., 5, p. 64, pl. 39, fig. 4. (Connecticut.)

Small; upper surface yellowish olive; head and breast gray; under-surface yellow.

Description.—Length 118-131 mm. Adult male, crown gray, with feathers often tipped yellowish olive; rest of upper surface, including tail, yellowish olive, slightly lighter on rump and upper tail coverts; primaries dusky, with outer web edged yellowish olive; rest of wing yellowish olive; complete orbital ring white; throat, upper breast, and sides of head gray, slightly lighter on throat; sides and flanks light yellowish olive; rest of undersurface yellow; bend of wing yellow; under-wing coverts light yellowish olive.

Female and immatures, as adult male, but gray replaced by drab grayish brown, slightly lighter on throat; orbital ring whitish to yellowish.

Measurements.—Males (10 from North America, taken in May), wing 69.5-74.0 (71.8), tail 45.8-50.9 (48.1), culmen from base 10.6-12.9 (11.9), tarsus 19.6-21.4 (20.9) mm.

Females (8 from North America, taken in May and June), wing 67.0-71.0 (68.5), tail 46.2-49.4 (48.2), culmen from base 11.3-12.3 (11.6), tarsus 18.7-21.5 (20.1) mm.

Migrant from the north. Very rare, apparently only a transient; recorded only from the lowlands of western Bocas del Toro, between late September-late October and late March-early April. The occurrence of this species in Panamá has only been confirmed recently, when 3 specimens taken in mist nets were collected at Almirante. A female was taken on October 15, 1963, and an unsexed individual on September 30, 1964 (Hicks, Méndez, and Loftin, Condor, 1967, p. 319). The third, a female with the skull ossified, was collected by T. V. Heatley on October 23, 1967; (AMNH no. 801541). The spring reports are based only on sightings (Ridgely, 1976, p. 299). The Connecticut Warbler winters in Venezuela, eastern Colombia, and northern Brazil; the bulk of the population travels to and from North America via the West Indies or across the Caribbean. D. L. Hicks wrote Eisenmann that, in addition to the bird he preserved at Almirante in September 1964, he banded and released other individuals identified as this species on September 28 and 29 and October 3, and in the following spring on March 21, 22, 28, and 29, and April 4, 5, and 9, 1965.

**OPORORNIS PHILADELPHIA (Wilson): Mourning Warbler,
Reinita Encopetada**

Sylvia Philadelphia Wilson, 1810, Amer. Ornith., 2, p. 101, pl. 14, fig. 6. (Within a few miles of Philadelphia, Pennsylvania.)

Small; head gray, male with black on breast; rest of upper surface yellowish olive; undersurface yellow.

Description.—Length 111-120 mm. Adult male, entire head slate gray; rest of upper surface, including tail, yellowish olive; primaries dusky with outer webs edged yellowish olive; rest of wing yellowish olive; center of throat and breast black, with feathers edged gray; sides of throat and breast gray; sides and flanks light yellowish olive; rest of undersurface, edges of wing, and underwing coverts yellow.

Adult female, like male, but head deep grayish olive and throat and upper breast drab.

Immatures, upper surface buffy olive; undersurface yellow, tinged brown on throat and upper breast.

Measurements.—Males (10 from Panamá), wing 58.9-65.0 (61.5), tail 45.9-50.7 (48.6), culmen from base 10.2-12.7 (11.4), tarsus 17.8-21.2 (19.8) mm.

Females (8 from Panamá), wing 55.4-60.1 (57.5), tail 45.5-51.7 (46.7), culmen from base 10.7-12.2 (11.4), tarsus 19.3-21.1 (20.4) mm.

Migrant and winter visitor from the north. Fairly common throughout as a transient, less common as a winter resident. The Mourning Warbler is found in Panamá from mid-September to mid-May: F. S. Blanton collected a male at Gamboa in the Canal Zone on September 16, 1953, and Mönniche (Blake, *Feldiana: Zool.*, vol. 36, no. 5, 1958, p. 559) collected a male at 1590 m on the Volcán de Chiriquí on May 16. E. A. Goldman's notes remark that this species was "rather common in the northern half of the Zone between January 11 and April 24 [1911] when the last one seen was shot at Gatún. The disappearance of the migrating warblers and some other North American birds seemed to be closely coincident with the opening of the rainy season about April 24, as indicated by a thunder shower and change in the prevailing direction of the wind. The wind about this time began to come from southward or southwestward and the northerly trade ceased to blow." Eisenmann saw 3 at Ft. Davis, Canal Zone, as late as May 11, 1960.

I have encountered this species throughout the Republic, at El Volcán, Santa Clara, Concepción, Buena Vista, and Alanje in Chiriquí; Almirante, Bocas del Toro; El Valle and El Uracillo, Coclé; Chilar in Colón; several localities in the Canal Zone and eastern Province of Panamá; on the Río Jaqué in Darién; and Mandinga and Puerto Obaldía in San Blas. Ridgely (*in litt.*) finds that during the northern winter it is numerous in the highlands of Chiriquí and Darién. It is always in dense shrubbery or in an area of weeds bordering taller growth.

Banding studies indicate that Mourning Warblers wintering in Panamá are faithful to a site through the winter and in succeeding years. Loftin et al. (*Bird-Banding*, 1966, p. 42) had the following returns at Almirante: April 19, 1963, retaken February 25, 1964; October 9, 1963, retaken September 27, 1964; and November 1, 1963, retaken April 21, 1964. One banded at Gamboa January 27, 1964, was retaken there November 11, 1964. Five collected by Burton (*Bull. Brit. Orn. Club*, 1975, p. 86) at El Real, Darién weighed from 9.5 to 10.0 g. G. V. N.

Powell (*in litt.* to Eisenmann) took a female immature (skull unossified) on October 19, 1966, at Ft. Sherman that weighed 11 g.

OPORORNIS TOLMIEI TOLMIEI (Townsend): MacGillivray's Warbler, Reinita de Tupidero

Sylvia Tolmiei J.K. Townsend, 1839 (Apr.), Narr. Journey Rocky Mountains, etc. p. 343. (Fort Vancouver, Clarke County, Washington.)

Small; head, throat, and chest slate gray; upper surface yellowish olive; undersurface yellow.

Description.—Length 114-127 mm. Adult male, crown and nape slate gray; rest of upper surface, including tail, yellowish olive; primaries dusky, with outer web edged yellowish olive; rest of wing yellowish olive; lores black; broken eye-ring white; sides of throat and upper breast light gray; center of throat and chest black, with most feathers tipped white; sides and flanks light yellowish olive; rest of undersurface, bend of wing and underwing coverts yellow.

Adult female, like male, but crown grayish olive; throat whitish, tinged gray; upper breast light grayish olive.

Measurements.—Males (10 from the breeding range, taken in May and June), wing 57.0-61.9 (59.4), tail 50.0-53.5 (51.9), culmen from base 10.5-11.2 (10.8), tarsus 18.2-21.2 (20.1) mm.

Females (10 from the breeding range, taken in June and July), wing 55.0-61.0 (56.4), tail 46.5-52.4 (49.5), culmen from base 10.6-12.0 (11.2), tarsus 18.8-21.1 (19.9) mm.

Winter visitor from the north. Uncommon, recorded only from Chiriquí and the Canal Zone. In Chiriquí, the MacGillivray's Warbler is known mainly from the highlands, where Mönniche collected it at the Volcán de Chiriquí between 1590 and 1800 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 559-560) (Phillips [Birds of Arizona, 1964, p. 159] believes some of Mönniche's specimens assigned to *tolmiei* are referable to *O. philadelphia*). W. W. Brown, Jr., found it at Boquete at 1200 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 61). The British Museum has a male and female collected by Arcé labeled "Chiriquí" and "Volcán de Chiriquí." The California Academy of Sciences has 2 specimens identified as *tolmiei* collected at Barriles (1350 m, near El Volcán), Chiriquí on January 21 and February 4, 1931, and a male from the lowlands at Puerto Armuelles, taken November 7, 1929. My only encounter with this species was at El Volcán, where on February 12, 1955, I collected a male in low growth along a small quebrada running through a pasture still thick with felled tree trunks.

All the records from the Canal Zone are quite old and were identified before mensural differences between this species and *O. philadelphia* were known. Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 274) listed *O. tolmiei* from the Canal Zone. The Field Museum in Chicago has 2 females collected at Colón by J. F. Ferry on March 14 and 16, 1908. The Smithsonian has a female collected by E. A. Goldman at Gatún March 2, 1911, that fits the mensural characters of *tolmiei* (examined by W. Lanyon).

Specimens collected by Mönniche (Blake, *op. cit.*) on October 15 and May 16 (to the extent correctly identified as *tolmiei*) would represent the extreme dates for which this species is known in Panamá.

The specimens from Panamá agree with those of the nominate race from California and Oregon in being brighter green above and brighter yellow below than *monticola* of Colorado and New Mexico. Cox (Auk, 1973, pp. 190-191) describes occasional hybridization between this species and *O. philadelphia* in southwestern Alberta. In non-breeding plumage *O. tolmiei* cannot be safely separated in the field from *O. philadelphia* and must be identified by measurements, especially the relatively longer tail compared to wing; thus many identifications, even of specimens, made without determining wing and tail relationship (as described in Lanyon and Bull, Bird-Banding, 1967, pp. 187-194) are likely to be erroneous.

GEOTHLYPIS TRICHAS (Linnaeus): Common Yellowthroat,
Reinita Gargantiamarilla Común

Turdus Trichas Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 293. (Maryland.)

Small, upper surface mostly buffy olive; throat (and on male much of undersurface) yellow; belly buff; male with black mask across fore-crown and face.

Description.—Length 108-129 mm. Adult male, forecrown and side of head black, bordered by white except on sides of throat; crown buffy olive, becoming more greenish on back; wings dull green, with remiges edged yellowish green; tail yellowish green; throat and breast bright yellow fading to light buffy brown on belly; undertail coverts pale lemon yellow; bend of wing bright yellow; underwing coverts white.

Adult female, forecrown light brown, fading to buffy olive on rest of upper surface; wings and tail as male; side of face dull tawny-olive; throat pale yellow, tinged with buff on breast and fading to light buffy brown on rest of undersurface; undertail coverts more yellowish.

Migrant and winter visitor from the north. Rare in Bocas del Toro

and Chiriquí and perhaps not found annually any farther east. The most easterly locations in Panamá from which it has been reported is the El Real, Darién airstrip, where Ridgely saw 2 females on March 5, 1981, and at Mandinga, San Blas, where I saw at least 2 in January and February of 1957. It usually forages near the ground, sometimes occurring with native yellowthroats. This species has been taken in Panamá from October 15, when in 1967 a female was collected by the Gorgas Memorial Laboratory at Almirante, Bocas del Toro, to April 24, when in 1963 R. Hinds collected a male at Almirante. Ridgely observed a male and a female at Tocumen marsh, eastern Province of Panamá on April 29, 1976. Most Common Yellowthroats winter farther north, from Central America to the southern United States and in the West Indies.

Geothlypis trichas has an extremely broad range across Mexico and North America and numerous races of varying degrees of distinction have been described. Dr. John W. Aldrich, who has studied this species extensively, very kindly examined the Panamanian specimens in the Smithsonian collection, and his identifications are followed here.

GEOTHYLPIS TRICHAS BRACHIDACTYLUS (Swainson)

Trichas brachidactylus Swainson, 1838 (1837?), Anim. Menag., p. 295. (Northern provinces of United States.)

Characters.—Large, extremely yellowish green above with pale flanks.

Breeds in southern New England, eastern New York, and northern New Jersey. There are 3 specimens in the Smithsonian collection: USNM no. 459116 and no. 474689 from Juan Mina, Canal Zone, on January 9, 1955, and January 13, 1961, and USNM no. 469132 from Changuinola, Bocas del Toro, March 4, 1958. Another male specimen in the British Museum, no. 85.3.8.496, which agrees with the characters of this race, was collected by Arcé in 1870 at Volcán de Chiriquí, Chiriquí.

GEOTHYLPIS TRICHAS PELAGITIS Braund and McCullagh

Geothlypis trichas pelagitis Braund and McCullagh, 1940, Wilson Bull., 52, p. 118. (Eel Falls, 250 ft., Fox Bay, Anticosti Island.)

Characters.—As large as *brachidactyla*, but darker greenish above and darker on flanks.

Dr. Aldrich includes in this race the populations breeding from Ontario and northern Michigan through northern New England and mari-

time Canada. A male, USNM no. 486554, taken at Almirante, Bocas del Toro, October 21, 1964, is of this race.

GEOTHYLPIS TRICHAS MINNESOTICOLA Oberholser

Geothlypis trichas minnesoticola Oberholser, 1948, Descr. New Races *Geothlypis trichas* (Linnaeus), p. 2. (St. Paul, Minnesota.)

Characters.—Grayish green above, more rufescent on flanks and more orange-yellow on throat.

Breeds in the northern Mississippi Valley from Iowa to Wisconsin and north to western Ontario and Manitoba. Specimens in the Smithsonian are as follows: USNM no. 459115, a female from El Volcán, Chiriquí, March 14, 1955; USNM no. 462397, a male from Mandinga, San Blas, February 3, 1957; and USNM no. 469133, a male from Changuinola, Bocas del Toro, February 13, 1958.

GEOTHYLPIS TRICHAS ROSCOE (Audubon)

Sylvia roscoe Audubon, 1831, Orn. Bio. 1, p. 124. (not far from the River Mississippi, Mississippi.)

Characters.—Small, paler, more yellowish green above; more rufescent on the flanks; more orange-yellow on throat.

Breeds in the lower Mississippi Valley. E. A. Goldman collected a male, USNM no. 207165, at the Río Indio, Canal Zone, on February 13, 1911, that has been identified as this race.

GEOTHYLPIS TRICHAS TYPHICOLA Burleigh

Geothlypis trichas typhicola Burleigh, 1934, Proc. Biol. Soc. Washington, 47, p. 21. (Athens, Georgia.)

Characters.—Brownish above and below, lighter colored, smaller.

Breeds on the southeastern coastal plain from eastern Mississippi north to Virginia, exclusive of Florida. Dr. Aldrich has identified 3 specimens from Almirante, Bocas del Toro, as belonging to this race: USNM no. 486553, a male collected April 24, 1963; AMNH no. 785926, an immature male taken October 17, 1965; and a female from the Gorgas Memorial Laboratory collected October 15, 1967.

GEOTHYLPIS AEQUINOCTIALIS CHIRIQUENSIS (Salvin):

Masked Yellowthroat, Reinita Gargantamarilla Chiricana

Geothlypis chiriquensis Salvin, 1872, Ibis, p. 148. (Slopes of Volcán de Chiriquí, Panamá.)

Small; upper surface bright yellowish green; undersurface yellow; male with black facial mask.

Description.—Length 120-133 mm. Adult male, lores, forecrown, orbital ring, and side of face black; top of crown and line from rear of eye to nape, bordering black area, gray; hind crown and all of upper surface, including tail and wing feathers except for primaries, bright yellowish green; primaries dusky, with outer web edged bright yellowish green; sides and flanks greenish yellow; rest of undersurface, bend of wing, and underwing coverts bright yellow.

Adult female, like male, but black replaced by gray, less extensive on side of face.

Immature, like female, but with gray areas replaced by warbler green.

Measurements.—Males (3 from Chiriquí), wing 58.1-61.5 (59.7), tail 46.7-51.2 (49.5), culmen from base 13.2-13.8 (13.6), tarsus 21.8-22.6 (22.1) mm.

Females (2 from Chiriquí), wing 57.1-57.2 (57.2), tail 47.6-49.6, (48.6), culmen from base 13.7, tarsus 22.0-22.2 (22.1) mm.

Resident. Found only in western Chiriquí in a few places around Volcán at 1050 to 1350 m, and in immediately adjacent southwestern Costa Rica, where it was first recorded by Skutch in 1964 (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 146-149). The Masked Yellowthroat inhabits lush meadows and marshy areas near streams; at La Lagunita, near El Volcán, I found a female perched in a spiny bush surrounded by heavy grass near a stream—habitat that *Geothlypis trichas* might choose. Although Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 369) called this species "very rare" it is actually very local but not uncommon, usually found in loose colonies. Its voice is "a sweet *twichee-teeweewee tweecheo*, repeated four or five times, then a pause before starting again" (Ridgely, 1976, p. 301). In Costa Rica, Skutch (*op. cit.*) found them most vocal during May and June. Ridgely (*in litt.*) has heard them singing regularly in March in Chiriquí.

On May 21, 1964, Skutch found a female working on a half-finished nest near Cañas Gordas, Costa Rica. When completed, 4 days later, the nest was a bulky open cup composed of blades of lemon grass lined with long, smooth, brown fibers of unknown origin, situated about 45 cm from the ground in a dense clump of lemon grass. The external dimensions were 10.1 by 14 cm in diameter by 8.9 cm high. The interior was 6.4 by 7.6 cm in diameter by 3.8 cm deep. The two eggs in this nest were laid May 26 and 27; they were "white, spotted with deep brown, pale brown, and pale lilac. The spots were largest and most crowded on the thick end of the egg and diminished toward the opposite pole, where they were few, small, and faint. The eggs mea-

sured 20.0 by 13.9 and 19.6 by 14.1 mm. The shells had little gloss." The eggs hatched after 15 days of incubation, and the nestlings were flesh colored, with a tinge of orange. Their natal down was a pale gray and by their third day the young had sprouted pinfeathers, but on that afternoon there was a heavy rainstorm that evidently killed the nestlings. Skutch never found another nest.

G. a. chiriquensis differs from other forms of *G. aequinoctialis* in its somewhat larger bill, duller dorsal coloration, and the greater extent of black on the forecrown. Despite the wide separation in range, the Chiriquí bird is clearly a representative of *aequinoctialis* and Hellmayr's (Field Mus. Nat. Hist., publ. 347, vol. 13, part 8, 1935, p. 440) listing of *chiriquensis* as a subspecies of *aequinoctialis* is probably justified, although most authors have kept them as separate species. It may also be noted that there is a similar, though less extreme, gap in the distribution of the races of *Geothlypis semiflava*, and geographical isolation is, therefore, not necessarily a compelling argument for specific distinctness.

GEOTHLYPIS SEMIFLAVA BAIRDI Ridgway: Olive-crowned
Yellowthroat, Reinita Gargantiamarilla Coronioliva

Geothlypis bairdi Ridgway (ex Nutting MS), 1884, in Nutting, Proc. U.S. Nat. Mus., 6 (1883), p. 398. (Los Sábalos, Nicaragua.)

Small; upper surface yellowish olive-green; undersurface yellow; male has forecrown and facial area black.

Description.—Length 111-125 mm. Adult male, forecrown, lores, and side of face to lower edge of throat black; rest of upper surface, including tail and all of wings except primaries, yellowish olive-green; primaries dusky with outer web edged olive-green; sides and flanks olive-green; rest of undersurface, bend of wing, and underwing coverts bright lemon yellow.

Adult female, like male, but black replaced by olive-green, more yellowish on forehead and superciliary; olive wash on undersurface more extensive.

Immature, like female, but buffier below.

Measurements.—Males (10 from Bocas del Toro and Costa Rica), wing 57.2-62.0 (59.2), tail 42.7-52.4 (47.6), culmen from base 13.8-16.1 (14.9), tarsus 20.1-22.9 (21.7) mm.

Females (7 from Bocas del Toro, Costa Rica, and Nicaragua), wing 54.2-57.0 (55.7), tail 42.6-47.3 (45.1), culmen from base 13.9-15.2 (14.7), tarsus 20.1-21.8 (21.2) mm.

Resident. Common in the lowlands of western Bocas del Toro, and north on the Caribbean slope to southern Honduras. In Panamá this species inhabits rank grass, bamboo thickets, shrubbery, and the borders of reedy swamps. I have collected it at Almirante and Changuinola; H. von Wedel collected it also at Isla Grande, in the Sixaola River near Victoria, about 32 km northwest of Almirante (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 337). *G. semiflava* was not recorded from Panamá prior to 1926, when on February 14 Kennard collected a male and female at Almirante (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 460). Its behavior is like other yellowthroats, and I have found it hard to distinguish from migrant *G. trichas* until I have had the specimen in hand. The song is a loud, sweet warble, somewhat suggestive of the Gray-crowned Yellowthroat and Orchard Oriole (Ridgely, 1976, p. 301). Three nests collected in early April of 1970 and 1971 in Costa Rica, now at the Western Foundation of Vertebrate Zoology, were each found in pasture. They were open cups made of wide dead strips of grass and lined with finer grass. Lloyd Kiff (pers. comm.) describes the eggs as "white with sparse springling of fine black and dark brown dots, mostly at the large ends. Similar to *G. trichas* eggs, but lacking the scrawls that are present on many examples of the latter." Measurements of 5 eggs average 19.47×14.05 mm. Two eggs form a clutch.

Eisenmann points out that the yellowish (rather than whitish or brownish) abdominal area separates it from *G. trichas* in all plumages, and males can be distinguished from all members of the genus known from Panamá by the more extensive black on the crown and lack of gray or white on the head.

GEOTHLYPIS POLIOCEPHALA RIDGWAYI (Griscom): Gray-crowned Yellowthroat, Reinita Gargantamarilla Carbonera

Chamaethlypis poliocephala ridgwayi Griscom, 1930, Proc. New England Zool. Club, 12, p. 7. (Boruca, southwestern Costa Rica.)

Small; crown gray; rest of upper surface grayish olive-green; undersurface yellow.

Description.—Length 115-131 mm. Adult male, lores and area just below eye black; crown gray; side of face and rest of upper surface, grayish olive-green, brighter, more yellowish on rump, upper tail coverts, and wings; undersurface, bend of wing, and underwing coverts yellow, fading into buffy whitish on abdomen and to light buffy olive on sides and flanks.

Adult female, like male, but gray on crown less extensive, rest of upper surface slightly browner than male; black area less intense, and yellow undersurface paler.

Measurements.—Males (8 from Chiriquí and Costa Rica), wing 53.5-57.0 (54.8), tail 51.7-61.1 (56.3), culmen from base 11.8-13.2 (12.5), tarsus 20.4-23.2 (21.7) mm.

Females (5 from Chiriquí and Costa Rica), wing 50.0-57.7 (53.3), tail 54.9-62.1 (57.7), culmen from base 11.7-13.2 (12.5), tarsus 21.0-22.8 (21.8) mm.

Resident. Uncommon and local in the foothills and highlands of western Chiriquí from 690 to 2250 m (Ridgely, 1976, p. 301), and west to the Térraba Valley in southwestern Costa Rica. Other races are found from extreme southern Texas through Middle America. This yellowthroat inhabits overgrown and abandoned pastures and brushy fields. Mönniche collected specimens at Lérida and Quiel on the Volcán de Chiriquí (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 560) and W. W. Brown, Jr., collected it also at Boquete (Bangs, *Proc. New England Zool. Club*, vol. 3, 1902, p. 61). The only place I found this species was at El Salto (1200 m), near Boquete, where on March 17 and 18, 1960, I collected a male and female in a field of bracken and grass. The song, which is sometimes delivered from an exposed perch as high as a tree branch or a wire, is "somewhat similar to *semiflava* and has a number of undistinctive vireo-like phrases strung together. It is not so long as that of *semiflava*, does not ramble up and down so markedly, and lacks a slur at the end although one may be thrown in elsewhere" (Slud, *Bull. Amer. Mus. Nat. Hist.*, vol. 128, 1964, p. 330). This species also has at least a half dozen calls. Rowley (Condor, 1962, p. 262) found the nest of the nominate race near Cuernavaca, Mexico. It was in dry grass bordering a cleared field and was made entirely of dried grasses; it contained 3 eggs.

Eisenmann (Auk, 1962, pp. 265-267) reviews all characters of this species, formerly placed in the monotypic genus *Chaemethlypis*, and concludes that it is not allied to *Icteria* but is properly placed in the genus *Geothlypis*, the only distinction between it and other members of the genus being the larger bill. It is "simply a yellowthroat of the drier, more sterile uplands, as distinct from the marshes or borders of wet places preferred by other yellowthroats. The drier niche, with the consequent difference in diet, doubtless accounts for the heavier bill, which is presumably useful in feeding on harder-bodied or larger insects (and possibly on seeds) than are normally taken by yellowthroats of water

edges, which have more soft-bodied larval forms available. The reduction of the black mask also seems correlated with a drier environment."

ICTERIA VIRENS VIRENS (Linnaeus): Yellow-breasted Chat,
Reinita Arriera

Turdus virens Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 171. (South Carolina.)

Medium size; upper surface yellowish olive; abdomen and undertail coverts white; rest of undersurface yellow.

Description.—Length 151-174 mm. Adult (sexes alike), forehead gray; superciliary and lower rim of eye white; lores black; upper surface and wing coverts yellowish olive; remiges and rectrices dusky with outer webs edged light yellowish olive; auricular region gray; thin white stripe on side of throat; throat to belly bright yellow; flanks gray; rest of undersurface white; bend of wing and underwing coverts yellow.

Measurements.—Males (10 from the breeding range, taken in May), wing 71.0-78.0 (75.5), tail 69.6-77.5 (74.4), culmen from base 14.2-17.0 (15.3), tarsus 24.3-27.0 (25.7) mm.

Females (10 from the breeding range, taken in June), wing 71.8-80.0 (76.5), tail 66.5-83.4 (76.2), culmen from base 14.9-16.1 (15.4), tarsus 24.7-27.8 (26.0) mm.

Winter visitor from the north. Uncommon in the lowlands of western Bocas del Toro, where it has been recorded at Almirante and at the mouth of the Río Teribe on the Río Changuinola. The first specimen known from Panamá was collected at Almirante by H. von Wedel on January 16, 1929, but banding results suggest that it is not rare there: in 1963, 16 were netted October 1-31 and 3 were netted April 17-21 (Loftin and Olson, Carib. Journ. Sci., vol. 3, no. 4, 1963, p. 195). Banding also indicates that Yellow-breasted Chats return to the same site in succeeding years. One banded at Almirante April 17, 1963, was recaptured there October 17 and 18, 1963, and again October 22 and November 1, 1965, (Loftin et al., Bird-Banding, 1967, p. 152). The only report of this species elsewhere in Panamá, and the most southern, is a sighting of 1 on Cerro Campana (far to the east of any other record and the only one from the Pacific slope) on September 14, 1961, by Richard Ryan and Ned Boyajian (Ridgely, 1976, p. 301). In Panamá, as in its breeding range, the chat usually stays well hidden in dense undergrowth of brushy areas and woodland borders.

**WILSONIA CITRINA (Boddaert): Hooded Warbler,
Reinita Encapuchada**

Muscicapa citrina Boddaert, 1783, Tabl. Planches Enlum., p. 41. (Louisiana.)

Small; face yellow; hindcrown, sides of neck, and throat black; rest of upper surface olive-green; rest of lower surface yellow.

Description.—Length 118-132 mm. Adult male, forehead, forecrown, and side of face to auriculars bright yellow; loreal spot, remainder of crown, nape, sides of neck, throat, and upper breast black; rest of upper surface olive-green; remiges dusky, with outer web edged olive-green; two outer pairs of rectrices nearly all white on inner web, dusky on outer web; next pair with white spot on inner web; remaining rectrices dusky, with outer web edged olive-green; rest of undersurface yellow, fading to very pale yellow on undertail coverts; bend of wing yellow; underwing coverts white.

Adult female, upper surface olive-green; wings and tail as male, but duller; lores, superciliary, side of face bright yellow, with auricular region tinged greenish yellow; undersurface bright yellow, becoming paler on undertail coverts.

Measurements.—Males (10 from the breeding range, taken in May and June), wing 62.1-70.0 (66.6), tail 53.2-58.1 (55.3), culmen from base 10.7-12.8 (11.6), tarsus 17.9-20.5 (19.3) mm.

Females (10 from the breeding range, taken in April, May, and June), wing 60.5-65.0 (62.5), tail 50.8-56.5 (54.5), culmen from base 10.5-12.0 (11.2), tarsus 18.6-19.8 (19.1) mm.

Winter visitor from the north. Breeds in eastern United States; winters through Middle America to central Panamá. Rare in the lowlands of western Bocas del Toro (Almirante) and the Canal Zone area. An adult male was reported seen by N. G. Smith in "late September" 1964 and another in Panamá City in his garden on May 2, 1968 (*in litt.* to Eisenmann). McLeannan evidently encountered this species at least twice in what became the Canal Zone, since specimens collected by him are now in the British Museum (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 12), 1881, p. 167) and the American Museum of Natural History (Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1863, p. 6). More recently in the Canal Zone, Gale and West (*in litt.*) banded, photographed, and released a male at Corozal on October 27, 1973, and T. A. Imhof (*in litt.*) found 1 at Caño Saddle on December 29, 1942. A male was seen on Barro Colorado Island on September 24, 1951, and another on January 5, 1977 (Willis and Eisenmann, Smiths. Contrib. Zool. 291, 1979, p. 27). In Bocas del Toro only 3 or 4 were banded in two seasons (October 12-30) at Almirante (Loftin,

in litt. to Eisenmann). Extreme dates from Panamá (*fide* Eisenmann) are September 24-May 2. Willis (Living Bird, 1966, p. 209) considers the Hooded Warbler to be an ecological competitor of the Spotted Antbird (*Hylophylax naevoides*) and suggests that this is why the warbler is locally rare or absent as a winter resident wherever the antbird occurs.

A male collected at Almirante by D. L. Hicks on October 25, 1964, weighed 8 g.

WILSONIA PUSILLA (Wilson): Wilson's Warbler, Reinita de Wilson

Small; mid-crown black; upper surface bright olive-green; forehead and undersurface yellow.

Description.—Length 103-115 mm. Adult male, forehead, superciliary, and orbital ring bright yellow; center and rear of crown shining black; auriculars and rest of upper surface bright olive-green; wings and tail dusky, with wing coverts tipped and rectrices and remiges edged olive-green; undersurface, bend of wing, and underwing coverts bright yellow.

Adult female, like male, but black on crown less extensive or absent.

Wilson's Warbler is an abundant winter resident in the highlands of Chiriquí, where, at El Volcán, I saw as many as a dozen together, on March 13, 1954. In the highlands and foothills farther east it becomes progressively less common. It is seen regularly in small numbers above Santa Fé, Veraguas, but in central Panamá there are only 3 sight records, all of males: 1 on Cerro Campana on September 14, 1961 (R. Ryan), and single individuals on Cerro Azul on December 30, 1967, and December 28, 1973 (Ridgely, 1976, p. 302). Panamá is the southern limit of this species' range in winter. Panamá records (*fide* Eisenmann) run from September 10 to May 16 (both specimen records).

Leck (Bird-Banding, 1975, p. 202) found that 15 Wilson's Warblers mist netted at Cerro Punta, Chiriquí, during September and October 1967 had an average weight of 7.6 g and 12 netted there in March 1968 averaged 8.0 g.

I have seen Wilson's Warblers feeding in herbaceous growth near the ground and as high as 10 m up in second growth. They are often common in coffee plantations. This is the most numerous and conspicuous wintering wood warbler in the Chiriquí highlands. Ridgely (*in litt.*) has seen up to 30-35 in a day in Chiriquí and in the Costa Rica highlands as well.

Eisenmann (*in litt.*) noted that in the Chiriquí highlands Wilson's Warblers favor semi-open or lightly wooded areas. He found them usually moving about in the mixed bands of wandering warblers and

tanagers. Ordinarily, only 1 Wilson's Warbler was in each band, but occasionally there were 2 or 3. They were noisy, constantly giving a *chip-chip-chip-chip* or *tsip-tsip-tsip*.

WILSONIA PUSILLA PILEOLATA (Pallas)

Motacilla pileolata Pallas, 1811, Zoogr. Rosso-Asiat., 1, p. 497. (Kodiak Island, Alaska.)

Characters.—Forehead light cadmium; upper surface paler green.

Measurements.—Males (10 from Chiriquí), wing 55.0-61.0 (57.1), tail 47.8-52.0 (50.0), culmen from base 9.7-11.3 (10.7), tarsus 17.2-19.9 (18.3) mm.

Females (10 from Chiriquí), wing 55.0-59.4 (56.0), tail 45.8-48.6 (47.5), culmen from base 9.2-11.4 (10.2), tarsus 16.8-18.8 (18.0) mm.

Winter visitor from the north, breeding in the Rockies and most of western Canada and northwestern United States. Abundant in the highlands of western Chiriquí, less numerous farther east. Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 560) collected this race on the Volcán de Chiriquí between 1560 and 2700 m. W. W. Brown, Jr., found it at Boquete as low as 1200 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 61); I have seen the species there from 1260 to 2610 m. Mönniche collected specimens of this race from September 17 to May 16. Griscom (Bull. Mus. Comp. Zool. 78, 1935, p. 369) considered this race fairly common in Veraguas and listed it from the Canal Zone.

WILSONIA PUSILLA CHRyseOLA Ridgway

Wilsonia pusilla chryseola Ridgway, 1902, Bull. U.S. Nat. Mus., 50, pt. 2, pp. 705, 714. (Red Bluff, California.)

Characters.—Upper surface suffused with yellow, lighter than any other race.

Measurements.—Males (10 from North America, taken in April and May), wing 52.0-58.5 (55.0), tail 44.1-49.9 (48.2), culmen from base 9.6-11.9 (10.5), tarsus 15.9-19.9 (17.2) mm.

Females (10 from North America, taken in May), wing 50.8-55.5 (52.8), tail 44.5-49.9 (47.1), culmen from base 9.7-11.3 (10.8), tarsus 17.3-19.0 (18.2) mm.

Winter visitor from the north, breeding in the Pacific coast region of the United States and Canada. Rare in the highlands of western Chiriquí. I know of only 4 specimens of this well-marked race that have been taken in Panamá. Arcé collected a male on the southern slope of

the Volcán de Chiriquí in 1870. The specimen is now in the British Museum and is presumably the one to which Griscom was referring when he listed "one record" for Panamá (Bull. Mus. Comp. Zool., 78, 1935, p. 369). C. Lynn Hayward collected 3, a male and 2 females, on Cerro Punta between March 6 and 14, 1962; they are now in the Monte L. Bean Life Sciences Museum at Brigham Young University, Provo, Utah.

WILSONIA PUSILLA PUSILLA (Wilson)

Muscicapa pusilla Wilson, 1811, Amer. Ornith., 3, p. 103, pl. 26, fig. 4. (Southern New Jersey.)

Characters.—Forehead lemon chrome; upper surface darker green.

Measurements.—Males (10 from North America, taken in May), wing 53.3-56.0 (54.5), tail 44.3-49.3 (47.1), culmen from base 9.6-11.4 (10.3), tarsus 17.2-18.4 (17.8) mm.

Females (10 from North America, taken in May), wing 50.8-55.1 (54.0), tail 44.0-49.4 (46.7), culmen from base 10.1-11.4 (10.8), tarsus 16.1-19.5 (18.1) mm.

Winter visitor from the north, breeding in northwestern United States and eastern Canada. Fairly common in the highlands of western Chiriquí. I have collected individuals of this race at El Volcán from 1320 to 1560 m, at Santa Clara (1080 m), and on Cerro Punta (2010 m).

**WILSONIA CANADENSIS (Linnaeus): Canada Warbler,
Reinita de Canada**

Muscicapa canadensis Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 327. (Canada.)

Small; upper surface gray; undersurface yellow, with necklace of black streaks on breast of male.

Description.—Length 113-127 mm. Adult male, forehead to top of crown black, with feathers tipped gray; rest of upper surface, including wings and tail, gray; superciliary to eye and orbital ring yellow; lores, auriculars, side of throat, and spots on breast black; undersurface yellow, to undertail coverts, which are white; underwing coverts white. In winter upper surface tinged with olive.

Adult female, like male, but black areas reduced, paler, or absent; yellow on undersurface slightly paler.

Measurements.—Males (10 from the breeding range, taken in May and June), wing 64.0-69.5 (65.5), tail 51.2-54.6 (53.0), culmen from base 10.5-12.5 (11.5), tarsus 17.4-20.0 (18.6) mm.

Females (10 from the breeding range, taken in May and June), wing 59.2-63.3 (61.5), tail 49.3-52.5 (51.4), culmen from base 10.4-12.0 (11.6), tarsus 17.2-18.8 (18.1) mm.

Migrant and winter visitor from the north. Fairly common throughout on migration, in small numbers up to the highlands of western Chiriquí as high as 1620 m (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 560), and on the Pearl Islands (Rendahl, *Ark. Zool.*, vol. 13, no. 4, 1920, p. 48). The Canada Warbler has been recorded in Panamá from September 3 to May 19 (Eisenmann, *Smiths. Misc. Coll.*, vol. 117, no. 5, 1952, p. 52; Willis and Eisenmann, *Smiths. Contrib. Zool.* 291, 1979, p. 27); it is most numerous from late September to early October and in late April and early May. On May 1, 1980, Ridgely counted at least 18 (75% of them males) at Galeta Island, Canal Zone. In 1963, 94 were banded at Almirante, Bocas del Toro, between September 18 and October 28 (Loftin, *in litt.*). Willis (*Living Bird*, 1966, p. 209) saw 12 on Barro Colorado Island on October 3, 1960; he found that the Canada Warbler regularly followed swarms of army ants there with as many as 5 individuals in attendance at one swarm. In Panamá it usually occurs in the understory of forest and woodland, often at edge, but only infrequently out in clearings, and then only when they are heavily overgrown.

This species is recorded in winter from British Honduras south to central Peru and northern Brazil, but is scarce at that season north of South America, its primary wintering area. In winter it has been recorded from Cerro Campana, Province of Panamá, and from the Canal Zone (Ridgely, *op. cit.*). One banded at Curundu in the Canal Zone on February 13, 1964, and retaken there 6 weeks later on March 29 (Loftin et al., *Bird-Banding*, 1966, pp. 42-43) was probably a winter resident. I also have a sight record for Chilar, western Colón, on February 19, 1952. Two sightings that probably represent wintering individuals in Chiriquí were an immature female at Fortuna on March 3, 1976, and a male near Volcán (Dos Ríos Hotel) on March 20, 1979, both observed by Ridgely.

**SETOPHAGA RUTICILLA (Linnaeus): American Redstart,
Candelita Americana**

Motacilla ruticilla Linnaeus, 1758, *Syst. Nat.*, ed. 10, 1, p. 186. (Virginia.)

Small; male black with orange on remiges, rectrices, and sides; female with gray crown, rest of upper surface green, undersurface white with yellow on sides.

Description.—Length 113-126 mm. Adult male, entire upper surface, throat, and breast shining black; wings black with basal half of remiges pinkish orange; central pair of rectrices black, all others pinkish orange on basal half, black on distal half; sides and flanks orange; rest of undersurface white; underwing coverts pinkish orange.

Adult female, crown gray; rest of upper surface to upper tail coverts buffy olive; upper tail coverts blackish; remiges blackish brown with yellow, base and outer webs edged buffy olive; central pair of rectrices blackish brown, all others with basal half wholly or partially light yellow and remainder blackish brown; orbital ring white; side of head gray; sides and flanks yellow; rest of undersurface white; underwing coverts pale yellow.

Immature male, like female, but sides of breast tinged pinkish orange.

Measurements.—Males (10 from the breeding range, taken in May) wing 61.8-66.0 (64.1), tail 52.3-57.4 (54.7), culmen from base 10.0-11.6 (10.8), tarsus 15.0-17.2 (16.2) mm.

Females (10 from the breeding range, taken in May and June), wing 58.0-63.8 (60.4), tail 51.4-56.2 (53.4), culmen from base 10.5-12.0 (11.1), tarsus 15.2-18.3 (16.3) mm.

Migrant and winter visitor from the north. Fairly common throughout on migration, less common in winter. The American Redstart has been recorded as high as 1650 m on the Volcán de Chiriquí (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1968, p. 561); I have also seen it in coastal mangroves, at Tonosí, Los Santos, and Almirante, Bocas del Toro, for example. Aldrich (*Scient. Publ. Cleveland Mus. Nat. Hist.*, vol. 7, 1937, p. 125) saw it on several occasions in forests on the west side of the Azuero Peninsula, Veraguas, where it was part of mixed flocks of migrant North American warblers. I have found redstarts in high forest on Isla Coiba, and W. W. Brown, Jr. (Thayer and Bangs, *Bull. Mus. Comp. Zool.*, vol. 46, 1905, p. 156) collected a female on San Miguel in the Pearl Islands on March 2, 1904. The British Museum has specimens collected by H. J. Kelsall at sea 160 to 190 km south of Panamá, taken between August 28 and October 2, 1924.

The American Redstart has been found in Panamá as early as August 17 (Eisenmann, *Smiths. Misc. Coll.*, vol. 117, no. 5, 1952, p. 52) and as late as May 11 (Ridgely, 1976, p. 302); most depart by late April. In Eisenmann's experience their numbers vary greatly from year to year; in some seasons few are noted even in fall migration. One banded near Curundu, Canal Zone, on December 8, 1963, was recaptured there September 27, 1965 (Loftin et al., *Bird-Banding*, 1967, p. 152). In Panamá this species is found in woodlands and borders. It

is less numerous in the highlands than at lower elevations. Ridgely (*in litt.*) has found it more common in mangroves than any other habitat in winter. Eisenmann has seen it on migration in the semi-arid, rather scrubby western part of the Province of Panamá near the coast at Playa Coronado, on August 19-26, 1947, (2-4 birds daily) and at Santa Clara Beach.

**MYIOBORUS MINIATUS (Swainson): Slate-throated Redstart,
Candelita Gargantigris**

Setophaga miniata Swainson, 1827, Philos. Mag., new ser., 1, fasc. 5, p. 368.
(Morelia, Michoacán.)

Small; upper surface and throat dark gray, with chestnut patch in center of crown; undersurface yellow.

Description.—Length 118-128 mm. Adult (sexes alike), upper surface, wings, head and throat slate color (throat dark, sometimes black); center of crown chestnut; tail black, with outer pair of rectrices nearly all white, second pair with distal half white, third pair white only at tip; undertail coverts white; rest of undersurface yellow; underwing coverts white.

Juvenile, head, back, rump, and foreneck sooty slate; upper breast and sides washed with dull rufous; lower breast, abdomen, and undertail coverts cinnamon; wings and tail like adults.

The Slate-throated Redstart is very common in woodlands, forests, and even borders and gardens adjacent to clearings in the highlands of Chiriquí and Veraguas and in eastern Darién. It moves about like *Setophaga ruticilla*, opening and shutting its tail both while perched and in flight, so that the white on the outer feathers is conspicuous. I have found these birds high in the tree crowns, in the undergrowth, and on the ground, where they occasionally drop when pursuing prey. Leck (Living Bird, 1971, p. 91) found that at Cerro Punta, Chiriquí, they spent 45 percent of their time in the upper middle section of trees and another 40 percent in the lower middle. Their food is almost exclusively insect material, but Skutch (Pac. Coast Avif. no. 31, 1954, p. 358) has observed them eating the little white protein bodies that are found at the base of the petioles of leaves on *Cecropia* trees. The Slate-throated Redstart sings throughout the year, although less often between October and January; it has "several usually squeaky or sibilant songs, sometimes suggestive of American Redstart, *tseeweech*, *swceeswee*, *sweech-sweechee*, or *tsecoo-tsecoo*, *cheerwee-cheerwee-tsee*" (Ridgely, 1976, p. 303).

This species is found from northern Mexico through Middle Amer-

ica to Guyana, northern Brazil, and Bolivia. In Panamá the birds of the western highlands belong to the race *aurantiacus* and those of Darién are of the race *ballux*.

MYIOBORUS MINIATUS AURANTIACUS (Baird)

Setophaga aurantiaca Baird, 1865, Rev. Amer. Birds, 1, p. 261. (Dota Mountains, San José and Barranca, Costa Rica.)

Myioborus miniatus acceptus Bangs, 1908, Proc. New England Zool. Club, 4, p. 30. (Boquete, 4000 ft., Volcán de Chiriquí, Panamá.)

Characters.—Chestnut crown patch bordered by black stripes; under-surface slightly darker yellow.

Measurements.—Males (10 from Chiriquí), wing 61.0-68.8 (63.2), tail 57.1-63.7 (61.3), culmen from base 10.6-13.0 (11.9), tarsus 16.3-19.6 (17.8) mm.

Females (10 from Chiriquí), wing 58.0-67.5 (60.9), tail 54.2-62.8 (58.2), culmen from base 10.6-12.2 (11.3), tarsus 16.7-18.6 (17.7) mm.

Resident. Very common in the highlands of Chiriquí and Veraguas. Found also in the Cordillera de Talamanca of eastern Costa Rica; Mönniche collected it on the Volcán de Chiriquí between 1590 and 1890 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 561) and W. W. Brown, Jr., found it from 1200 to 1350 m at Boquete, Chiriquí, during January and February of 1901 (Bangs. Proc. New England Zool. Club, vol. 3, 1902, p. 61). It is common in the regenerating woodland around the Volcán lakes (1200 m). Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 369) said it occurred above 1050 m. At Cerro Punta, Chiriquí, I found it rather uncommon at 2100 m during March 1955; I believe this must be about the upper limit of its range. The only locality in Veraguas from which I know of a specimen is Calovévora, where Arcé collected a male, now in the British Museum, on 1867. In early January 1974, Ridgely (*in litt.*) found it fairly common along the road north of Santa Fé (900-1160 m).

On March 3, 1954, I saw that males were in pursuit of females at El Volcán, Chiriquí, and in 1960 I found that they were always in pairs there on February 24. In 1965 I collected a male in breeding condition at El Volcán on February 27. Further details of breeding behavior come from Costa Rica, where Skutch (Pac. Coast Avif. no. 31, 1954, pp. 357-365) has found several nests, always on the ground. Most that Skutch found were in a cranny in a bank, but others were placed on a fallen log amid dense vegetation and on a steep slope, also well sheltered by vegetation. The nest is a roofed structure composed of straws, dried

grass, and fibrous rootlets, and requires 3 to 5 days of construction. Skutch found nests between March 30 and mid-May.

A week usually elapsed between completion of the nest and laying of the first egg. Eleven nests that Skutch found contained 3 eggs or nestlings, 2 contained 2 eggs each. "The eggs were white or dull white, speckled and blotched with some shade of brown, ranging from bright brown to chocolate. The pigment was heaviest in a wreath about the point of greatest transverse diameter, or in a cap covering the large end . . . The measurements of 20 eggs averaged 17.5 by 13.4 millimeters" (Skutch, *op. cit.*, p. 362). The incubation period varied from 13 to 15 days, and at hatching the nestlings were pink-skinned and blind. By 9 or 10 days of age they were well feathered, and left the nest at 12 to 14 days. By mid-July the young nearly resemble their parents and in October they appear to be mated. While observing the nests of this species, Skutch found that parents would sometimes feign injury, fluttering on an open piece of ground near their nest.

On April 23, 1961, Eisenmann at Nueva Suiza, Chiriquí, ca. 1800 m, saw a pair carrying food to a domed nest on the ground. During this month he heard birds singing *tsíreé-tsíreé-tsíreé*, *tsee-tsee-tsee* (lasting about 2 seconds); in late February he noted a different, rather fast *tseéoo-tseéoo*, *chééwep-chééwee-tsee*, somewhat suggestive of a song of the American Redstart, but weaker and rather less sweet. In September Eisenmann heard the song quoted by Ridgely. It also gives a call, *tit-tit-tit-tit*, as it flicks open the tail, snappier and louder than a similar call of the Collared Redstart.

MYIOBORUS MINIATUS BALLUX Wetmore and Phelps

Myioborus miniatus ballux Wetmore and Phelps, 1944, Proc. Biol. Soc. Washington, 57, p. 11. (1,600 m., near Queniquea, Táchira, Venezuela.)

Characters.—White on outer rectrices more extensive than in *M. m. aurantiacus*; chestnut crown patch not bordered with black; lighter yellow below.

A male collected February 22, 1964, at Cerro Malí, Darién, had the iris slightly reddish brown (very dark); bill black; tarsus, toes, and claws fuscous-black.

Measurements.—Males (10 from Darién and Colombia), wing 55.0-66.1 (62.0), tail 51.3-62.2 (56.8), culmen from base 10.4-12.9 (11.5), tarsus 14.9-18.4 (16.9) mm.

Females (10 from Darién and Colombia), wing 57.0-64.0 (60.5),

tail 49.9-59.1 (56.0), culmen from base 10.6-11.8 (11.4), tarsus 16.3-18.2 (17.4) mm.

Resident. Very common in forest in eastern Darién between 1050 and 2100 m. It has been collected at Cerro Malí, Cerro Cana, Cerro Tacarcuna, Cerro Pirre, and Alturas de Nique. A male that I collected on Cerro Malí on February 26, 1964, was in breeding condition and had somewhat worn plumage. E. A. Goldman's notes from Cerro Pirre in 1912 mention a female collected April 18 "with egg ready to lay." On April 27 he says "this species is nesting."

An individual seen in cloud forest on Cerro Jefe, eastern Province of Panamá in July 1973 by D. Hill (Ridgely, 1976, p. 303) may have been of this race, which ranges south through the Andes of Colombia and western Venezuela at least as far as northwestern Ecuador.

A. H. Miller (Univ. Calif. Publ. Zool., vol no. 1, 66, 1963, p. 45) has described habitat, behavior, nesting, and weights (8 males, 9-10 g; female, 9.3 g) of *M. m. ballux* in the western Andes of Colombia at San Antonio.

**MYIOBORUS TORQUATUS (Baird): Collared Redstart,
Candelita Collareja**

FIGURE 24

Setophaga torquata Baird, 1865, Rev. Amer. Birds, 1, p. 261. (San José, Costa Rica.)

Small; upper surface dark gray with reddish brown crown; sides of face and undersurface yellow, with black band across upper breast.

Description.—Length 121-133 mm. Adult (sexes alike), forecrown, sides of crown, and nape black; center of crown rufous; upper surface slate color; wings and tail blackish, with white extensive on outer two pairs of rectrices; forehead, lores, superciliary, side of head, and undersurface yellow, with black band across chest; underwing coverts a mixture of light yellow and gray.

Immature, upper surface gray; forehead, lores, lower cheeks, and throat pale yellow flecked with gray; broad gray band across breast; lower breast and belly yellow; brightest on flanks, fading to whitish on center of abdomen.

A male taken March 5, 1965, at Volcán de Chiriquí, Chiriquí, had the iris mouse brown; bill black; tarsus and toes fuscous-brown; claws black.

Measurements.—Males (10 from Chiriquí), wing 63.9-70.1 (66.7),

tail 56.8-63.8 (60.1), culmen from base 10.3-12.4 (11.4), tarsus 17.9-20.3 (19.4, average of 9) mm.

Females (10 from Chiriquí), wing 61.1-64.5 (62.0), tail 54.7-59.3 (57.8), culmen from base 9.6-11.8 (10.4, average of 9), tarsus 18.4-19.9 (19.0) mm.

FIGURE 24.—Collared Redstart, Candelita Collareja, *Myioborus torquatus*.

Resident. Common in highlands of Chiriquí, adjacent Bocas del Toro, and in Veraguas, in forests and woodland edges. It is also found in the mountains of Costa Rica. Mönniche found it up to 2700 m on the Volcán de Chiriquí, higher than *M. miniatus* occurs (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 561). In Chiriquí it is usually found above 1800 m, sometimes down to 1050 (at the Fortuna Dam site); in Veraguas (Chitra, Santa Fé, Cerro Tute) it regularly comes down to 1050-1200 m (Ridgely, 1976, p. 303). *M. torquatus* has been collected commonly in Chiriquí on the Volcán de Chiriquí, above Boquete, and about Cerro Punta. In eastern Chiriquí it has been collected at Cerro Flores, by Griscom, and on the Cordillera de Tolé (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 13), 1881, p. 183). In Veraguas it was collected by Arcé at Calvovévora.

The Collared Redstart behaves much like its congener, the Slate-throated Redstart, flying after insects and moving acrobatically through

the trees or undergrowth. I have seen individuals of this species swinging on the side of a branch for an instant with wings and tail spread, so that they resemble a huge butterfly; many observers have remarked on their amazing tameness. At the elevations where both species of *Myioborus* occur they may both be found in the same mixed flock. On Cerro Punta, however, I have found *torquatus* at 1990 m in a humid cloud forest area where the trees were laden with moss and epiphytes, while *miniatus* occurred at the same elevation in a drier area.

M. torquatus sings throughout the year, although not so frequently between July and February as does *M. miniatus*. One song is an elaborate series of varied, mellow phrases, another is "a rather soft, slightly musical *tsit-tsit-tsee*, repeated" (Ridgely, 1976, p. 303).

On February 26, 1955, I noted that all the Collared Redstarts on Cerro Punta were paired, but I have no information on the breeding of this species in Panamá. Skutch, however, has observed several nesting pairs in Costa Rica (Pac. Coast. Avif., no. 31, 1954, pp. 371-376). The first nest he found was on April 3, when it was nearly completed. It and the other nests were placed on the ground, at the edge of a bank, in a hollow on a grassy hillside near woods, or beneath a decaying log. The nests were made of fine vegetable fibers, fibrous roots, bamboo leaves, and scales from tree ferns. Two or three eggs form the clutch; the eggs are white, sprinkled all over with light brown spots, most concentrated on the large end, and measure between 18.3×13.5 and 19.1×13.5 mm. The incubation period is 15 days.

In the few days just before and just after her eggs hatched, a female that Skutch watched would flutter helplessly on the ground in front of the nest. At hatching the young have pink skin and sparse natal down. By 10 days of age they are well feathered and at 13 days they leave the nest. Young hatched in April leave their parents by mid-June, when they are difficult to distinguish from adults. In August they seem to be paired.

**BASILEUTERUS TRISTRIATUS (Tschudi): Three-striped Warbler,
Cerrojillo**

Myiodiocetes tristriatus Tschudi, 1844, Archiv. f. Naturg., 10 (1), p. 283. (Valley of Vitoc, Junín, Peru.)

Small; crown striped black and buff; upper surface yellowish olive; undersurface light greenish yellow.

Description.—Length 113-123 mm. Adult (sexes alike), forehead and superciliary, extending to nape, buff; sides of crown black; central crown stripe olive-ocher, becoming buff on nape; rest of upper surface,

including wing coverts, yellowish olive; remiges and rectrices dusky with outer webs edged yellowish olive; line through eye and auriculars largely black (except in *tacarcunae*); patches below eye and on side of neck buff; throat whitish; sides of breast, sides, and flanks light yellowish olive; rest of undersurface light yellow; underwing coverts white, tinged yellow.

The Three-striped Warbler is a montane bird found from Costa Rica to northern Venezuela and northern Bolivia. Three races have been recognized in Panamá, *melanotis*, *chitrensis*, and *tacarcunae*. Examination of specimens of *chitrensis*, including the 14 taken by R. R. Benson at Chitra, Veraguas, from which the race was described by Griscom (Amer. Mus. Novit., no. 280, 1927, p. 13) shows that it differs slightly in a series, but single individuals are not separable in some cases. Some specimens from Chitra show a somewhat darker chest, but lighter ones cannot be separated from *melanotis*. As there is no natural barrier between the birds of the Veraguas highlands and those of Chiriquí belonging to *melanotis*, the Veraguas population seems too poorly differentiated to merit subspecific status.

This species is found in highland forest and woodland, where it moves through the lower level of trees, in thickets, and undergrowth, usually traveling in mixed species flocks. Its vocalizations include "a rushing series of chipping or 'tsitting' twitters composed of weakly clipping dry notes sprinkled at times with squeaky and harsh ones," as well as single notes (Slud, Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 334).

The breeding behavior of this species has been investigated by William H. Buskirk in Costa Rica. He found that the female constructs the nest and performs all the incubation herself. The male, however, participates in feeding the nestlings, and when the young are fledged each parent takes full responsibility for a single offspring. Ridgely (*in litt.*) transcribed the song of a bird at Cerro Jefe as "a very fast, high, jumbled *tidedetecadedecheeawweea*"; he also heard the bird give single notes as a contact call.

BASILEUTERUS TRISTRIATUS MELANOTIS Lawrence

Basileuterus melanotis Lawrence, 1868, Ann. Lyc. Nat. Hist. New York, vol. 9, April, p. 95. (Cervantes, Costa Rica.)

Basileuterus tristriatus chitrensis Griscom, 1927, Amer. Mus. Novit., no. 280, p. 13. (Chitra, 4,000 ft. Pacific slope of Veraguas, Panamá.)

Characters.—Auriculars black; central crown stripe grayish buffy; broad superciliary stripe pale buffy gray.

Measurements.—Males (9 from Chiriquí and Costa Rica), wing 60.0-65.0 (62.6), tail 52.7-57.7 (55.1), culmen from base 10.3-12.1 (11.6), tarsus 20.1-21.7 (20.9) mm.

Females (7 from Chiriquí and Costa Rica), wing 56.0-59.0 (58.4), tail 48.5-54.2 (50.9), culmen from base 10.2-12.2 (11.7, average of 6), tarsus 20.2-22.2 (21.2) mm.

Resident. Rare and local in the subtropical forests of Volcán de Chiriquí and adjacent Bocas del Toro, from 1080 to 2250 m, and in the mountains of Veraguas. Recorded in Chiriquí from above Palo Santo, west of El Volcán, above Boquete on Alto de Chiquero, and Bajo Mono, Chiriquí, and in Bocas del Toro from Camp Cylindro, at 1590 m on the Holcomb Trail (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 561-562). In Veraguas it is found lower, from 600 to 1200 m (Ridgely, 1976, p. 303); here it has been recorded from Chitra and Santa Fé, where Rex R. Benson collected 16 in 1925, and from the Cordillera del Chucú, where Arcé collected 2 in 1869.

In February-March 1976 Ridgely (*in litt.*) found it to be common in forests above the Fortuna Dam site in central Chiriquí; there it was a conspicuous nuclear species of the flocks of the forest understory. The birds were found from 1050 m up.

BASILEUTERUS TRISTRIATUS TACARCUNAE Chapman

Basileuterus tacarcunae Chapman, 1924, Amer. Mus. Novit., no. 143, p. 6. (East slope, Mt. Tacarcuna, 4,600 ft., below Colombia-Panamá line, Darién, Panamá.)

Characters.—Black absent from auriculars, replaced by light yellowish olive; central crown stipe more buffy yellow and orange in the center, with some feathers tipped yellowish olive.

A male taken February 20, 1964, at Cerro Malí, Darién, had the iris dark brown, maxilla and tip of mandible fuscous; base of mandible dull brownish white; tarsus and toes verona brown; claws fuscous-black.

Measurements.—Males (7 from Darién), wing 59.0-62.0 (61.3), tail 48.3-53.7 (52.2), culmen from base 11.0-12.3 (11.9), tarsus 19.7-21.8 (20.8) mm.

Females (6 from Darién), wing 57.6-58.9 (58.2), tail 47.5-51.6 (49.5), culmen from base 10.5-12.3 (11.4), tarsus 19.5-21.6 (20.1) mm.

Resident. Rare and local in forest in the highlands of eastern Darién, where it has been collected on Cerro Tacarcuna and Cerro Malí. It has also been collected in Colombia, around the headwaters of the Río Cuti, Chocó Province. There are sight reports of what may be

this race or an intermediate form from Cerro Jefe, eastern Province of Panamá, where D. Hill and Ridgely found it several times between 900 and 990 m (Ridgely, 1976, p. 303).

In my few encounters with this species in Darién it has been in flocks moving through the undergrowth or the lower tree crown.

This form has been given specific rank by some authors. It does not occur on the Cerro Pirre range, where its place may perhaps be taken by *B. melanogenys ignotus*.

BASILEUTERUS CULICIVORUS GODMANI Berlepsch: Golden-crowned Warbler, Reinita Coronidorada

Basileuterus godmani Berlepsch, 1888, Auk, 5, p. 450. (Chiriquí, Panamá.)

Small; crown striped with central stripe yellow-orange; upper surface grayish green; undersurface yellow.

Description.—Length 115-123 mm. Adult (sexes alike), sides of crown to nape striped black; central area yellow-orange; superciliary and rest of central crown stripe light yellowish olive, extending to nape; dusky spot in front and behind eye; ear coverts olive-green, finely streaked with whitish; rest of upper surface dark greenish olive; wings grayish dusky with middle and greater coverts tipped light yellowish olive and outer web of remiges edged light gray; tail grayish dusky; sides of breast, sides, and flanks light yellowish olive; rest of undersurface and bend of wing yellow; underwing coverts yellow and white.

A male taken March 17, 1965, at El Volcán, Chiriquí, had the iris dark chestnut; lower half of rami and distal half of gonys pale brownish white; rest of bill fuscous-brown; tarsus and toes brownish yellow; claws light brown; underside of toes yellow.

Measurements.—Males (10 from Chiriquí), wing 57.4-63.0 (60.8), tail 48.7-55.5 (51.9), culmen from base 10.6-12.9 (11.9), tarsus 17.8-20.0 (19.1) mm.

Females (10 from Chiriquí), wing 57.5-63.7 (59.9), tail 47.3-54.7 (50.6), culmen from base 10.9-12.6 (11.8), tarsus 17.9-20.6 (19.1) mm.

Resident. Fairly common in the lower highlands of Chiriquí and also known from the foothills of Veraguas and Herrera (Cerro Montosa, 700-870 m) (Ridgely, 1976, p. 304). It is also found in Costa Rica. Other races are found in Mexico, through Middle America, and in South America east of the western Andes of Colombia to southern Brazil, Bolivia, Paraguay, and northern Argentina. Mönniche collected this race on the Volcán de Chiriquí between 1710 and 1800 m (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 562) and W. W. Brown,

Jr., collected it there and at Boquete between 1200 and 2310 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 60). Elsewhere in Chiriquí, it has been taken by Frank Hartman at Santa Clara (1230 m), by M. E. Davidson at Barriles (1350 m), and by Griscom at Cerro Flores (1200 m). Ridgely (*in litt.*) found it fairly common at Fortuna between 1000 and 1050 m in February-March 1976; it was replaced by *B. tristriatus* at higher elevations, but was not as common as that species. On the western slope of the Azuero Peninsula, Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, pp. 25-26) found this species uncommon in rain forest from 300 to 900 m and in cloud forest above 900 m. Arcé collected it in Veraguas at Calovévora (Salvin, Proc. Zool. Soc. London, 1870, p. 183).

The Golden-crowned Warbler inhabits forest and woodland, where it usually forages from the shrubbery up to about 7 m. It is often in pairs or little flocks, and regularly accompanies the small mixed flocks of the understory. At El Volcán, Chiriquí, on February 7, 1955, I saw a small scattered flock on a heavily wooded ridge of Cerro Picacho at 1740 m. The birds moved with twitching tails through the smaller branches of the higher levels; in silhouette they were like the migrant warblers from the north. The call was a low chipping note. Slud (Bull. Amer. Mus. Nat. Hist. vol. 128, 1964, p. 334) describes the song as "three 'wee's on the same level, followed by three consecutively rising 'wee's, with the last one accentuated. Usually, however, only the last three or so notes are given as an accelerating little crescendo or an unmusical 'chip-chip-chirk' lacking the 'wee' quality." Buskirk et al. (Auk, 1972, p. 620) found that at Cerro Punta, Chiriquí, Golden-crowned Warblers regularly joined mixed flocks but showed only moderate tendencies to follow them.

Nothing is known of this species' breeding behavior in Panamá, but Skutch (Publ. Nutt. Orn. Club., no. 7, 1967, pp. 150-154) has found a nest in Costa Rica, where this race also occurs. The nest was a globular structure about 14 cm in diameter with a round opening on the side; it was set on the ground, hidden amid fallen leaves and twigs, in a fairly open forest. The outer surface of the nest was made of black rootlets, with additions of green moss, strips from the leaves of palms and branching stems of foliose liverworts; the thick inner cup was of very fine, brownish fibers. When Skutch found the nest on April 15, 1964, it contained three eggs; they were white with a heavy wreath of dark brown blotches around the broadest part and a scattering of paler brown spots on the rest of the surface. Their measurements were 17.9×14.1, 17.8×13.8, and 18.7×14.9 mm.

On April 19 the young hatched; they had pink skin with sparse gray down. The young were fed mature and larval insects, and by their seventh day pin feathers had sprouted. These were open at 9 days, and the following day the young "exploded" from the nest when Skutch approached. At this time their feathers were still short, but the birds could fly a few feet and were led off by their parents.

BASILEUTERUS MELANOGENYS Baird: Black-cheeked Warbler,
Reinita Carisucia

Small; crown striped chestnut and white; rest of upper surface grayish green; undersurface buffy white.

Description.—Length 123-132 mm. Adult (sexes alike), forehead and very thin stripe on side of crown black; central crown area chestnut, blackish at nape; rest of upper surface olive, becoming more greenish on rump; wings and tail dusky, with coverts tipped and remiges and rectrices edged yellowish olive; superciliary extending to nape white or pale yellowish; lores, orbital and auricular region black; sides of chin black, flecked white, central chin more white; throat whitish; broad breast band gray; sides, flanks, and abdomen olive; rest of undersurface buffy white; underwing coverts gray.

This species is found only in the highlands of Costa Rica and Panamá, where in western Chiriquí it is common in forest, woodlands, and in brushy areas at the edge of pasture, while in Veraguas and in eastern Darién it is very local and only poorly known. I have found the Black-cheeked Warbler only in Chiriquí, where I have seen it in heavy forest and in brush along a small stream running through rough pastureland; it feeds in low undergrowth, often barely above the ground, up to middle tree branches, usually moving in pairs. Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 154-159) has studied this species in Costa Rica, and notes that it sings much less frequently than other species of *Basileuterus*; he describes the song as slight and lisping. The bird also has weak *chip* call.

Buskirk et al. (Auk, 1972, p. 620) found that at Cerro Punta, Chiriquí, the Black-cheeked Warbler was a short-term follower of the mixed species flocks that passed through its territory. Eisenmann (*in litt.*) only very occasionally saw this species with mixed species bands, and with these it usually foraged low; once only did he observe 1 well up in a tree.

Three subspecies are currently recognized (all 3 found in Panamá), nominate *melanogenys*, *bensoni*, and *ignotus*. The last two were treated as full species by Todd (Proc. U. S. Nat. Mus., vol. 74, art. 7, 1929, pp.

79-80), although this treatment was not generally followed. The Check-list Committee of the American Ornithologists' Union (Check-list of North American Birds, 6th ed., 1983, p. 627) has recently re-elevated *ignotus* to the rank of species, but there is no justification for this.

BASILEUTERUS MELANOGENYS MELANOGENYS Baird

Basileuterus melanogenys Baird, 1865, Rev. Amer. Birds, 1, p. 248. (Costa Rica.)

Basileuterus melanogenys eximius Nelson, 1912. Smiths. Misc. Coll., 60(3), p. 22. (Boquete, 5,000 ft., Chiriquí, Panamá.)

Characters.—Superciliary white; side of head black.

A male taken February 24, 1965, at Volcán de Chiriquí, Chiriquí, had the iris dark brown; cutting edge of maxilla and all of mandible flesh color; rest of maxilla fuscous-brown; tarsus and toes pale brownish white; claws dull neutral gray.

Measurements.—Males (10 from Chiriquí), wing 56.5-66.5 (61.1), tail 58.1-62.3 (60.4), culmen from base 10.3-12.7 (11.7), tarsus 20.0-23.0 (21.7) mm.

Females (10 from Chiriquí), wing 58.8-62.1 (60.3), tail 54.7-61.0 (58.6), culmen from base 11.3-12.7 (11.9), tarsus 20.7-23.5 (21.9) mm.

Resident. Common in forests, woodlands, and borders in the highlands of western Chiriquí, and in adjacent Costa Rica. In Panamá *B. m. melanogenys* has been collected at Cerro Punta, the Volcán de Chiriquí, and Boquete. Ridgely (*in litt.*) has found it more numerous near Boquete, on the wetter side of the mountain, than above Cerro Punta. From February to May of 1901 W. W. Brown, Jr., collected 11 specimens at Boquete and Volcán de Chiriquí between 1350 and 3060 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 60); Mönniche found it at Volcán de Chiriquí between 1560 and 2760 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 562).

The population of the Chiriquí highlands was originally described under the name *eximius* by E. W. Nelson (Smiths. Misc. Coll., vol. 60, no. 3, 1912, p. 22), but, in examination of a large series from Chiriquí, this population was found to be inseparable from nominate *melanogenys* of Costa Rica. There are differences that appear to be due to specimen age—older specimens from Chiriquí are buffier below and less grayish on the back than fresher specimens and they thus resemble the Costa Rican birds in the Smithsonian series, all of which are older. Comparison of fresh material from both localities is desirable.

Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 154-159) has studied the nesting behavior of this species in Costa Rica, where on March 21, 1963, he found a female building a domed nest on the ground in a steep ravine. The next day darkness and falling ash from an eruption of Volcán Irazú 32 km away seemed to have caused the desertion of the nest. Skutch found another nest that year on June 3; this one was set in a nearly vertical mossy bank in a rather open forest with dense undergrowth of bamboo. The nest was oven shaped with a foundation of leaves and bamboo blades, sides and roof of bamboo leaves and pieces of fern fronds and roots, and lined with shredded vegetable fibers and brown scales from the fronds of large ferns. The nest was about 18 cm in height, 14 cm from side to side, and 12 cm from front to back. The interior measured about 6 by 5 cm in diameter by 7 cm in height.

When Skutch found this nest it already contained two eggs. They were white, speckled with cinnamon-rufous, deeper and more heavily concentrated on the broader end. Both eggs measured 19.0×15.0 mm. The eggs hatched on June 10. The young had pink skin and long but sparse gray down. One of the young disappeared a few days after hatching, the other was beginning to develop feathers at 7 days, but had disappeared 4 days later when Skutch next visited the nest. Both before and after hatching of the eggs, the female had performed injury-feigning displays when Skutch approached the nest.

On July 10, 1979, Eisenmann (*in litt.*) found individuals of this species at 1900 and 2030 m at Cerro Punta evidently carrying food to young; 1 with an insect in its bill persistently remained in the area where approached, chirping nervously. On September 20, 1959, he saw pairs at several places in densely grown hillsides or in ravines near Cerro Punta, keeping very low near the ground. On February 24 and 26, 1960, on the trail to Boquete, between 2330 and 2430 m several pairs were seen perched low in shrubbery at the forest edge. One pair was building a nest at the base of a tree on a slope beside the trail; 1 bird carried material while the other accompanied, calling a sweet *tseep*.

BASILEUTERUS MELANOGENYS BENSONI Griscom

Basileuterus bensoni Griscom, 1927, Amer. Mus. Novit., no. 280, p. 12. (Chitra, 4,700 feet, Pacific slope of Veraguas, Panamá.)

Characters.—Upper surface iron gray instead of greenish; under-surface white instead of yellow; with distinct gray pectoral band darker.

Measurements.—Males (3 from Chitra, Veraguas), wing 57.5-63.0 (60.2), tail 53.5-55.5 (54.6), culmen from base 11.4-11.8 (11.6), tarsus 21.5-21.8 (21.6) mm.

Females (3 from Chitra, Veraguas), wing 54.0-56.5 (55.3), tail 51.5-52.2 (51.8), culmen from base 11.4-11.7 (11.6), tarsus 20.6-22.5 (21.5) mm.

Resident. This race is known only from mountains about Chitra, eastern Veraguas, where it was first collected by Rex R. Benson in February 1926. He encountered it between 1200 and 1500 m, the latter altitude representing the tops of the highest peaks in that area.

Eisenmann observes that in the Veraguas highlands several species develop forms with more black pigment in the plumage, while in Darién the tendency is to reduced melanin and more carotenoid yellow.

BASILEUTERUS MELANOGENYS IGNOTUS Nelson

Basileuterus melanogenys ignotus Nelson, 1912, Smiths. Misc. Coll., 60(3), p. 21. (Mount Pirri, 5,200 ft., near head of Río Limón, Darién, Panamá.)

Characters.—Superciliary pale greenish yellow; undersurface with strong yellowish suffusion, black on head reduced.

Measurements.—Male (1 from Cerro Tacarcuna, Darién), wing 59.0, tail 57.0, culmen from base 12.8, tarsus 21.0 mm.

Female (1 from Cerro Pirre, Darién, the type), wing 57.0, tail 55.4, culmen from base 11.5, tarsus 20.5 mm.

Resident. Known only from eastern Darién, where the type, an adult female, was collected at Cerro Pirre (as 1560 m) near the head of the Río Limón, on April 18, 1912, by E. A. Goldman, and 3 males and 2 females were collected by C. Myers and R. Hinds at 1650 m on Cerro Tacarcuna on February 9-12, 1975. Eisenmann, who examined all the Tacarcuna specimens in comparison with the type, noted that they showed much more black on sides of the head, forehead and throat than the lone Pirre specimen and a narrower superciliary. The Tacarcuna birds thus seem nearer to the western Panamá birds in this respect than to the type of *ignotus*.

BASILEUTERUS RUFIFRONS (Swainson): Rufous-capped Warbler, Reinita Cabecicastaña

Setophaga rufifrons Swainson, 1838 (1837?), Anim. Menag., p. 294. (Real de Arriba, Mexico, Mexico.)

Small; crown reddish brown; nape gray; rest of upper surface olive-green; undersurface yellow, greenish on sides.

Description.—Length 111-121 mm. Adult (sexes alike), superciliary white; lores, orbital ring, and line through eye black; crown and auriculars reddish brown; nape gray; rest of upper surface, including tail, olive-green; wings dusky with coverts tipped and remiges

edged olive-green; chin, sides of throat, and side of face to auriculars white; sides of breast, sides, and flanks olive-yellow; rest of under-surface yellow.

The Rufous-capped Warbler is found from northern Mexico through Central America to northern Colombia and western Venezuela. In Panamá the race *mesochrysus* is common in lowlands of the Pacific slope and on the Caribbean slope in the vicinity of the Canal Zone. Another race, *actuosus*, inhabits Isla Coiba off the Pacific Coast of Veraguas. The forms ranging from southeastern Guatemala southward through Middle America to Colombia and Venezuela (including all Panamá populations) are often separated as a distinct species, *B. delatrii* (see Todd, Proc. U.S. Nat. Mus. 74, art. 7, 1929, pp. 85-87; Hellmayr, Field Mus. Nat. Hist. Zool., vol. 13, pt. 8, 1935, pp. 508-512).

The habitat of this species is scrubby clearings, weedy fields, and second growth. It usually forages near the ground, where its secretive behavior makes it hard to see, but once at Pesé, Herrera, I watched 1 come up to feed actively in leafless branches 10 m above a stream. Skutch, who has observed this species in Costa Rica (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 159-164) noted that it usually travels in pairs. Males sing from February to August and may deliver their song from elevated perches at dawn, but sing from within thick shrubbery during the rest of the day. Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 53) describes the song as heard at Playa Coronado in June, as "a rather rapid, dry, chittering *chit-cha-chup-cha-chuweép*, with variations. . . calls include a simple *chit*, a *zeep-zeep* or *dzit-dzit*." Sometimes the song ends with a *chee-weécha*. In central Panamá, Eisenmann has noted singing from early March through late June.

E. A. Goldman collected 2 specimens with full stomachs at Corozal in the Canal Zone on June 15, 1911: one contained a chrysomelid 3%, a small curculionid 2%, elaterid fragments 3%, bug remains 3%, many fulgorid remains finely ground 44%, more than four large ants 35%, 2 smaller species 8%, other coleoptera 2%; the other contained 5 ants 44%, a reduviid 15%, *Achalles* sp. 10%, 2 cerambycids 15%, a riti-dulid near *Colastus* 8%, other coleoptera fragments (Chrysomelidae) 8%.

BASILEUTERUS RUFIFRONS MESOCHRYsus Sclater

Basileuterus mesochrysus P.L. Sclater, 1861, Proc. Zool. Soc. London, 28 (1860), p. 251. ("Bogota," Colombia.)

Characters.—Undersurface brighter yellow than in *B. r. actuosus*; gray of nape lighter.

A female collected February 21, 1962, at El Copé, Coclé, had the iris dark mouse brown; bill black; tarsus, toes, and claws light brown with a line on back of tarsus buffy brown; pads honey yellow.

Measurements.—Males (10 from Panamá), wing 50.3-56.9 (54.3), tail 47.1-55.0 (50.0), culmen from base 11.2-13.5 (12.2), tarsus 19.3-20.6 (20.0) mm.

Females (10 from Panamá), wing 50.2-57.8 (53.8), tail 46.5-53.7 (49.5), culmen from base 11.5-13.8 (12.4), tarsus 18.8-20.6 (19.6) mm.

Resident. Fairly common throughout the mainland Pacific slope lowlands from Chiriquí to the Canal Zone area and on the Caribbean slope in the vicinity of the Canal Zone. In Chiriquí it has been collected as high as 1560 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 562), and in central Panamá it has been recorded to 950 m on Cerro Azul. Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 23) found it uncommon in brushy savannas and forest margins near Montijo Bay, Veraguas. In 1911, E. A. Goldman recorded it as "a rather common bird in the partly open country throughout the Zone." This race also occurs in southwestern Costa Rica and in northern Colombia and western Venezuela. Griscom (Bull. Mus. Comp. Zool, vol. 78, 1935, p. 370) states it ranges to Darién, but I am not aware of any specimens or sight reports from that province.

According to Eisenmann, this bird favors thickets or lightly-wooded semi-arid areas, but in more humid habitats follows clearings into second growth and woodland borders up into the lower highlands and to the Caribbean coast in the Canal Zone and adjacent parts of Colón Province. If forest grows up again in humid areas it tends to disappear, as on Barro Colorado Island (Willis and Eisenmann, Smiths. Contrib. Zool. 291, 1979, p. 27).

A bird banded by H. Loftin (*in litt.* to Eisenmann) at Curundu, Canal Zone, on January 8, 1963, was recaptured there on March 31, 1966.

E. A. Goldman shot a pair at Gatún, Canal Zone, on May 3, 1911, that were in breeding condition; the female contained two large eggs, the larger of which was nearly ready to lay. A pair that I collected March 7, 1960, at Buena Vista, Chiriquí, was also in breeding condition. Eisenmann noted a fledgling being fed in the Canal Zone on June 25.

Skutch (Publ. Nutt. Orn. Club. no. 7, 1967, pp. 159-164) has found the nest of this species in Costa Rica. Like other members of the genus, *B. rufifrons* places the nest on the ground where it is hidden amid litter

or set between rocks or against a fallen log. The nest is oven shaped and constructed of fine herbaceous stems, grass blades, fragments of dead leaves, rootlets, and other fine plant material. The bottom is a thick pad of finely shredded bast fibers. One nest measured 12 cm high, 12 cm from back to front, and 14 cm from side to side. The inside measurements were 6 cm high, 11 cm from front to back, and 7 cm from side to side.

All the nests in which Skutch found eggs contained a clutch of three. Those from one set were white, marked with fine specks of cinnamon crowded over the thicker end and more sparingly scattered over the rest of the surface. They measured 17.9×14.3 , 17.5×14.3 , and 17.5×14.3 mm. Incubation is performed only by the female; Skutch could not determine the length of the incubation period. The young are born with yellow mouth cavities and sparse gray down on pink skin. They are fed by both parents, who bring them insects including long green caterpillars. In one nest the feathers of the young were expanding rapidly at 8 days of age and at 12 days, when their upper surface was a uniform dark gray without head markings and their undersurface yellowish olive, the young left the nest.

Two females collected in Panamá by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 10.1 and 11.8 g.

BASILEUTERUS RUFIFRONS ACTUOSUS Wetmore

Basileuterus delatirii actuosus Wetmore, 1957, Smiths. Misc. Coll., 134 (9), p. 92. (Isla Coiba, Panama.)

Characters.—Bill larger and coloration darker than that of *B. r. mesochrysus*.

Measurements.—Males (11 from Isla Coiba), wing 57.6-62.5 (60.1), tail 51.1-55.8 (53.3), culmen from base 13.3-14.4 (13.8), tarsus 20.5-22.5 (21.3) mm.

Females (5 from Isla Coiba), wing 56.1-60.2 (57.5), tail 50.0-53.5 (51.8), culmen from base 13.5-13.9 (13.6), tarsus 20.0-21.6 (21.0) mm.

Resident. Common on Isla Coiba, off the Pacific coast of Veraguas. In January 1956 I encountered birds near the shoreline and back through high forest in the interior of the island. They also came into thickets in abandoned fields near the work camps. They were common, but of secretive habit, keeping behind cover. As they frequently carry their tail at an angle over the back, they often suggest wrens as they move about behind the screening twigs and leaves. At this season they were silent except for an occasional chipping call. Usually they are

found in pairs, and during January most of the specimens I obtained were nearly ready to breed.

Although the total length of the bill in the Coiba Island birds is only slightly more than in mainland individuals, the breadth and general bulk are appreciably greater. The darker color of this race is a general tendency in the races endemic to Coiba.

On April 13, 1976, Ridgely (*in litt.*) saw a pair on Coiba with two fledged but still dependent young. He was interested to note that the birds were common in forest undergrowth, a habitat in which they would never be found in on the mainland.

**BASILEUTERUS FULVICAUDA (Spix): Buff-rumped Warbler,
Reinita de Rabadilla Anteada**

FIGURE 25

Muscicapa fulvicauda Spix, 1825, Av. Spec. Nov. Brasil, 2, p. 20, pl. 28, fig. 2.
(São Paulo de Olivença, Rio Solimões, Brazil.)

Small; upper surface dark olive; upper tail coverts and basal half of rectrices buffy; outer half dark brown; undersurface buffy, marked with dark olive.

Description.—Length 118-128 mm. Adult (sexes alike), crown blackish olive, becoming dark olive on rest of upper surface to upper tail coverts, which are warm buff; wing coverts and remiges blackish, edged dark olive; basal half of tail ochraceous-buff, outer half dark brown; fine superciliary warm buff; undersurface white mottled with varying degrees of warm buff and dark olive.

Immature, like adult, but throat and breast heavily marked with dark olive.

There is little justification for separating this species and its ally *B. rivularis* in the genus *Phaeothlypis* as was done by Lowery and Monroe (in Peters, Check-list Birds World, vol. 14, 1968, p. 75). Todd (Proc. U.S. Nat. Mus., no. 2752, 1929, p. 8) erected the genus *Phaeothlypis* only for the forms here included in the species *fulvicauda*. The characters he used to distinguish the genus were "bill relatively wider, . . . tail relatively shorter, much less than the distance from the bend of the wing to the end of the longest secondaries, . . . style of coloration very different, the tail being always bicolor . . ." Hellmayr (Field Mus. Nat. Hist. Zool., Cat. Birds. Amer. part 8, 1935, p. 522) did not recognize *Phaeothlypis* for *fulvicauda* on account of the recognizably close relationship of that species with *rivularis*, a species that Todd included in *Basileuterus*. None of Todd's characters for *Phaeothlypis* apply to *B. rivularis*, in which the tail is longer and not bicolored, and in some

forms of which, such as *bolivianus*, the bill is actually narrower than in a number of more distantly related species of *Basileuterus* (e.g., *coronatus*). Lowery and Monroe, by including *rivularis* in *Phaeothlypis*, left the genus with no distinguishing characters. The best way to resolve this inconsistency is by refusing to recognize the validity of *Phaeothlypis*.

FIGURE 25.—Buff-rumped Warbler, Reinita de Rabadilla Anteada, *Basileuterus fulvicauda*.

In Panamá there are two very distinct forms of *B. fulvicauda* that Todd (*op. cit.*, p. 9) considered to be separate species. One form, *semicervina*, is found in the eastern half of Panamá and in the Western and Central Andes from Colombia to northwestern Peru. Two subspecies have traditionally been recognized within the western half of Panamá, *leucopygia* and *veraguensis* (with their respective synonyms *gaffneyi* and *toddi*). The stated range of *leucopygia* is from Honduras through Costa Rica and along the Caribbean slope of Panamá to Veraguas; that of *veraguensis* is from southwestern Costa Rica along the Pacific slope of Panamá to the Canal Zone. According to Todd (p. 12), the only distinguishing feature of *veraguensis* is the supposedly buffier, less whitish, underparts. A series of 36 specimens from Nicaragua to the Canal Zone shows individual variation to be too great to permit any subdivision of this population. Three birds (USNM no.

469102-4) taken in 1958 on the Western River, Almirante, Bocas del Toro, show this variability admirably. One is light underneath, as attributed to typical *leucopygia*, another is much buffier, while the third is extremely dark, the underparts except the throat and midline of belly being entirely suffused with dusky. Certain individuals from Chiriquí are as light as any from farther north, while others from Nicaragua and Costa Rica are as buffy as some from Coclé or Chiriquí. Therefore, these populations are listed under the name *leucopygia*, with *veraguensis* as a junior synonym.

There is a narrow zone of intergradation between *leucopygia* (*sensu lato*) and *semicervina* in the Canal Zone and slightly eastward. Two birds collected by E. A. Goldman labeled "Río Indio, Canal Zone" (a tributary of the Chagres, not the following Río Indio in western Colón Province) and another taken from Chilar, on the Río Indio, Colón, are typical of *leucopygia*, as are all those from farther west. Birds from Cerro Chucantí, Serranía de Majé, eastern Panamá Province, and from there east through San Blas and Darién and most of Colombia are typical of *semicervina*. Except for the 2 Goldman specimens above, all birds from the Canal Zone proper (Gamboa, Gatún, Cocoli River), Cerro Azul, Utivé, and the upper end of Madden Lake in eastern Province of Panamá (Candelaria and Peluca Hydrographic Stations) are clearly intergrades. An exception is an individual from the Peluca Station (1 of 4 taken there) that appears perfectly typical of *semicervina*, suggesting that the zone of intergradation probably does not extend much farther east than this locality.

Some authors merge the *B. fulvicauda* complex in *B. rivularis* (Riverside Warbler) of eastern, Amazonian, and southern South America south to northern Argentina (Meyer de Schauensee, Species Birds S. Amer., 1966, p. 453).

The Buff-rumped Warbler dwells along the shores of streams or, more rarely, boggy areas and mangrove swamps. Eisenmann has generally seen this species only at rapid-flowing, narrow, clear streams over rocky beds, but in coastal Bocas del Toro east of Almirante, on the slow-moving, dark, muddy, rather wide Western River, on October 19, 1965, he saw two pairs at different places in waters navigable by motor launch. In many aspects of behavior this species resembles a water-thrush, but it hops rather than walks, fanning and wagging its tail from side to side, exposing the conspicuous light patch on the upper tail coverts and base of the tail feathers. I have always found this a rather shy species, continually flying ahead and rarely affording one a good look.

The song is varied and clear, with final phrases like the loud trilling of a domestic canary. Skutch (Pac. Coast Avif., no. 31, 1954, p. 348) found that the female sings a rich warble in response to the song of the male. This species sings more or less throughout the year, but most during the nesting season; the song is usually delivered from the ground or a rock or log in a stream. Eisenmann describes the song as explosive, emphatic, and loud (usually increasing toward the end), with notes in rapid succession often given from a perch, 5-3 m above the ground, above or near a stream. On April 12 and 16, 1959, he wrote songs as *chewy, chewy, chee-chee-chee-chee-chee-chee-, choo, choo, choo, choo-choo-choo-choo, tyoo, tyoo*. The song lasted 4-6 seconds; the numbers of *chee* and other notes varied, and the *tyoo* notes might be omitted. The call is a loud, sharp note or a series of such notes.

The stomach of 1 collected by E. A. Goldman at Cana, Darién, contained bits of two dragonflies 20%, fragments of an ant 10%, an ichneumon 5%, dipteran remains finely ground 54%, fragments of a cerambycid 5%, bits of two other beetles 6%.

BASILEUTERUS FULVICAUDA LEUCOPYGIUS Sclater and Salvin

Basileuterus leucopygius P.L. Sclater and Salvin, 1873, Nomen. Av. Neotrop., pp. 10, 156. (Costa Rica.)

Basileuterus [leucopygius subsp. a] veraguensis Sharpe, 1885, Cat. Birds. Brit. Mus., 10, p. 403. (Paraiso Station, Panamá.)

Basileuterus fulvicauda gaffneyi Griscom, 1927, Amer. Mus. Novit., no. 280, p. 14. (Guaval, Río Calovévora, . . . Veraguas, Caribbean slope, western Panamá.)

Basileuterus fulvicauda toddi Griscom, 1927, Amer. Mus. Novit., no. 280, p. 14. (Boqueron, Chiriquí, western Panamá.)

Characters.—Undersurface mottled and smudged with dark olive; upper surface and cheeks darker; superciliary obscure; dark areas of tail, particularly the outer rectrix, more extensive.

A male collected at Puerto Armuelles, Chiriquí, March 8, 1966, had the iris dark brown; base of mandible very dull dark brown; rest of bill black; inside of mouth pale bluish gray; tarsus and toes brown; claws dull slate.

Measurements.—Males (10 from western Panamá), wing 61.0-66.9 (64.4), tail 50.0-55.7 (52.4), culmen from base 12.7-14.9 (14.1), tarsus 21.3-22.9 (22.2) mm.

Females (10 from western Panamá and Costa Rica), wing 60.4-65.5 (62.7), tail 47.1-54.6 (51.2), culmen from base 12.8-14.5 (13.8), tarsus 19.0-22.6 (21.3) mm.

Resident. Uncommon to fairly common along streams and rivers

in forest and second-growth woodland of both slopes from the Costa Rican border to central Panamá, where it is less frequent and intergrades with the race *semicervinus*, as described above. It has been found as high as 1620 m, where Mönniche collected it at Horqueta, Chiriquí (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 563). Ridgely (*in litt.*) finds that during the dry season it seems to disappear from areas of the Canal Zone where streams mostly dry up, e. g., around Summit and in Madden Forest.

Skutch (Pac. Coast Avif., no. 31, 1954, pp. 346-356) found that in Costa Rica the nesting season runs from March to August. Both sexes build the nest, which is oven shaped and usually placed in a niche on a steep slope, often close to a stream or river. The nest takes up to 13 days to construct. It is made of coarse rootlets, dry grass blades, leaf fragments, and weed stems; the lining is of fine shredded fibers and leaf skeletons. Two eggs form a clutch; they are glossy white, marked around the blunt end with a heavy wreath of brown blotches or spots and thinly spotted with the same shades over the remaining surface. The average measurements of twenty eggs are 20.7×14.9 mm. Incubation is performed entirely by the female and requires 16 to 19 days. When the young hatch they have pink skin and scanty gray down. The interior of the mouth is yellow. They are fed by both parents and usually remain in the nest until 13 or 14 days old, when they are well feathered. Only a single brood is reared each year.

BASILEUTERUS FULVICAUDA SEMICERVINUS Sclater

Basileuterusemicervinus P.L. Sclater, 1861, Proc. Zool. Soc. London, 28 (1860), p. 84. (Nanegal, Ecuador.)

Characters.—Breast unmarked; cheeks buffy; buffy superciliary more prominent; upper surface lighter; light area of tail more extensive.

A female collected at Armila, San Blas, on February 23, 1963, had the iris dark brown, base of gonys and lower half of mandibular rami dull brownish white; rest of bill black; tarsus and toes brownish honey yellow; claws light mouse brown.

Measurements.—Males (10 from eastern Panamá), wing 61.5-66.0 (63.6), tail 49.0-54.8 (51.7), culmen from base 12.7-15.3 (13.8), tarsus 19.9-22.3 (21.4) mm.

Females (10 from eastern Panamá), wing 58.9-64.0 (60.6), tail 45.8-52.5 (49.7), culmen from base 12.3-14.8 (13.5), tarsus 19.3-22.6 (21.2) mm.

Resident. Uncommon to fairly common in the lowlands and foothills of both slopes from east of the Canal Zone to the Colombian border. I have found it as high as 1260 m, on the south fork of the Río Pucro, Cerro Malí, Darién.

ZELEDONIA CORONATA Ridgway: *Zeledonia*, *Zeledonia*

FIGURE 26

Zeledonia coronata Ridgway, 1889, Proc. U.S. Nat. Mus., 11 (1888), p. 538. (Laguna del Volcán de Póas, Costa Rica.)

Small; center of crown orangey brown, margined by black; rest of upper surface brownish olive; forehead, sides of head, and undersurface slaty.

Description.—Length 100-110 mm. Adult (sexes alike), center of crown orangey brown, bordered by narrow black stripe; forehead and side of head dark slate gray; rest of upper surface brownish olive; undersurface slaty gray; flanks and undertail coverts dull olive; remiges and rectrices dark brown, edged brownish olive.

Juvenile, like adult, but lacks crown patch; underparts olive.

Measurements.—Males (10 from Veraguas, Chiriquí, and Costa Rica), wing 61.5-69.5 (65.8), tail 36.3-42.3 (38.8), culmen from base 11.7-13.5 (12.8, average of 9), tarsus 26.1-30.9 (28.7) mm.

Females (10 from Veraguas and Costa Rica), wing 61.0-68.0 (62.9), tail 33.3-38.8 (35.8), culmen from base 11.8-13.9 (12.7), tarsus 26.2-29.5 (27.7) mm.

Resident. Rare and local in the highlands of Chiriquí and Veraguas, where it inhabits very humid forests with thick ground cover. It has been recorded in Chiriquí between 1740 and 3090 m and in Veraguas at Chitra from 1050 to 1200 m (Ridgely, 1976, p. 305). In Chiriquí it has been collected on the Volcán de Chiriquí and at Boquete. Ridgely heard and briefly saw one in cloud forest well above Fortuna (1800 m) in central Chiriquí on February 27, 1976, and N. G. Smith reports (*in litt.* to Eisenmann) seeing one on Cerro Colorado, eastern Chiriquí, in April, 1979. The *Zeledonia* is also found in Costa Rica.

The systematic position of *Zeledonia coronata* was formerly the subject of considerable uncertainty. It was thought, on quite inadequate grounds, to be related to thrushes, although equivocation resulted in its being placed in a monotypic family Zeledoniidae. Sibley (Postilla, no. 125, 1968, pp. 1-12), after a review of its taxonomic history and an analysis of the electrophoretic pattern of its egg-white proteins, concluded that this species is not a thrush, but probably a parulid, on the

basis of egg-white data and morphology. The parulid affinities of *Zeledonia* were confirmed by Raikow's (Bull. Carnegie Mus. Nat. Hist., 7, 1978, p. 28) dissections of the musculature, which also suggest that *Zeledonia* may be more nearly related to *Basileuterus*. As the name "Wrenthrush," formerly applied to this bird, is now seen to be inappropriate, the name "*Zeledonia*" has been used in its place.

FIGURE 26.—*Zeledonia*, *Zeledonia*, *Zeledonia coronata*.

Until James Hunt studied it in Costa Rica during 1968 (Auk, 1971, pp. 1-20), little was known of the biology of *Zeledonia* except its whistled call and that it was a very secretive inhabitant of dense undergrowth in the humid herb layer of high mountains and in tangles and vines on trunks and lower limbs directly above it, where it hops and flicks its wings, but very rarely flies. The *Zeledonia*'s commonest call is a "thin, high-pitched whistle, usually with a slight rising inflection," transcribed by Ridgely as a very piercing, sibilant *psee*. The song, which Hunt first heard on March 19, is a sequence of phrases like *ssee-del-deet* with emphasis on the last syllables.

Hunt found a nest under construction on March 25. It was situated in a cavity in a vertical mossy bank of a small stream. The nest, finished on March 31, was a domed structure with an entrance on the side, made of mosses with a few small leaves and twigs and lined with fine dead plant material, including grass, mosses, and decaying leaves. The first egg was laid on April 8. It and a second, laid 2 days later, were

white or buffy white marked with brown spots. They measured 21.9×17.3 and 21.2×16.9 mm.

This nest was abandoned, but another found May 21 was identical in appearance and situation. It contained 2 young birds probably not more than 3 days old. They were sparsely covered with down and their eyes were still shut. Their mouth linings were orange. The young of this nest died a few days later, but a third nest found June 26 had 2 nestlings about 10 days old. By 15 days these young were fully feathered; 2 days later, when Hunt had to leave the area, the nestling he had not collected was still in the nest, indicating a longer pre-fledging period than that of any other wood warbler.

Family ICTERIDAE: Blackbirds and Orioles, Turpiales y Chacareros

The Icteridae are an exclusively American family that has its greatest diversity in the tropics. Twenty-two species have been found in Panamá, including 5 migrants from temperate North America. The icterids are medium- to large-sized birds, mostly boldly patterned in black with yellow, red, or orange, or entirely black. The oropendolas are the largest passerines in the tropics; along with the caciques and the Giant Cowbird, they have the ability to produce loud noises with their wings when in flight that are sometimes part of courtship displays. Another peculiarity of many of the larger icterids is a strong musky odor.

The icterids are particularly interesting for the diversity of their breeding behavior. The oropendolas and some of the caciques live in colonies in isolated or exposed trees, where females outnumber males and weave long, pendulous nests. Other caciques and the orioles nest in solitary pairs, while the Red-breasted Blackbird and Eastern Meadowlark sometimes form loose colonies in large fields and savannas. The Panamá cowbirds are parasites with varying degrees of specializations, from the Shiny and Bronzed Cowbirds, which put their eggs in the nest of a variety of small birds, to the Giant Cowbird, which parasitizes only the colonial oropendolas and caciques.

All the icterids have powerful voices, some of which are loud and raucous, while others produce very fine songs. Their diet is varied, including insects, fruit, seeds, and nectar. The Great-tailed Grackle regularly scavenges and takes small vertebrate prey including nestling birds; there are records of oropendolas snatching birds as well.

Although the Dickcissel, *Spiza americana*, is usually included with one or another of the finchlike groups, Raikow's (Bull. Carnegie Mus. Nat. Hist., vol. 7, 1978, pp. 1-43) examination of the limb myol-

ogy corroborates the observations of Beecher (Auk, 1951, pp. 411-440) based on jaw muscles and shows *Spiza* to be a primitive member of the Icteridae, close to the Emberizinae. This conclusion is followed here, as no evidence in support of a contrary position has been presented.

KEY TO SPECIES OF ICTERIDAE

1. Entirely black..... 2
 - Not entirely black..... 6
2. Very large..... 3
 - Medium size..... 4
3. Tail not graduated.
 - Giant Cowbird, *Scaphidura oryzivora*. p. 355
 - Tail graduated.
 - male Great-tailed Grackle, *Quiscalus mexicanus peruvianus*. p. 362
4. Strong purple sheen.
 - male Shiny Cowbird, *Molothrus bonariensis cabanisii*. p. 361
 - Little or no iridescent sheen..... 5
5. Long light-colored bill.
 - Yellow-billed Cacique, *Cacicus holosericeus holosericeus*. p. 353
 - Short dark bill.
 - Bronzed Cowbird, *Molothrus aeneus aeneus*. p. 358
6. Uniformly dull brown..... 7
 - Streaked or boldly patterned..... 8
7. Large, with long graduated tail.
 - female Great-tailed Grackle, *Quiscalus mexicanus peruvianus*. p. 362
 - Smaller, tail not graduated.
 - female Shiny Cowbird, *Molothrus bonariensis cabanisii*. p. 361
8. Large, body black or dark brown, tail yellow with central pair of rectrices black..... 9
 - Tail not all yellow except for central pair of rectrices..... 12
9. Remiges and entire back reddish brown.
 - Montezuma Oropendola, *Psarocolius montezuma*. p. 336
 - Remiges black or blackish..... 10
10. Back and wing coverts brown.
 - Black Oropendola, *Psarocolius guatimozinus*. p. 339
 - Wings entirely black or blackish..... 11
11. Head dark brown.
 - Chestnut-headed Oropendola, *Psarocolius wagleri*. p. 341
 - Head black or blackish.
 - Crested Oropendola, *Psarocolius decumanus melanterus*. p. 344
12. Rump uniform with back and tail; head and/or chest orange-yellow.
 - Yellow-headed Blackbird, *Xanthocephalus xanthocephalus*. p. 377
 - Rump differs from color of back or tail..... 13
13. Rump red.
 - Scarlet-rumped Cacique, *Cacicus uropygialis*. p. 349
 - Rump not red..... 14

14. Broad buffy band across nape, rump white.
 male Bobolink, *Dolichonyx oryzivorus*
 in alternate (breeding) plumage. p. 381
 Rump not white..... 15
15. Undertail coverts yellow, rest of undersurface black.
 Yellow-rumped Cacique, *Cacicus cela vitellinus*. p. 346
 Most of undersurface not black..... 16
16. Throat to belly bright red, rest of body black, or body streaked brown with
 patch of red on belly and bend of wing.
 Red-breasted Blackbird, *Leistes militaris militaris*. p. 378
 No red on body..... 17
17. Upper surface streaked brown..... 18
 Upper surface not streaked..... 21
18. Undersurface yellow, with black patch..... 19
 Undersurface buffy..... 20
19. Large, more than 180 mm.
 Eastern Meadowlark, *Sturnella magna subulata*. p. 379
 Small, less than 155 mm.
 adult male Dickcissel, *Spiza americana*. p. 334
20. Crown with broad, buffy central stripe.
 male in basic plumage or female Bobolink, *Dolichonyx oryzivorus*. p. 381
 Crown without broad stripes.
 female or immature Dickcissel, *Spiza americana*. p. 334
21. Undersurface rich brown or yellowish green.
 Orchard Oriole, *Icterus spurius spurius*. p. 365
 Undersurface yellow or orange..... 22
22. Undersurface bright orange or washed with orange.
 Northern Oriole, *Icterus galbula galbula*. p. 375
 Undersurface yellow and black..... 23
23. Entire back yellow.
 Yellow-backed Oriole, *Icterus chrysater gairaudii*. p. 373
 Upper back black..... 24
24. Head black.
 Black-cowled Oriole, *Icterus dominicensis praecox*. p. 367
 Head yellow or orange..... 25
25. Head orange.
 Orange-crowned Oriole, *Icterus auricapillus*. p. 368
 Head yellow.
 Yellow-tailed Oriole, *Icterus mesomelas*. p. 369

**SPIZA AMERICANA (Gmelin): Dickcissel, Arrocero
Pasajero Americano**

Emberiza americana Gmelin, 1789, Syst. Nat., 1(2), p. 872. (New York.)

Medium size; upper surface mostly streaked brown; undersurface white with yellow wash on breast; male with black lower throat.

Description.—Length 135-154 mm. Adult male in alternate plumage, lores white, superciliary rich yellow; fine line around lower rim

of eye white; crown, nape, sides of head and of breast gray; crown tinged greenish; rest of upper surface brown, with upper back streaked blackish; wing coverts reddish brown; remiges and rectrices blackish brown; tertials edged light brown; upper throat white; moustachial stripe begins white, becomes rich yellow and terminates white; lower throat and upper breast black in shape of a V; rest of breast and center of belly rich yellow; rest of undersurface white; bend of wing dark yellow; underwing coverts white, tinged yellow.

Male in basic plumage duller, with feathers of black bib tipped buff.

Female, like male, but duller, with crown and nape light brown instead of gray, a thin gray stripe on sides of throat and across bottom of throat; yellow less extensive and black absent.

Measurements.—Males (10 from the breeding range, taken in May), wing 78.1-84.8 (82.1), tail 51.4-61.5 (58.0), culmen from base 14.3-15.8 (15.1), tarsus 21.4-23.4 (22.4) mm.

Females (10 from the breeding range, taken in April and May), wing 70.5-77.2 (74.6), tail 50.3-58.6 (54.3), culmen from base 13.3-15.5 (14.6), tarsus 19.3-22.6 (21.3) mm.

Migrant and winter visitor from the north. Fairly common and sometimes abundant as a migrant on the Pacific slope; on the Caribbean slope more erratic. Less common in winter, mainly on the Pacific slope. Most of the population winters in northern South America. In Chiriquí, the Dickcissel has been collected as high as 1200 m at Boquete, where W. W. Brown, Jr., took a male on January 24, 1901 (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 70). In January of 1956, I found 2 in a pasture on Isla Coiba, off the Pacific coast. This species is commonest during September and April, but first appears in late August (Ridgely, 1976, p. 332) and stragglers remain until May and June—there is 1 specimen from June 16 (Eisenmann, Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 57). One banded at Almirante, Bocas del Toro, on October 18, 1963, was recovered at Algarrobo, Magdalena, Colombia, in February 1964 (Loftin, Rogers, and Hicks, Bird-Banding, 1966, p. 43). Although less common on the Caribbean slope, Wedel took several in San Blas at Permé and Obaldía between September 11 and May 10 (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 372).

As a migrant, the Dickcissel is sometimes extraordinarily numerous. I have seen flocks containing thousands of birds. When flushed from the ground they resemble shorebirds, until they land in a tree; after ascertaining that all is safe they drop down to the ground again. They call constantly, giving twitters and more raspy notes. Skutch (A Nat-

uralist in Costa Rica, 1971, p. 103) has heard them singing in winter. During the winter their distribution is more erratic and they are usually found in smaller groups, in clearings and marshes where they feed on seeds. Country people often call these birds "veinticuatro" from their habit of ranging in little flocks that popularly are believed always to number 24 individuals. A Dickcissel killed in an October rainstorm at Almirante weighed 24.36 g and had enough fat to travel another 846 km (Rogers, Bird-Banding, 1965, p. 116).

**PSAROCOLIUS MONTEZUMA (Lesson): Montezuma Oropendola,
Chacarero de Montezuma**

FIGURE 27

Cacicus Montezuma Lesson, 1830, Cent. Zool., livr. 2, p. 33, pl. 7. (Mexico.)

Very large; narrow crest, head, upper back, throat, and breast black; wings and rest of body chestnut; central pair of tail feathers dark brown, others bright yellow; particolored bill.

Description.—Length, male 395-475 mm, female 347-398 mm. Adult male, head, nape, upper back, throat, and breast black; rest of upper surface, including wing coverts, chestnut; primaries blackish, with basal half of outer web of eighth primary chestnut, and chestnut increasingly extensive on outer web of inner primaries; secondaries chestnut on outer web, blackish on inner web, increasingly reduced toward inner secondaries; central rectrices blackish, shorter than others, which are bright yellow; sides, flanks, and abdomen chestnut; central undersurface black with feathers tipped chestnut; underwing coverts black. The basal half of the bill is black, the terminal half is orange; a bare frontal shield is blackish; patch of bare skin below eye bluish and pink.

Adult female, like male, but smaller and black more brownish on breast and rest of undersurface.

Immature, like adult, but brown areas are duller; bill dusky at base, less yellow at tip.

Measurements.—Males (10 from Panamá, Costa Rica, Guatemala, Honduras, and Nicaragua), wing 218.8-261.0 (236.7), tail 170.9-200.2 (181.6), culmen from base 71.5-81.1 (74.4, average of 9), tarsus 52.4-56.9 (54.5) mm.

Females (10 from Panamá, Costa Rica, Guatemala, Honduras, and Nicaragua), wing 187.3-208.2 (197.0), tail 146.0-163.5 (153.6), culmen from base 57.4-61.1 (58.8), tarsus 43.8-46.9 (45.2) mm.

Resident. Locally common in lowlands of the Caribbean slope in Bocas del Toro, less common farther east to the Canal Zone. It occurs as far north as eastern Mexico. In Bocas del Toro it has been recorded at Sixaola (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 343), Zegla, on the Teribe River (specimen collected by Austin Smith on May 16, 1927, now in the Havemeyer Collection at the Peabody Museum, New Haven, Connecticut), Almirante, and at Changuinola and Isla de Colón, in Almirante Bay. Eisenmann states that "it seems to reach its regular southern limit in this area, although there are a few records from the Caribbean coast of the Canal Zone" (Condor, 1957, p. 257). In March 1952, I saw several at El Uracillo, Coclé, and Chilar, Colón. The Montezuma Oropendola was collected in the Canal Zone region by McLeannan (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 52), 1886, p. 438) during the 19th century, but was not recorded there again until 1964 when N. G. Smith (*in litt.*) reported a colony in the Escobal Road area; in January 1969 Smith found a colony of 2 males and 12 females nesting in a big tree in a cow pasture on the Achiote Road southeast of the town of Achiote. This species can now be seen regularly on the Achiote and Escobal Roads and it has wandered to the Pacific side in the Rodman area of the southwestern section of the Canal Zone (Ridgely, 1976, p. 306). A specimen taken by M. J. Kelly in March 1921 at the Gaspar Savanna, near Chepo, eastern Province of Panamá is now in the Everhart Museum, Scranton, Pennsylvania. Smith also reports (*in litt.* to Eisenmann) seeing a flock on April 9, 1975, above Santa Fé, Veraguas, at about 700 m on the Pacific slope and also over the Continental Divide.

FIGURE 27.—Montezuma Oropendola, Chacarero de Montezuma, *Psarocolius montezuma*.

The large Montezuma Oropendola feeds almost entirely on fruit and nectar, for which it travels considerable distances from its colonial nesting sites. Its flight is crowlike and direct. When feeding high in the tree tops this species is rather shy, and some of its food habits may have been overlooked; in Costa Rica, Larry Wolf (Wilson Bull., 1971, pp. 197-198) saw an oropendola catch and kill a fledgling Black-faced Grosbeak (*Caryothraustes canadensis*) that was part of a flock feeding in a tree. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 528.5 g; a female weighed 241.8 g.

This is a very vocal species. The male sings through most of the year, delivering a series of loud gurgling notes as he bows forward and raises his wings and then brings himself upright again. Once at El Uracillo I saw a male display by calling and opening his wings before his mate, who was on the branch beside him. He then moved over and touched her with his bill, finally pecking her on the rump; this was repeated several times. Both sexes also have several loud clucking and cacking calls.

The Montezuma Oropendola nests in large and conspicuous colonies in open areas in trees that are inaccessible to most predators. I have found active colonies during February and March in Bocas del Toro and western Colón. One colony on the Changuinola Canal in Almirante had approximately 25 nests on February 20, 1958. Females always considerably outnumber males. The Canal Zone area colonies are active from January to at least May, or sometimes early June; by July, nesting trees are deserted, and birds wander about in noisy bands.

Skutch (Pac. Coast Avif., no. 31, 1954, pp. 287-304) has observed the nesting of this species in Costa Rica, where the season begins in January. One colony in a group of trees included 61 nests. The nests are placed on the outer twigs of trees from 13 to at least 33 m off the ground; they are hanging pouches 60 to 120 cm long and 18 to 23 cm in diameter near the bottom. It takes the female approximately 10 days, working alone, to weave the nest basket, which is made of long fibers of banana leaves, vines, and palm leaves, and she spends another 3 to 6 days adding dead or dying leaves to the lining. Much of the nest material is brought from far away, but oropendolas also steal whatever they can from unattended nests. When not actually courting, the sexes ignore one another in the nest tree; the males provide no assistance in building or later in incubation or feeding the young, but they serve as sentries and accompany females gathering nest material.

An egg in the British Museum collected in Costa Rica by C. F. Underwood was long and oval, dull buffy white with numerous scattered

scrawls and other irregular markings partly overlaid by shell so that they vary from dull chocolate and dull cinnamon to faint purple; it measured 43.8×26.3 mm. Three eggs measured by Skutch averaged 38.1×24.3 mm.

These oropendolas are sometimes parasitized by the Giant Cowbird (*Scaphidura oryzivora*). Although they attempt to drive the intruders out of their nest tree, a few cowbirds inevitably succeed in depositing an egg. Only some of the female oropendolas recognize the egg as foreign and remove it.

The incubation period is 17 or 18 days (Smith, Nature, vol. 219, 1968, p. 692) and the young remain in the nest approximately 30 days, during which time they are fed fruit. When they emerge, the young are quite large and able to fly a few hundred yards, even though they have never before had space to stretch their wings. The young are immediately led from the conspicuous and isolated nest tree to the safety of the forest.

This species and *P. guatimozinus* have often been separated in the genus *Gymnostinops*.

**PSAROCOLIUS GUATIMOZINUS (Bonaparte): Black Oropendola,
Chacarero Negro**

Ostinops guatimozinus Bonaparte, 1853, Compt. Rend. Acad. Sci. Paris, 37, p. 833.
(Garrapata, middle Río Magdalena, near Malena, Antioquia, Colombia.)

Very large; few feathers of central crown elongated, forming a thin crest; all black except for dark chestnut scapulars, lower back, upper tail coverts, and abdomen, and bright yellow tail; particolored bill.

Description.—Length, male 464–481 mm, female 387–396 mm. Adult (sexes alike except for size), entire body black except middle of back to upper tail coverts, abdomen, and undertail coverts dark chestnut, darkest on rump and upper tail coverts; wing coverts dark chestnut, remiges black; central pair of rectrices black, shorter than others, which are bright yellow; underwing coverts black.

A male collected January 31, 1964, at Pucro, Darién had the iris light wood brown; swollen cheek patch deep clear blue; bare skin behind eye paler blue; lower edge of lores like cheek patch; bare forehead reddish orange, changing to orange from most of center; top of bill orange-red; rest of bill black; top of tongue pale gray; inside of mouth black except for tip, this orange-red, shading distally to yellowish on mandible; bare skin on side of throat dull red, bordered narrowly by bluish white, this color extending on either side of central feathering inside rami; tarsus and claws black; underside of toe pads dull yellow,

blackier on distal pads. Two females taken at Pucro on February 2, 1964, had the soft parts like the male's except that the bare forehead was dull red.

Measurements.—Males (7 from Darién and Colombia), wing 241.0-264.0 (253.9), tail 184.5-201.0 (195.3), culmen from base 65.2-71.2 (68.1, average of 6), tarsus 60.0-63.6 (55.8) mm.

Females (9 from Darién and Colombia), wing 198.0-228.0 (205.8), tail 154.6-180.0 (168.5), culmen from base 51.6-67.7 (57.1, average of 8), tarsus 43.7-59.3 (48.6) mm.

Resident. Fairly common in the lowlands of Darién, and may range west into the upper Bayano River valley in eastern Province of Panamá, where there are some recent unconfirmed sightings (Ridgely, 1976, p. 306) that may be referable to Crested Oropendolas. The Black Oropendola is also found in northern Colombia. In Darién it has been collected at Marraganti by E. A. Goldman in 1912, at Tapalisa, Chepigana, and El Real on the Río Tuira by W. B. Richardson in 1914 and 1915, and on the Río Sambú by the Fifth George Vanderbilt Expedition in 1941. Other Darién specimen records (*vide* Eisenmann) are from Santa Fé, Río Chucunaque, and Río Pirre.

In 1964 I found a group of males at a nest colony at Pucro, Darién, in late January. The colony was in a tree at the border of a stand of platanos. Near or at the nest, the males called hollowly and then fell forward to hang upside down briefly. This was varied by the hollow calls being followed by high pitched excited notes—*kwee*, *kwee*, *kwee* or *keea*, *kee-a*, *kee-a*, often uttered as the bird dashed away in sudden flight. The colony's 20 or so nests were mostly complete and were grouped closely in the ends of two or three branches. On the ground were the nests of last season that apparently had been torn down by the birds when they started the new construction; many of them were complete. One that I examined had many small, partly cut up dried leaves in the bottom.

A Black Oropendola that I watched feeding in a flowering tree at Pucro thrust its bill into a closed flower and gaped to open the corolla. I was interested to find when skinning one of these birds that the bare blue patches, projecting roundly, and hard to the touch, covered a jaw muscle of similar size.

Females that I collected in early February were nearly in laying condition, but in the evenings all the birds I saw were flying to roosts rather than remaining at the nest tree.

Two eggs from Remedios, Antioquia, Colombia, in the Salvin-Godman collection at the British Museum are oval, dull white, with

the shell very slightly roughened, have a faint gloss, and are marked with a few widely scattered irregular spots that vary from cinnamon and chocolate to purple, scattered among which are many tiny dots of the same color. They measure 34.0×24.8 and 35.2×24.8 mm.

**PSAROCOLIUS WAGLERI (Gray): Chestnut-headed Oropendola,
Chacarero Común**

FIGURE 28

C. [acicus] Wagleri G.R. Gray, 1845, *Genera, Birds*, 2, p. 342, pl. 85. ("Coban," Guatemala.)

Zaryhynchus wagleri ridgwayi van Rossem, 1934, *Bull. Mus. Comp. Zool.*, 77, p. 405. (Limón, Limón, Costa Rica.)

Large; few narrow feathers of central crown elongated, forming a thin crest; head, rump, flanks, and abdomen dark brown; wings and rest of body black; tail bright yellow.

Description.—Length, male 336-353 mm, female 273-289 mm. Adult male, head, nape, throat, and upper breast bay; rump, upper tail coverts, flanks, lower abdomen, and undertail coverts chestnut; rest of body and wings iridescent black; central pair of rectrices (slightly shorter than others) and outer web of outermost pair black, others bright yellow; underwing coverts black.

Adult female, like male, but smaller, and less glossy black (brownier) below.

A male collected at El Copé, Coclé, on February 23, 1962, had the iris pale blue, tip of bill extending back on cutting edge of mandible and on base of rami and around base of pileum light neutral gray; rest of bill yellowish buff; tarsus, toes, and claws black. Some males have the bill greenish yellow with a dusky tip (Eisenmann). A female taken at Puerto Armuelles, Chiriquí on January 30, 1966, had the iris pale blue; bill light greenish yellow changing to pale neutral gray at tip; inside of mouth including top of tongue pale neutral gray; tarsus and toes fuscous-brown; claws black.

Measurements.—Males (10 from Panamá), wing 187.0-227.0 (214.1), tail 124.8-144.0 (133.5), culmen from base 62.4-72.4 (66.1), tarsus 37.7-41.1 (40.0) mm.

Females (10 from Panamá), wing 145.4-161.9 (152.1), tail 100.0-117.3 (110.0), culmen from base 46.6-52.0 (49.9), tarsus 30.1-33.8 (31.8) mm.

Resident. Common but local, in the humid lowlands of both slopes in forests, second growth, borders, and open areas that have trees suitable for nesting. More local on the Pacific slope, where it is absent en-

tirely from the drier parts of the Azuero Peninsula and from southern Coclé. This species has been recorded in the foothills as high as 1350 m (Ridgely, 1976, p. 306); Frank Hartman collected a female at El Volcán (1230 m), Chiriquí (now in the collection of Ohio State University) and I have seen them feeding in a banana plantation at 1200 m at Santa Clara, Chiriquí.

FIGURE 28.—Chesnut-headed Oropendola, Chacarero Común, *Psarocolius wagleri*, male.

The populations from Nicaragua southward have in the past been recognized under the name *ridgwayi* and are supposed to be characterized by paler coloration. The series in the Smithsonian collection indicates that if there is a point of demarcation between northern and southern populations, it is somewhere south of Panamá, whereas birds from Mexico through Panamá do not show any geographic variation. Therefore, *ridgwayi* becomes a synonym of *wagleri*. There is as yet insufficient material from South America for further nomenclatural action.

This is the most widespread oropendola in Panamá. Its nest colonies, sometimes with as many as a hundred long, globular pouches hanging from an isolated tree or grove, often on the side of a well-traveled highway or even in front of a building (as at Coco Solo Hospital), are

a familiar sight. Like other oropendolas, this is a highly vocal bird. Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 53) lists some of its calls as a "liquid croak, *grwackoo*, *grwackoo*, *grwak*, *grwak*; often *grwackoo* alone; also a series of gurgling notes like the sound of dripping water, *plup*, *plup*, *plup*, *plup-looupo*; also *plup* alone." Eisenmann also reports watching a male giving a liquid song, *oo-loo-oo*, *tloo*, *coo-oo*, *tloo-coo-oo*, in late April. Chapman (Bull. Amer. Mus. Nat. Hist., vol. 48, art. 3, 1928, pp. 132-133) lists several other calls. Males also produce a variety of noises with their wings in flight that are part of courtship displays.

The Chestnut-headed Oropendola feeds high in trees. It often moves in groups to and from the nesting colony, and during the nonbreeding season moves through the forest in noisy flocks. One collected by E. A. Goldman at Cana, Darién, on June 19, 1912, contained acridid fragments 38%, elytra of an otiorhynchid 2%, about 550 seeds and 2 other indeterminate 60%. The large mass of seeds was apparently from berries. Leck (Auk, 1974, p. 163) has observed this species feeding on the nectar of the large white flowers of the balsa tree (*Ochroma limonensis*). Two males collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 213.4 and 239.4 g; 2 females weighed 134.2 and 141.3 g.

At Barro Colorado Island, Canal Zone, where Chapman (*op. cit.* pp. 123-166) investigated the nesting habits of this species in great detail, birds return to a previously used nest tree in late December for brief inspections, and females begin constructing new nests in early January. In 1964, at Tacarcuna Village in Darién I found a colony on March 8 to which pairs came occasionally to inspect and peer into old nests, usually visiting several in turn. By March 12 they came in groups of 12 or 15 and there was activity in the nest tree all day, although still no new construction. At Barro Colorado most breeding activity ended by the beginning of the rainy season in May, although a few nests were active into July. The nest tree is always chosen for its situation beyond the reach of most predators. In Darién I found a group of nests swinging in a tree over the Río Imamadó and another at Jaqué on a tree whose trunk had a large wasps' nest. Usually a colony contains 25 to 50 active oropendola nests. The nests rarely survive from year to year in usable condition, so new ones are built each season. They are placed on the outermost twigs that are about the diameter of a pencil in width; most nests are on the leeward side of the tree, to avoid damage from the trade winds that blow during this season. The nests seem to be placed as near to one another as possible.

Male oropendolas go through a noisy and aggressive courtship peri-

od, during which several may pursue a single female until one has established his dominance and the other males look elsewhere. At the Barro Colorado colony Chapman studied, females outnumbered males about 6 to 1. Males may accompany particular females as they go off to gather nesting material, but as soon as incubation begins the males lose interest.

The nest itself is a long pouch woven out of lengthy rootlets, tendrils, and fibers that are gathered in the forest or stolen from neighbors. Chapman found nests that measured from 55 to 100 cm in length; the diameter of the pouch was always 19 cm. At the beginning of the season most nests take about 31 days to complete; later, however, they are built more rapidly. The two eggs that form a clutch are "pale blue with numerous irregular shaped brownish-black marks varying in size from a pinpoint to a currant and clustering most thickly about the larger end" (Chapman, *op. cit.*, p. 147). The one egg Chapman was able to measure was 33 by 22 mm.

The incubation period is 17 days and the young emerge from the nest approximately 33 days after hatching. Incubation and care of the young are performed entirely by the female. The oropendolas have two avian parasites to contend with, the Giant Cowbird (*Scaphidura oryzivora*) and the Piratic Flycatcher (*Legatus leucophaeus*). The cowbird is recognized as an enemy from the time the female cowbirds first visit the colony tree, when nests are still under construction; groups of oropendolas attempt to drive them away, but inevitably a few cowbird eggs are deposited in oropendola nests. Chapman mentioned no incidents of oropendolas recognizing the strange egg and removing it. The Piratic Flycatcher attempts to harass at least 1 female oropendola to the point where she deserts her nest, which the pair of flycatchers then take over and use as their own. In 1928 a pair of these flycatchers so distracted the birds Chapman was observing that the entire colony deserted its tree.

This species has often been separated in the genus *Zarhynchus*.

**PSAROCOLIUS DECUMANUS MELANTERUS (Todd): Crested
Oropendola, Charcarero Crestado**

Ostinops decumanus melanterus Todd, 1917, Proc. Biol. Soc. Washington, 30, p. 3.
(Las Vegas, Santa Marta, Colombia.)

Large; a few feathers of central crown elongated, forming a slight crest; all black except for chestnut rump and undertail coverts, and yellow tail. Bill, extended to form a frontal shield, pale yellowish green or waxy yellow, without dusky tip.

Description.—Length, male 412-442 mm, female 319-340 mm. Adult (sexes alike except for size), entirely black except for rump, lower abdomen, and upper and undertail coverts, which are chestnut, and for tail, in which all but central pair of rectrices are bright yellow; central pair of rectrices black, shorter than others.

Immature, similar, but black and chestnut areas duller, sometimes with brown edging; bill yellowish brown or brownish white.

A female collected at El Real, Darién, on January 23, 1964, had the iris dark gray; bill ivory, slightly more yellowish on basal third; tarsus, toes, and claws black. A male taken at Alanje, Chiriquí, on March 12, 1960, had the iris bright blue.

Measurements.—Males (10 from Panamá and Colombia), wing 196.0-236.0 (213.7), tail 170.2-207.0 (188.0), culmen from base 57.9-64.8 (60.4), tarsus 49.3-51.4 (50.6) mm.

Females (10 from Panamá), wing 160.0-179.8 (168.6), tail 137.1-159.0 (151.6), culmen from base 46.0-49.3 (47.7), tarsus 39.0-43.3 (41.3) mm.

Resident. Locally common in forest borders, second-growth woodlands, and clearings in the lowlands of the Pacific slope from western Chiriquí (Buguba, Divalá, Concepción), where it is scarce with few recent reports, to the Colombian boundary in Darién, including the Azuero Peninsula (south to Tonosí and Pedasí, Los Santos), ranging at least locally to the lower edge of the Subtropical Zone (above El Valle, Coclé; Cana, Darién). In March 1981 it was the only oropendola present at Cana; here it was abundant and nesting (Ridgely, *in litt.*). On the Caribbean side it is found in scattered colonies along the Río Indio, from above the mouth near Chilar, Colón to El Uracillo, Coclé, and in the Canal Zone and vicinity (Ridgely, 1976, p. 307). This species is much commoner in Darién than it is further west, and although unrecorded from San Blas, will probably be found there as it is common in adjacent northern Colombia. In the Bayano Valley of eastern Province of Panamá, however, it is still outnumbered by *P. wagleri*. Other races of *Psarocolius decumanus* are found in Colombia east of the Andes, south through Ecuador, Peru, and Bolivia to northern Argentina and east to the Guianas, Trinidad and Tobago, and much of Brazil.

The habits of this species are very like those of other oropendolas. Its calls are similar in quality to the vocalizations of *P. wagleri*, although they seem less varied and most are lower in pitch. It nests in colonies, often in smallish *Cecropia* trees, sometimes in association with *P. wagleri* or with Yellow-rumped Caciques (*Cacicus cela*). A colony

I found at Chilar, Colón, on March 7, 1952, had 15 or 20 nests in a tree over the Río Indio. Their baglike nests give the oropendolas the local name of *chacarero*, because the nest suggests the *chacara*, a knit bag used by the country people. Salvadori and Festa (Bol. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 14, no. 339, 1899, p. 5) noted that a native name in Darién was *uropendolo*.

The nesting season in Panamá seems to begin later than that of other oropendolas. On March 9, 1951, I shot 2 females at La Campana, Panamá, that had ovaries beginning to develop. On March 22, 1949, I saw females looking at nesting sites at Chico, Panamá. I saw females carrying food to young in the nest on April 22, 1949, at Chepo, Panamá. In March 1981, Ridgely (*in litt.*) found nests under construction in Cana, Darién. In the Canal Zone the nesting season extends into late June (Ridgely, *in litt.*). Courtship and nest construction by the race *P. d. insularis* on Trinidad are discussed in great detail by Drury (Zoologica, 47, pt. 1, 1962, pp. 39-58). A photograph in Nature (vol. 219, 1968, p. 690) shows a light-colored egg with a few dark marks. Schafer (Bonner. Zool. Beitr., 1951, pp. 1-148) writes that in Venezuela eggs were white, pale gray, or pink with dots and spots of black irregularly scattered over the larger end. Two eggs measured 23×34 mm and each weighed 12 g. The clutch was 1 or 2.

When preparing specimens of this oropendola I noted that the oil gland was very large and contained considerable thickened fluid which I did not encounter in any other oropendola. Two females collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 178.3 and 191.8 g.

In July 1975, Ridgely (*in litt.*) found a roost at Matuganti (above the mouth of the Río Pucro) that contained 2000-2500 oropendolas and caciques. Of these, probably over 1000 were Crested Oropendolas, with Yellow-rumped Caciques, Black and Chestnut-headed Oropendolas, and Giant Cowbirds in diminishing proportions.

**CACICUS CELA VITELLINUS (Lawrence): Yellow-rumped Cacique,
Charro de Rabadilla Amarilla**

Cacicus vitellinus Lawrence, 1864, Proc. Acad. Nat. Sci. Philadelphia, p. 107.
("New Grenada, Isthmus of Panamá.")

Rather large; all black except for bright yellow lower back, rump, undertail coverts, and small patch on wing coverts; bill pale yellow.

Description.—Length, male 268-292 mm, female 223-233 mm. Adult male, body all black except for lower back to upper tail coverts, lower abdomen, and undertail coverts, which are rich yellow to orange-yellow;

wings black with patch of rich yellow on central coverts, often partially concealed; tail black with basal quarter of feathers paler yellow.

Adult female, like male, but smaller, and black duller, tinged with olive below.

A male collected at Cañita, Province of Panamá, on February 7, 1962, had the iris light blue; bill dark ivory-yellow with a very narrow line of neutral gray around entire base, faintest on lower border of mandibular rami; tarsus, toes, and claws fuscous-black. A female taken at Juan Mina, Canal Zone, on January 11, 1961, had the iris light blue; bill yellow, shading to very pale grayish white at tip; tarsus and toes fuscous-brown.

Measurements.—Males (10 from Panamá), wing 168.5-183.0 (175.3), tail 109.5-118.5 (115.2), culmen from base 36.0-40.5 (39.1), tarsus 31.4-34.3 (33.2) mm.

Females (10 from Panamá), wing 120.0-140.1 (130.8), tail 88.5-97.0 (92.9), culmen from base 31.6-34.2 (32.5), tarsus 27.5-32.2 (29.4) mm.

Resident. Fairly common in forest, second-growth woodlands, borders, and clearing in the lowlands. Most numerous in Darién and the Río Bayano Valley of eastern Province of Panamá. On the Pacific slope found from Soná (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 64) and Paracoté (Aldrich, Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 127), Veraguas, east to Colombia, and on the Caribbean slope eastward from the Río Indio in western Colón. In the lowlands of the Canal Zone area, it extends across the Isthmus, and in Darién it has been collected as high as 540 m by E. A. Goldman at Cana, on May 22, 1912. In March 1981, Ridgely (*in litt.*) found it at Cana up to 700 m. This race is also found in northern Colombia; other races occur as far south as northern Bolivia and central Brazil.

The Panamá form, *vitellinus* (Lawrence's Cacique), was formerly considered specifically distinct from the Amazonian and Guianan *C. cela cela*, from which it differs in the lesser extent of, but richer, yellow in the wings and tail. The nominate race is well known throughout its range as a mimic of other birds and of the sounds of mechanical objects; this is unreported for *vitellinus*. In Venezuela nominate *cela* is often caged because of its vocal abilities.

The Yellow-rumped Cacique resembles the oropendolas in many ways, and sometimes nests in the same trees with them, although usually in a group somewhat removed. Like the oropendolas, it feeds high in trees, where it is often difficult to observe. Once at Cañita, Panamá, I was able to see a flock well enough to note that the birds were eating

figs. E. A. Goldman recorded the stomach contents of 2 that he collected: one contained 11 caterpillars, 9 of one species, 2 of another 55%, 25 seeds with bits of red fruit pulp surrounding them 45%; the other had bits of 2 ants 10%, a large otiiorhynchid near *Lachnopus* 10%, remains of two other weevils 5%, elytron of another beetle trace, 58 seeds undetermined, a few other smaller ones, and a mass of vegetable fiber 75%. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 94.9 g.

Caciques call constantly with a series of highly varied conversational notes; these are closely similar to those of *Psarocolius wagleri*, but with fewer bubbling calls and explosive notes, and, in all, more musical. Some that I noted are *wick-a-weo*, *char-che-ar*, *chock-chu-chou*, *wicka-wicko*, and *chut-chu-chut*. The female seems limited to liquid chirps and clucks.

Although they sometimes nest with oropendolas, the cacique's breeding season appears to start somewhat later. It may depend on locality and the rainfall or dryness of a particular year. On March 9, 1957, at Pedasí, Los Santos, I watched a male displaying before a female perched beside him; the male arched his neck and raised the feathers there and on the rump and gave his gabbling calls. During April of 1949, I found several colonies in the Province of Panamá that were still under construction: near Cerro Azul I saw a group starting a new colony in a tree in recently cleared fields at San Miguel on April 19, and at Chepo I watched females carrying nest material to a colony on April 26. Skutch, who studied this species in 1935 at Barro Colorado Island in the Canal Zone (Pac. Coast. Avif. no. 31, 1954, pp. 305-315) found them building nests there during April and early May.

The nest is a hanging pouch woven from strips of palm fronds and fibrous strands of leaves and vines, and is lined with softer fibers. It is 30 to 45 cm long, generally shorter and more oblong than oropendola nests. Eisenmann points out that the nests are placed closer together, often touching each other. In South America caciques have evolved an interesting adaptation that makes nesting in the rainy season less difficult: when the rains begin in the middle of the breeding cycle the female weaves a roof over the nest entrance so that the interior remains dry (Cherrie, Mus. Brooklyn Inst. Arts and Sci. Bull., 2, 1916, p. 204). This has not been observed in Panamá, but it is certain that Yellow-rumped Caciques have not finished raising their young by the beginning of the rainy season. When not in a tree surrounded by a clearing, the colony is sometimes over water, as the 1 Skutch watched and 1 that I found at Chepo that consisted of 15 nests hung from a pendant branch

2 or 3 m above the Río Mamóní. Very frequently a tree containing a wasp colony is chosen; *Cecropias* that host stinging ants are sometimes used. At the Barro Colorado colony there were 8 males and 15 females; as in the oropendolas, the females build the nest and raise the young independently.

The eggs of *C. c. vitellinus* have not been described, but those of the nominate race in Venezuela are "white with a faint bluish wash, marked with specks, spots and blotches of chestnut over vinaceous brown" (Cherrie, *op. cit.*, p. 205); in Venezuela the clutch consists of two eggs. The incubation period is 16 days (Smith, *Nature*, vol. 219, 1968, p. 692). The first eggs at Skutch's colony hatched on May 12; 3 days later over half the nests had young. The colony, however, was pillaged by a snake (*Spilotes pullatus*), which destroyed the contents of all but 2 nests. Less severe nuisances endured by the colony were the parasitic Giant Cowbird (*Scaphidura oryzivora*), although Skutch never saw one actually entering a nest, and the Piratic Flycatcher (*Legatus leucophaius*), which harassed the caciques but never took over one of their nests.

**CACICUS UROPYGIALIS (Lafresnaye): Scarlet-rumped Cacique,
Charro de Rabadilla Escarlata**

Cassicus uropygialis Lafresnaye, 1843, *Rev. Zool.* [Paris], 6, p. 290. ("Bogota," Colombia.)

Medium size; all black with scarlet rump.

Description.—Length 200-235 mm. Adult (sexes alike), all black, with scarlet rump and lower back.

Juvenile, like adult, but red rump duller, brownish orange.

These are forest birds, found in pairs or groups of half a dozen or more, that range mainly through the higher branches. Skutch, who has observed them in Costa Rica (*Pub. Nutt. Orn. Club* no. 10, 1972, pp. 173-181) noted that there they were often loosely associated with other treetop birds, including oropendolas, Black-faced Grosbeaks (*Caryothraustes poliogaster*), Purple-throated Fruitcrows (*Querula purpurata*), and White-fronted Nunbirds (*Monasa morphoeus*). Much of their movement is behind leaf cover, so that often it is not easy to distinguish them from related species of caciques. The light-colored bill is usually prominent, but aside from this they appear plain black, as the red of the lower back is ordinarily covered by the wings. They often whistle musically as they move about, and display considerable curiosity. At any unusual circumstance they may come with flitting wings and jerking tails to call and scold vociferously near at hand. They feed

on insects, fruit, and nectar. Four males collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed from 62.5 to 71.7 g; 5 females weighed from 50.0 to 57.6 g.

Although while they range in small groups or pairs during the day, at night they tend to gather to sleep in roosts. On the slopes of Cerro Pirre in Darién in late January and early February of 1961, several hundred came to tall trees bordering an open marsh near our camp at 450 m elevation on the upper reaches of the Río Seteganti. Small bands began to arrive after sunset to perch in the high tree crown where they moved about restlessly until finally settled for the night. In the morning they began to call as soon as it was light, and then flew about with noisy wings through the fog-screened treetops until the sun appeared, when they spread out into the adjacent forest. Another roost in early March was located in a band of tall trees along the mouth of the Quebrada Candelaria, in the Province of Panamá, where that stream joins the Río Pequení. Here the birds assembled in the forest behind the clearing and came to the roosting area in groups of 25 to 30. These swept in over the tops with much calling and wing noise, rising and falling in undulating lines.

This species ranges from Nicaragua south through Costa Rica, Panamá, Colombia, and Ecuador to northern Peru. Three subspecies are recognized currently, of which 2 (*microrhynchus* and *pacificus*) are found in Panamá. These differ from the typical race, *Cacicus uropygialis uropygialis*, by their smaller size. The race *microrhynchus* has often been treated as a separated species, *C. microrhynchus*, but *pacificus* seems intermediate in bill shape and geographic position.

CACICUS UROPYGIALIS MICRORHYNCHUS (Sclater and Salvin)

Cassidix microrhynchus Sclater and Salvin, Proc. Zool. Soc. London, 1864 (Feb., 1865), p. 353 (Lion Hill, Canal Zone.)

Characters.—Compared with *C. u. pacificus*, bill, particularly the culmen, more slender, with the mandibular rami normal in form, not swollen laterally; concealed white bases of feathers of dorsal surface found at base of hindneck only, in some specimens absent.

A male collected at Juan Mina, Canal Zone, on January 14, 1961, had the iris pale blue; bill light yellow at base changing to greenish near center and continuing thus to tip; tarsus and toes fuscous-black. Females I have collected were similar.

Measurements.—Males (10 from Panamá), wing 122.0-136.5

(129.0), tail 83.3-96.5 (89.7), culmen from base 28.8-30.2 (29.6), tarsus 27.4-30.0 (28.8) mm.

Females (10 from Panamá), wing 109.7-117.3 (113.9), tail 77.5-87.3 (80.4), culmen from base 25.7-29.2 (27.5), tarsus 25.7-27.8 (26.9) mm.

Resident. Found in forested areas in the lowlands of both slopes from Chiriquí and Bocas del Toro to the eastern section of the Province of Panamá (Utivé) and eastern San Blas (Permé, Puerto Obaldía), ranging to 900 m in mountain areas (Santa Fé, Veraguas). To the west and north this race ranges through Costa Rica to Nicaragua. In Panamá it is absent from the savanna areas of the Pacific slope and there are no records from the Azuero Peninsula. Felling of the original forest has greatly reduced their range in Chiriquí, where Brown secured specimens at Divalá in November and December, 1900 (Bangs, Auk, 1901, p. 370), and on the Pacific slope of Veraguas, where Arcé found it near Santiago (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 53), 1886, p. 442). There are specimens from Puerto Armuelles and "Barú," Chiriquí, in the California Academy of Science taken by M. E. Davidson in November 1929. There appear to be very few, perhaps none, left in these areas today, although the bird is still fairly common on the Caribbean slope. Ridgely (*in litt.*) is unaware of any reports from Chiriquí or Pacific Veraguas other than above Santa Fé, where several groups were seen in January 1974 at about 900 m. In April 1980, Ridgely was struck by their abundance in the forests of the Changuinola River in western Bocas del Toro.

On March 25, 1949, I found a mated pair at Utivé, in the foothills of the Cerro Azul, Panamá, and Arbib and Loetscher (Auk, 1935, p. 237) included this as one of the species noted as breeding in or near the Canal Zone in July and August. On March 25, 1975, E. S. Morton and Eisenmann saw a female on Achiote Road, Canal Zone, building a nest hung from a tree branch, while in the same tree a male perched about 7 m away. On June 25, 1952, Eisenmann and J. Bull found a nest being built on a vine growing on a bridge between Fort Sherman and Fort San Lorenzo, Canal Zone.

Skutch (Pub. Nutt. Orn. Club, no. 10, 1972, pp. 173-181) has studied the species in Costa Rica, where he found that, unlike *Cacicus cela* and the oropendolas, *C. uropygialis* is monogamous and nests solitarily; other characters it shares with *Icterus* rather than the larger species are singing by the female and feeding of the nestlings by the male. N. G. Smith (*in litt.* to Eisenmann) found that birds about Almirante, Bocas

del Toro, on the Río Ciri Grande, Province of Panamá, and apparently in western Panamá east to the western part of the Canal Zone all nest solitarily, while in the eastern part of the Canal Zone (Madden Forest Preserve) eastward, colonial nesting apparently prevailed, although some solitary nesting occurred.

The nest is a long pouch—one measured 64 cm in length—placed in a tree from 4 to 33 m from the ground; often a tree containing a wasp colony is selected. Skutch found birds building nests in late April and early May. One nest contained two eggs on April 24; they were “white marked with a few light brown and blackish spots and some short scrawls on the thicker end, still fewer elsewhere.” Incubation is performed exclusively by the female. At one nest two eggs hatched by May 1; the young had pink skin, no down, and mouth interiors of pale pink. At 3 or 4 days their pinfeathers were sprouting and their eyes were partly open. The young were fed insects; unfortunately this nest was destroyed, so that Skutch could not observe their growth. Young, well-grown birds still accompany their parents and are fed by both of them; Skutch found one such family in mid-March, when a juvenile was being fed by both parents and had little success finding food on its own.

After breeding, these solitary nesters often gather in bands.

The voice of *C. u. microrhynchus* is far more musical than that of the Yellow-rumped Cacique, *C. cela*; it consists chiefly of loud, clear whistles. On June 23, 1952, Eisenmann noted a vocalization as a rather human-sounding whistle *wheew-whee-whee-whee-wheet*, sometimes abbreviated to *wheew-whee-wheet*. Characteristic also was a rather sweet, tremulous, though burry, or throaty, whistle, *ree-oo*, *ree-oo* varied to *kreéoo* or *shreew-shreew*.

An occasional adult male of this race shows a faint swelling on the outer face of the base of the mandibular rami, an indication of approach to the condition found in *C. u. pacificus*, but this is not usual. The 2 races are similar in size.

CACICUS UROPYGIALIS PACIFICUS Chapman

Cacicus uropygialis pacificus Chapman, Bull. Amer. Mus. Nat. Hist., vol. 34, Dec. 30, 1915, p. 657. (Alto Bonito, Río Sucio, Antioquia, Colombia.)

Characters.—Bill larger, with the bases of the mandibular rami distinctly swollen; concealed white on bases of the feathers of the dorsal area much more extensive, both in distribution and on the individual feathers.

Measurements.—Males (10 from Darién and Colombia), wing

122.2-137.0 (132.2), tail 87.8-94.9 (91.1), culmen from base 28.2-31.0 (29.6), tarsus 28.2-31.5 (29.5) mm.

Females (8 from Darién and Colombia), wing 113.1-122.5 (118.6), tail 76.0-85.2 (81.0), culmen from base 26.6-28.9 (27.9), tarsus 24.5-28.5 (26.5) mm.

Resident. Fairly common in eastern Darién, where it has been recorded from the mouth of the Río Piñas on Bahía Piñas, Jaqué, Río Jaqué, Cerro Quía, and Cerro Pirre; found also in western Colombia and in western Ecuador. From the somewhat scanty data, there may be a gap between the range of this form and that of *C. u. microrhynchus*. On the Río Jaqué I once found a flock of a half dozen feeding low in dense growth along the river. A male that I collected at Jaqué on April 13, 1946, was in breeding condition.

The vocalizations of this race include a whistled *teeo* or *keeo*, without the burry quality of the corresponding call of *microrhynchus* in the Canal Zone (Eisenmann, *in litt.*).

CACICUS HOLOSERICEUS HOLOSERICEUS (Deppe): Yellow-billed Cacique, Charro Piquihueso

Sturnus holosericeus W. Deppe, 1830, Preis-Verz. Säug., Vogel, etc., Mexico, pl. 1. (Alvarado, Veracruz, Mexico.)

Amblycercus holosericeus centralis Todd, 1916, Proc. Biol. Soc. Washington, 29, p. 95. (Rio Sicsola, Costa Rica.)

Medium size; entirely black; bill yellowish.

Description.—Length 202-222 mm. Adult (sexes alike), entirely black.

A male collected at El Llano, Province of Panamá, on February 4, 1962, had the iris orange; bill light yellowish green, except the nasal operculum and extreme base of maxilla on the side immediately below, which are neutral gray; a narrow line of neutral gray along side of mandible also; tarsus, toes, and claws neutral gray. A female taken the same day was similar.

Measurements.—Males (10 from Panamá), wing 92.0-105.6 (98.8), tail 88.5-101.2 (94.9), culmen from base 28.7-31.7 (30.6), tarsus 29.8-33.8 (32.3) mm.

Females (10 from Panamá), wing 85.9-96.8 (90.7), tail 84.0-99.0 (91.4), culmen from base 25.4-29.2 (27.3), tarsus 27.1-31.8 (30.3) mm.

Resident. Locally common in thickets of wooded borders, clearings, and second growth throughout the lowlands on both slopes of the mainland and more irregularly found in the foothills and lower highlands.

Mönniche (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, pp. 563-564) collected it on the Volcán de Chiriquí between 1590 and 2910 m and W. W. Brown, Jr., found it there between 2850 and 3090 m (Bangs, *Proc. New England Zool. Club*, vol. 3, 1902, p. 64). In Coclé it has been collected at 750 m at El Valle, and in Darién at 600 m at Cana. I have not found it in the lowland scrub of the drier eastern side of the Azuero Peninsula, though it occurs in the more humid western slope in this area, where Aldrich and Bole (*Scient. Publ. Cleveland Mus. Nat. Hist.*, vol. 7, 1927, pp. 24-25) considered it common in semi-deciduous coastal forest near Montijo Bay, Veraguas, and uncommon in rain forest between 300 and 900 m. This race also occurs north to central Mexico and south to northern Colombia; other races are found south to eastern Peru and Bolivia.

The race *centralis* of Costa Rica and Panamá, described by Todd (*Proc. Biol. Soc. Wash.*, 1916, 29, p. 95) as having the wings longer than the tail, rather than the reverse, as supposedly found in populations farther north, is not valid. Both Peters (*Bull. Mus. Comp. Zool.*, 71, no. 5, 1931, p. 475) and Hellmayr (*Cat. Birds Am.*, vol. 13, pt. 10, 1937, p. 43) concluded that differences are due to individual variation. In a large series of specimens from Panamá, as many have the tail longer than the wings as the reverse.

The Yellow-billed Cacique inhabits dense thickets in forest openings and edge, second growth, abandoned fields, and, occasionally even mangroves, mostly at their edge or near islands of higher ground where there is some low vegetation. It is far more often noted by its calls than its appearance. In handling these birds I noticed that they lack the pungent odor of the other caciques and oropendolas. The male has a variety of pleasant whistling notes as well as the harsh, often explosive, calls that are given by both sexes; one that I noted was a wrenlike chatter, *chruh-chruh-chruh*. When seen, the birds often seem quite jay-like in movement, often resting with the tail hanging straight down. Rarely does one stay long in the open. So far as has been reported, they feed exclusively on insects. Ridgely (*in litt.*) has at least once seen a pair attending a small army-ant swarm. He has also seen them in flowering and fruiting trees, but it was not clear that they were feeding on anything but insects. One that I was able to watch closely at Chiva Chiva, Canal Zone, was climbing slowly about in heavy undergrowth, keeping under cover. Several times I saw it pull masses of lodged dead leaves apart. Later it came out higher up on a slender dead branch that had some insect infestation. Repeatedly it thrust the

closed, chisel-pointed bill into the bark and then opened the two halves to pry off loose flakes.

This species is found in pairs all through the year and is rarely seen in groups. Its nest is a cup, not a pendant bag like that of typical *Cacicus*. Hallinan (Auk, 1924, p. 320) found a nest at Gatún, Canal Zone, on April 24, 1909. It was "in a crotch of a limb in a sparsely-leaved shrub, in the jungle, about 8 feet from the ground. It was closely woven with heavy grass and light twigs and thickly lined with finer grass, with a cavity $3\frac{1}{4}$ inches in diameter and 2 inches deep. Two eggs, light blue, sparsely spotted with black, denser at the larger end." Another nest, found at Summit, Canal Zone, on September 14, 1941 by Major General G. Ralph Meyer was of similar construction and contained two eggs that measured 27.2×18.0 and 27.7×17.8 mm. In Costa Rica, Skutch (Pac. Coast Avif. no. 31, 1954, p. 284) found fledged young accompanying their parents in early March, indicating a breeding season beginning no later than January. A newly hatched nestling he found in May had pink skin with no down, tightly closed eyes, and red mouth lining.

Eisenmann reports among other calls he has heard this species give in Panamá, a clear, emphatic, whistled *pur-weé-pew*; a rather sweet *wreeeeeeo*; a harsher *kweéyoo*; a *kwack-kwack-kwack*, sometimes with a buzz in it like *kzaak*.

Until recently this species was placed in a monotypic genus *Amblycercus*.

**SCAPHIDURA ORYZIVORA (Gmelin): Giant Cowbird,
Vaquero Gigante**

FIGURE 29

O.[riolus] oryzivorus Gmelin, 1788, Syst. Nat., 1(1), p. 386. (Cayenne.)

Cassidix oryzivora violea Bangs, 1900, Proc. New Eng. Zool. Club, 2, June 30, p. 11. (La Concepción, Santa Marta, Colombia.)

Psomocolax oryzivorus impacificus Peters, 1929, Proc. Biol. Soc. Washington, 42, p. 123. (Pasa Nueva, Veracruz, Mexico.)

Large; glossy black with violet sheen.

Description.—Length, male 305-346 mm, female 270-315 mm. Adult male, entirely glossy black with violaceous sheen. Shows neck ruff in display.

Adult female, much smaller, entirely black with less gloss and smaller ruffs than male.

A male collected at Puerto Armuelles, Chiriquí, on March 1, 1966,

had the iris light reddish brown; bill, tarsus, toes, and claws black. A female collected there that day was the same except for the iris, which was light mouse brown. At death, the reddish color of the iris changes within seconds to orange and then pale straw yellow (Olson, Proc. Wash. Biol. Soc., vol. 86, no. 34, 1973, p. 408).

Measurements.—Males (10 from Panamá and Colombia), wing 169.9-204.5 (191.1), tail 129.5-157.0 (145.4), culmen from base 35.9-39.9 (37.5), tarsus 41.7-48.0 (44.5) mm.

Females (10 from Panamá and Colombia), wing 145.5-167.0 (155.2), tail 112.5-133.0 (119.2), culmen from base 31.3-33.5 (32.7), tarsus 37.2-39.9 (38.8) mm.

FIGURE 29.—Giant Cowbird, Vaquero Gigante, *Scaphidura oryzivora*, male.

Resident. Uncommon but widespread in lowlands of both slopes, except in the drier areas; it is absent from the eastern side of the Azuero Peninsula, southern Coclé, and most of western Province of Panamá. In July 1975 and March 1981, Ridgely (*in litt.*) found this species more numerous in the Tuira lowlands of Darién than anywhere else in Panamá. In July they were in flocks of well over 100 birds; in March, the breeding season, the birds were more dispersed, but equally abundant. This species parasitizes oropendolas and the colonial caciques, so during their nesting season is found in the same areas; at other times it is dispersed over more open country, generally feeding and displaying on the ground.

The Giant Cowbird is found from southern Mexico to southeastern Brazil and northeastern Argentina. Peters (Proc. Biol. Soc. Wash.,

vol. 42, 1929, p. 123) is responsible for dividing this species in Middle America, and he also recognized the race *violea* Bangs, which Hellmayr (Cat. Birds Am., vol. 13, no. 10, 1937, p. 49) puts into *oryzivora*. The forms are supposedly separable on size, but Peter's statistics are not at all convincing. The break between *impacifica* of southern Mexico and *oryzivora* is supposed to be in central Panamá, but there are no detectable differences in size between birds from Chiriquí, Los Santos, the Canal Zone, Darién, or Colombia. A perfunctory examination of birds from north of Panamá disclosed no significant size variation. Nor are color differences (more violaceous as against more bronzy gloss in the nominate race) apparent. Until there is good supporting evidence for recognizing geographic variation in this species, it should be regarded as monotypic. Parkes (Condor, 1954, p. 229) has shown why *Scaphidura*, not *Psomocolax*, is the correct prior name for this genus.

The Giant Cowbird, formerly known in English as the Rice Grackle, is indeed sometimes found with cattle. It rides on their backs, where it picks off parasites, as well as taking insects flushed by the cattle as they move about. It also feeds independently in fields and pastures, on the exposed banks of rivers, and in trees. One I collected when it came to drink at a river in Los Santos had the throat filled with hulled rice eaten in a nearby field. Except for the brief season when these birds are depositing their eggs in the nests of oropendolas and colonial caciques, Giant Cowbirds are found in flocks in which females outnumber males; often they feed with other icterids or with Groove-billed Anis (*Crotophaga sulcirostris*). Courtship occurs when the birds are in flocks: the males parade with the neck ruff distended and the bill bent down on the foreneck; sometimes when approaching a female, a male will bob up and down while in this posture. When skinning a male I found that the neck skin was loose so that it slipped readily over the head, and a sheath of dermal muscle was spread broadly over the dorsal and ventral sides. Presumably this is associated with the displaying of the ruff.

Female Giant Cowbirds wait patiently around the colonies of oropendolas and caciques for the opportunity to deposit an egg in one of their nests. They are often driven away, but not so vigorously that it is impossible for them to slip in and out of a nest. There are several descriptions of the eggs. Twelve taken from a colony of *Cacicus cela* in Suriname (Haverschmidt, Bull. Brit. Orn. Club, 87, 1967, pp. 136-137) were pale blue with a few small black spots and hair lines. Eight were elliptical, four oval. They measured 30.2-35.3×25.1-28.0 mm. The

cacique eggs were white with similar black marks. Eggs taken from *Psarocolius* nests were longer, more elongated, with white ground color. An egg from Costa Rica was "spotless white, rough in texture and slightly glossed" and measured 36.1×26.0 mm (Crandall, Zoologica, vol. 1, no. 18, 1914, pp. 338-339).

In Panamá, N. G. Smith (Nature, vol. 219, 1968, pp. 690-694) found that eggs either mimicked in size and color those of their host or were "generalized" and non-mimetic. Response of the host species varied: at some colonies the hosts were more aggressive to visiting cowbirds and removed from the nest any eggs they detected as different from their own, while the entire population of other colonies was much more tolerant, neither driving away the cowbirds nor ejecting their eggs. Smith correlated tolerance with the absence of wasp or bee colonies in the nest tree, since these insects somehow repel parasitic botflies (*Philornis*) that place their eggs or larvae on nestlings; the young cowbirds—themselves covered with down at hatching and less vulnerable to the botflies—preen their downless nestmates and eat any insect parasites they find. In the colonies lacking protective insects, productivity of the host species was higher in nests with cowbirds than in those without. Smith suggested that the reason some female cowbirds continue to place their eggs in nests where they have a great chance of being rejected may be that those sufficiently mimetic also gain the protection from other predators provided by the wasps or bees.

The adult male Giant Cowbird is rarely seen at oropendola or cacique colonies, but fledglings often associate with young oropendolas and when begging for food may stimulate feeding by adult cowbirds if present (N. G. Smith *in litt.* to Eisenmann).

**MOLOTHRUS AENEUS AENEUS (Wagler): Bronzed Cowbird,
Vaquero Bronceado**

FIGURE 30

Ps.[arocolius] aeneus Wagler, 1829, Isis von Oken, 22, heft 7, col. 758. (Laguna, Veracruz, Mexico.)

Medium size; entirely black.

Description.—Length, male 195-208 mm, female 175-184 mm. Adult male, entirely shiny black, iridescent purple on wings and tail.

Adult female, entirely black, but with less iridescence than male; undersurface, especially at throat, often tinged dark brown.

An immature male taken at Puerto Armuelles, Chiriquí, on February

8, 1966, had the iris light mouse brown; bill dark dusky neutral gray; tarsus, toes, and claws black. In adult males the iris is red.

Measurements.—Males (10 from Panamá and Costa Rica), wing 111.0-120.6 (115.9), tail 68.8-82.0 (75.3), culmen from base 21.3-33.9 (22.5), tarsus 29.1-32.6 (31.0) mm.

Females (10 from Panamá), wing 95.5-106.0 (103.1), tail 65.4-72.1 (69.5), culmen from base 18.8-20.8 (19.9), tarsus 27.4-28.6 (28.2) mm.

FIGURE 30.—Bronzed Cowbird, Vaquero Bronceado, *Molothrus aeneus aeneus*, female (left), male (right).

Resident. Common in the lowlands of Bocas del Toro; local and less common on the Pacific slope from western Chiriquí to eastern Province of Panamá, although never recorded in the Canal Zone. In recent years it has been recorded regularly and in substantial numbers in the lower highlands of Chiriquí; e.g., 45 at Volcán on March 20, 1979 (Ridgely *in litt.*). Ridgely (1976, p. 308) writes that "most central Panamá reports are from the Tocumen/La Jagua area of eastern Panamá Province. Several recent sightings from the María Chiquita/Río Piedras area of eastern Colón Province (N. G. Smith et al.); also a flock of 8 seen on eastern shore of Madden Lake on February 10, 1973 (Eisenmann). Is perhaps becoming more numerous in central Panamá, and spreading eastward." This race is found north to south-central Texas. Other races occur in Arizona, Mexico, and Colombia. Parkes and Blake (Fieldiana: Zool., vol. 44, no. 22, 1965, pp. 207-216) have shown that

this species lacks any characters important enough to justify separating it from other molothrine cowbirds in the genus *Tangavius*. They also argue for the inclusion of *armenti* Cabanis of northern Colombia as a race of *aeneus*.

The Bronzed Cowbird is usually seen in open country where it feeds on the ground in fields and pastures, with or without cattle. It is often in flocks; one that I saw leaving a swampy roost at Tonosí, Los Santos, at sunrise, numbered 500 or so. On January 23, 1976, near El Rincón, Herrera, Ridgely noted over 600. If no conspecifics are available it may join flocks of other species—I once saw a cowbird at Chepo, Panamá, flying and feeding with a large band of Dickcissels (*Spiza americana*). A female Strauch (Bull. Brit. Orn. Club, 1977, p. 64) collected weighed 54.0 g.

The brilliant red of the iris of this species is probably due to perfusion with blood, since the eyes of 1 that I collected faded in half an hour to a deep reddish orange.

In courtship the males spread the ruff on the sides of their neck, arch their wings, bend the head so the bill touches the breast, bring the tail forward, and fluff out their other body feathers so that their body resembles a sphere. Sometimes they fly around this way, and once, on March 3, 1960, at Buena Vista, near Concepción, Chiriquí, I saw one all puffed out rise straight up a meter off the ground, where he hovered like a little helicopter in one spot for 10 or 15 seconds. To Eisenmann (*in litt.*), the display shows considerable resemblance to that of the Giant Cowbird. The male's song is like that of the northern Brown-headed Cowbird (*M. ater*), but wheezier and throatier (Friedmann, 1929, *The Cowbirds*, Springfield, Ill.: Charles C. Thomas, p. 325); the commonest call note of both sexes is a harsh *chuck*. When displaying, the male bounces up and down on the ground, meanwhile giving guttural yet bubbling notes, then a few high squeaky notes.

The Bronzed Cowbird lays its eggs in the nests of small birds of many families. Friedmann (Smiths. Misc. Coll., vol. 149, no. 11, 1966, p. 7) says 56 species are known as hosts over the cowbird's wide range; most build cup nests. Kiff (Wilson Bull., 1973, p. 73) lists 3 additional host species from Costa Rica. N. G. Smith (*in litt.* to Eisenmann) states that in the Almirante area of Bocas del Toro in late March 1965 both this species and the Giant Cowbird were frequenting and apparently parasitizing oropendola colonies. Smith collected both kinds of cowbirds to prove the point. I have no other information on hosts in Panamá.

Friedmann (*op. cit.*, 1929, p. 327) describes the eggs as "very light bluish green, bluish, or greenish, and without any markings whatsoever"; their average measurements are 23×18 mm. In southern Texas, the incubation period is 12 to 13 days and the young leave the nest at 11 days, although they may be fed by their foster parents for another 2 weeks.

MOLOTHRUS BONARIENSIS CABANISII Cassin: Shiny Cowbird,
Vaquero Brillante

Molothrus Cabanisii Cassin, 1866, Proc. Acad. Nat. Sci. Philadelphia, 18, p. 22.
(Santa Marta, New Grenada.)

Medium size; male glossy violet-black; female drab grayish brown.

Description.—Length, male 227-241 mm, female 196-216 mm. Adult male, body entirely very glossy violet-black; wings and tail more greenish black.

Adult female, entire upper surface grayish brown; wings and tail darker dusky brown; undersurface light brownish gray, paler on throat; back and breast more or less finely streaked with dusky.

Immature, like female but more dusky above, the feathers edged with brownish buff; below more or less yellowish buff; males streaked below with dusky.

A male collected at El Real, Darién, on February 17, 1964, had the iris dark brown; bill black; tarsus, toes, and claws black.

Measurements.—Males (10 from Panamá and Colombia), wing 123.5-135.0 (128.7), tail 97.0-107.2 (102.7), culmen from base 19.5-21.8 (20.9), tarsus 26.6-29.2 (27.9) mm.

Females (10 from Colombia), wing 98.6-111.5 (107.8), tail 78.5-89.1 (85.9), culmen from base 17.5-19.6 (18.6), tarsus 24.9-26.6 (25.4) mm.

Resident. Rare in eastern Darién and eastern San Blas. W. B. Richardson collected an immature male at Boca de Cupe on the Tuira River, Darién on April 3, 1915 (AMNH no. 136758). On February 17, 1964, I shot an adult male from a treetop beside a cattle corral at El Real, Darién, and a few days earlier I saw several along the Tuira River between Boca del Cupe and Yape. In March 1981, Ridgely (*in litt.*) saw up to 4 per day along the lower Tuira above El Real. From San Blas there is 1 sight report of a group of 7 or 8 birds, including 3 or 4 males, seen by D. Sheets east of Puerto Obaldía in June 1965 (Ridgely, 1976, p. 309). Ridgely (*in litt.*) saw 8 on the upper Río Bayano, Province of Panamá, between Aguas Clara and the Río Diablo

on April 24, 1976. This race is also found in adjacent Colombia, and other races are found to eastern Peru, southern Argentina, Chile, and southern Brazil.

This species has been extending its range northward, having recently spread in the West Indies to the Lesser Antilles, Puerto Rico, and Hispaniola. In early 1980, large numbers were seen around the Tocumen marsh and at the La Siesta Hotel, eastern Province of Panamá, by many people (Ridgely *in litt.*). They were seen from at least January to March by observers previously familiar with both small cowbirds. The maximum count was approximately 200 on January 20, seen by P. Donahue, but usually the number seen was under 100. For a time the birds roosted at the hotel with Orchard Orioles. In the same period of 1981 neither cowbird was seen in this area.

Friedmann (1929, *The Cowbirds*, Springfield, Ill.: Charles C. Thomas, pp. 57-144) has studied this species in Argentina, where its vocalizations are similar to those of *M. ater* of North America. Eisenmann (*in litt.*) has heard a "pleasant tinkling song" from this species in Venezuela. It parasitizes a wide variety of small birds, but it has also occasionally been observed beginning the construction of a nest, although never finishing it.

QUISCALUS MEXICANUS PERUVIANUS Swainson: Great-tailed
Grackle, Changamé

Quiscalus Peruvianus Swainson, 1838 (1837?), Anim. Menag., p. 354. (Peru.)

Very large; tail graduated; male entirely black with a glossy purple sheen; female dark brown above, lighter brown below.

Description.—Length, male 389-414 mm, female 281-330 mm. Adult male, entirely black with a glossy purple sheen on body; wings and tail with slightly greenish sheen; tail long and keel shaped.

Adult female, crown sepia, rest of upper surface, including wings and tail, very dark brown, slightly glossy; superciliary lighter brown; malar and auricular areas, and sides of neck sepia; chin dingy whitish, becoming buffy on throat; flanks, abdomen, and undertail coverts dark brown; rest of undersurface light brown, slightly lighter, more buffy on center of belly.

A male taken at Chico, Panamá, on March 16, 1949, had the iris yellowish white. The eye color of females varies from rather dull yellow to a light brownish yellow. In young birds the iris is dark.

Measurements.—Males (10 from Panamá), wing 166.5-186.4

(175.1), tail 165.4-200.5 (184.2), culmen from base 40.3-45.7 (43.2), tarsus 43.3-48.8 (45.8) mm.

Females (10 from Panamá), wing 139.9-150.2 (144.1), tail 132.5-155.9 (144.8), culmen from base 31.7-36.8 (34.6), tarsus 36.0-41.6 (38.4) mm.

Resident. On the Pacific slope this species is scarce in Chiriquí, but increasingly common as one moves east toward central Province of Panamá and Darién. There are a few records from western Chiriquí: on March 9, 1966, I watched a male bathing in the Canal del Colorado at Puerto Armuelles, and on March 6, 1976, Ridgely (*in litt.*) saw 50 in mangroves and on the seashore at Estero Rico. It is common on most of the islands off the Pacific Coast. On the Caribbean slope, it occurs quite commonly in the town of Changuinola, Bocas del Toro (April 1980, Ridgely *in litt.*), and from just west of the Canal Zone eastward through San Blas and the islands off San Blas. It is most abundant in open residential areas and along the seashore. In Chiriquí and Darién, it seems as yet not to have spread far from its presumed ancestral habitat, mangroves and seashore areas. Beyond Panamá this race is found on the Pacific Coast of Costa Rica and south to northwestern Peru and the Caribbean coast of Colombia and Venezuela. Other races are found north to southern Arizona and the Gulf Coast.

Dr. Graham Fairchild of Panamá City told me in 1960 that this species has increased greatly in abundance since he first came to Panamá 20 years earlier. With the increase in number, the birds are spreading back along the Canal. In 1960, I found a dozen at Gamboa; previously I had never recorded any number beyond Fort Clayton and the Miraflores locks. Dr. Fairchild told me that the grackle roosts in the main plaza at Panamá once became such a nuisance that the authorities finally cut down the trees. In contrast, Thayer and Bangs (Bull. Mus. Comp. Zool., vol. 46, 1906, p. 221) saw only 1, an adult female, in Panamá City in 1904. They wrote that "the grackle is one of the birds relentlessly hunted for food by the natives, and is found, consequently, in very small numbers, and is exceedingly shy."

As might be expected of a bird that expands so successfully when not molested, the Great-tailed Grackle is opportunistic and aggressive. I have seen them feeding along the shore of rivers and oceans, taking fish (sometimes by diving a few inches), frogs, and crabs dead and alive, hawking for flying ants and termites, picking parasites off cattle, extracting insects from the ground, and eating berries. One that I watched eating ripe berries of a royal palm (*Roystonea* sp.) seized them

in the tip of its bill, pulled them off, and then manipulated them back into the mouth, where the berry was given a hard squeeze that crushed it. When it was rolled forward again, the pit was discarded with a scissorlike motion of the mandibles and the pericarp was swallowed. All this was done rapidly and expertly. Other foods I have not myself witnessed being taken are the eggs and young of other birds, and, not uncommonly, adult birds as large as a Groove-billed Ani. A female collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 112.0 g.

These are noisy birds with a wide repertoire of raucous calls: "both sexes have a harsh *chack*; male gives a long strident whistle, *weeek*, *week*, sometimes drawn out to *weeeeeeek*, and both sexes also give a rattling *trit-trit-trit*" (Ridgely, 1976, p. 309). It also has some more musical calls. The males, which are only half or a third as numerous as the females, are aggressive about fighting among themselves and in courting females. Males court by fluffing out the body plumage, shaking the wings, and extending the bill and neck, while uttering a variety of calls. Once I saw a male following a female in flight suddenly hold the wings fully extended and flap them well below the line of his body for 8 or 10 strokes.

I have seen females gathering nest material on January 21, 1961, at Corozal in the Canal Zone and on February 16, 1944, at San José in the Archipiélago de las Perlas. Males that I collected on March 17, 1946, at Jaqué, Darién, were only approaching breeding condition. On Taboga Island, Panamá, I saw females carrying food to young in the nest on March 19, 1952, and on May 5, 1953, I saw grown young out of the nest at Balboa, Canal Zone. Dorothy M. Hobson (Year Book Indiana Audubon Soc., vol. 26, 1948, p. 24) saw young being fed in Panamá City on July 20, 1947. Evidently the nesting season varies in date from locale to locale, and perhaps from year to year.

Skutch (Pac. Coast Avif. no. 31, 1954, pp. 321-334) has studied this species in Guatemala, where it nests in colonies that are often placed in trees near water or in palms, as they are in Panamá as well. However, they may at times nest nearer the ground. Major General G. Ralph Meyer found 3 nests on Taboguilla Island, Panamá, on April 9, 1944, that were in low bushes not over 1.3 m from the ground. The nest is always a large, bulky cup made of grasses and other pliable plant fibers; as in most other colonial icterids, there is much attempted stealing of material from nearby nests, and I once saw a female simply take over a mockingbird's nest under construction. A nest cup actually con-

structed by a grackle measured 10 to 13 cm in internal diameter and 6 to 10 cm in depth.

All the nests so far reported in Panamá had a clutch of two eggs, although in Guatemala Skutch found three-egg clutches most common. The eggs have a "ground color . . . from bright blue to very pale bluish gray, on which are dots, blotches, and intricate scrawls of brown and black. The blue ground color of some eggs is locally washed with shades of brown or pale lilac. The diversities of pattern are so great that, if all the eggs in a populous colony were mixed together, each bird might conceivably be able to recognize her own by its distinctive markings. The measurements of 62 eggs . . . average 33.6 by 23.0 millimeters" (Skutch, *op. cit.*, pp. 328-329). Incubation is 13 or 14 days, and, like all aspects of the nesting cycle except guarding the colony, is performed only by the female; both sexes, however, drive away hawks and other potential predators. The young hatch with pale salmon colored skin and sparse long gray down on the head, back, wings, and legs. They are fed insects and when 16 to 19 days old begin climbing outside the nest, although they can not yet fly. At this stage they resemble females, but with more grayish breasts, brown eyes, and faces and foreheads still unfeathered. When 20 to 23 days old they begin to fly, and continue to follow their mothers for food for several days or weeks. In Panamá the adults molt between September and November.

**ICTERUS SPURIUS SPURIUS (Linnaeus): Orchard Oriole,
Parao de Huertos**

O.[riolus] spurius Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 162. (South Carolina.)

Rather small; male with head, neck, upper back, wings, and tail black, rest of body rich reddish brown; female with upper surface grayish olive-green, undersurface bright greenish yellow.

Description.—Length 148-165 mm. Adult male, head, throat, upper breast, and upper back black; rest of body chestnut; lesser and middle upper wing coverts and all underwing coverts chestnut; greater wing coverts black, tipped whitish and brown; remiges black with outer webs narrowly edged whitish; tail black with all but central pair of rectrices tipped whitish.

Adult female, upper surface grayish olive-green, brighter on crown and rump; undersurface dull greenish yellow; wings dusky; wing coverts edged with whitish forming two wing bars; tail bright olive-green.

Immature male, like female, but lores, front of face, and throat black;

sometimes chestnut feathers on yellow undersurface; tail feathers black, edged green.

Measurements.—Males (10 from North America, taken in April to June), wing 74.5-82.0 (78.7), tail 66.3-71.3 (69.2), culmen from base 16.1-18.2 (16.9), tarsus 19.6-21.9 (20.8) mm.

Females (10 from North America, taken in April to July), wing 74.0-78.0 (75.9), tail 62.6-69.0 (66.4), culmen from base 15.5-17.7 (16.6), tarsus 19.3-22.1 (20.5) mm.

Migrant and winter visitor from the north, breeding in eastern United States and southeastern Canada. Common in the lowlands of both slopes (less so on the Pacific slope of the western provinces), where it has been recorded from late July until mid-April; occasionally it is found on migration in the highlands up to 1650 m (Ridgely, 1976, p. 309). It occurs in light woodlands and open areas with trees. W. W. Brown, Jr. (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1905, p. 157) collected an adult male on Saboga Island, in the Perlas Archipelago, on April 13, 1904, and Eisenmann observed an immature male (with black throat) on Isla Coiba on October 9, 1965, but it is not otherwise recorded from any of the islands off either coast. It winters from southern Mexico to northern Colombia and Venezuela.

Most Orchard Orioles arrive in Panamá in August and leave by mid-March. An indication of its abundance as a migrant in central Panamá is Loftin's report (*in litt.* to Wetmore) that he banded 68 on October 18-19, 1963, 4.8 km east of Panamá City. During the winter, it gathers in roosts that may be used in successive years; one in a tree in front of the Ancon Police Station in the Canal Zone held at least 100 birds when I saw it in February 1952 and December 1955. Another, near the old Tocumen airport, had 300-400 in December 1973-January 1974; these birds seem to have shifted to the La Siesta Hotel. Eisenmann notes that most of the Orchard Orioles he saw in central Panamá during the northern winter were adult male, in chestnut plumage.

When in Panamá, the Orchard Oriole feeds to some extent on nectar, particularly that of the tree *Erythrina fusca*.

Morton (Ann. Missouri Bot. Gard. 66, 1979, pp. 482-489) speculates that the identical color of the adult male Orchard Oriole's body plumage and the floral parts surrounding the nectar of *Erythrina fusca* indicates a coevolved relationship. He notes that adult male Orchard Orioles exclude females and immatures from these trees when they are in flower, which is at the time the orioles are most abundant in Panamá. The Orchard Oriole is the only species that opens *Erythrina* flowers "correctly," thereby getting pollen on its chest. The correctly opened

flower reveals a patch of chestnut-brown matching the adult male's plumage and, Morton hypothesizes, "repels" the bird, so that it moves to unopened flowers in another *Erythrina*.

At Almirante, Bocas del Toro, a male I watched feeding with Northern Orioles (*I. galbula*) on the pink blossoms of a vine, pecked at the other orioles, and, when they did not respond, pulled at their rump feathers. The only time I saw this species feeding near the ground was in January 1961 at Corozal, Canal Zone, when I watched 4 or 5 searching the rank grasses that grew up one-third or so of the height of a 2.5-m chain-link fence. I have occasionally heard Orchard Orioles singing in February. Skutch (A Naturalist in Costa Rica, 1971, p. 104) has heard them sing in Costa Rica in late July and August and for 2 months before their departure in April; he noted that immature males still in the green plumage sang more than full adults.

ICTERUS DOMINICENSIS PRAECOX Phillips and Dickerman:
Black-cowled Oriole, Parao Encapuchado

Icterus prosthelas praecox Phillips and Dickerman, 1965, Wilson Bull., 77, p. 298. (Almirante, Bocas del Toro province, western Panamá.)

Medium size; black, with bright yellow on lesser and middle wing coverts, bend of wing, lower back, and lower undersurface.

Description.—Length 173-193 mm. Adult (sexes alike), entirely black, except for lesser and middle upper wing coverts, bend of wing and underwing coverts, lower back, and undersurface from belly through undertail coverts, which are bright yellow.

Immature, as adult, but back yellowish olive-green.

Measurements.—Males (5 from Bocas del Toro and Costa Rica), wing 88.1-91.0 (89.6), tail 89.3-91.7 (90.3), culmen from base 20.1-20.9 (20.6), tarsus 20.5-23.1 (21.9) mm.

Females (7 from Bocas del Toro and Costa Rica), wing 80.3-87.5 (83.8), tail 82.2-90.6 (85.7), culmen from base 19.4-21.9 (20.4), tarsus 21.1-23.1 (22.1) mm.

Resident. Uncommon in lowlands of western Bocas del Toro and adjacent parts of Costa Rica on the Caribbean slope. Other races of the *prosthelas* group are found on the Caribbean slope north through Central America into southeastern Mexico; and the *dominicensis* group is found on some islands of the Bahamas and Antilles. In Panamá this oriole is usually found near river banks, in humid woodland borders, clearings with trees, and in banana plantations. Specimens have been collected at Changuinola, Almirante, Western River, and Chiriquicito

(Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 344). Phillips and Dickerman described this race on the basis of the juvenal plumage, in which "the black of the throat patch [is] more extensive [than in *I. d. prosthelas*], extending on to the lower breast, and the interscapular region solid black, instead of yellow-green." Postjuvenal plumages of most individuals are like those of *I. d. prosthelas*, although Bangs (Proc. Biol. Soc. Wash., vol. 19, 1906, p. 111) notes that some individuals from Panamá to Honduras have the black extending beyond the breast and onto the flanks and rump.

I have seen this species three times, at Almirante, during February and March 1958. A pair that I collected there on February 21 was in breeding condition. The only vocalization I heard was a metallic *plink* call note, but it also has a song that is "a sweet and rapid, but not very loud, series of whistles" (Ridgely, 1976, p. 310). In Costa Rica, Ridgely (*in litt.*) has seen this species feeding in flowering *Erythrina* trees with migrant orioles.

The nest of this oriole is a pouch suspended like a hammock from the underside of a broad leaf such as a banana or palm. The nest is attached by strands passed through holes made by the bird in the leaf. Two nests collected at Almirante on May 16 and June 9, 1962, were made of dark and light fibers and rootlets; the first nest was lined with brown plant down and was 80 mm deep. Neither nest contained eggs. Skutch (Pac. Coast Avif. no. 31, 1954, p. 266) found a nest in Honduras that had 3 young birds; after leaving their parents, the young form small flocks of their own age group.

The Panamá race has often been separated specifically with other Middle American subspecies from the West Indian *I. dominicensis* under the species name *I. prosthelas*.

ICTERUS AURICAPILLUS Cassin: Orange-crowned Oriole,
Parao Coroninaranja

Icterus auricapillus Cassin, 1848, Proc. Acad. Nat. Sci. Philadelphia, 3 (1847), p. 332. (Santa Marta, Colombia.)

Medium size; back of head bright orange; forehead, throat, back, wings, and tail black; rest of body bright yellow.

Description.—Length 179-190 mm. Adult (sexes alike), forehead, orbital region, throat, and breast black; crown, nape, and sides of head bright orange; upper back, tail, and wing, except for lesser and middle coverts, black; lesser and middle wing coverts, rump, and undersurface below breast orange-yellow; bend of wing and underwing coverts light orange-yellow.

Juvenile, crown and nape yellowish olive; back buffy olive; rump greenish olive; wings dusky; tail dusky, with feathers edged buffy olive; side of face, undersurface pale yellow, brighter greenish wash across breast; bend of wing and underwing coverts yellow.

A male collected at El Real, Darién, on March 21, 1964, had the iris wood brown; bill black; tarsus and toes dark neutral gray; claws black.

Measurements.—Males (10 from Panamá and Colombia), wing 87.2-95.1 (91.0), tail 74.2-91.0 (83.3), culmen from base 19.2-21.0 (20.1), tarsus 19.6-23.3 (21.4) mm.

Females (10 from Panamá and Colombia), wing 84.4-89.0 (86.8), tail 80.4-85.7 (83.2), culmen from base 18.2-19.8 (19.0), tarsus 20.1-22.8 (21.6) mm.

Resident. Fairly common in the lowlands of eastern Province of Panamá and in Darién. Found also in Colombia and northern Venezuela. In Panamá, it has been recorded in the hills east of Chepo, on the Platanares-Jesús María road, eastward (Ridgely, 1976, p. 310). In Darién, it has been collected along the Río Tuira up to the mouth of the Río Pucro (Griscom, Bull. Mus. Comp. Zool., vol. 78, 1935, p. 372), at Garachiné and the Río Sambú (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mon. no. 6, 1944, p. 43). I found the species at El Real and at the mouths of the Río Tuquesa and Río Paya. It seems especially common along rivers and streams, but is found elsewhere as well in woodland borders and shrubby clearings. It often feeds high in flowering trees. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 33.5 g. The song of this oriole consists of a whistled phrase repeated over and over, often for 15 or 20 minutes. The song period is especially long in early morning. I know of no information on its nesting habits.

**ICTERUS MESOMELAS (Wagler): Yellow-tailed Oriole,
Parao Coliamarillo**

FIGURE 31

Ps.[arocolius] mesomelas Wagler, 1829, Isis von Oken, 22, heft. 7, col. 755. (Chalcaltiangas, Veracruz, Mexico.)

Medium size; bright yellow, with black throat, wings, upper back, and central tail feathers.

Description.—Length 200-230 mm. Adult (sexes alike), lores, orbital region, throat, and center of upper breast black; rest of head orange-yellow, rest of undersurface, lower back, and rump lighter orange-yellow; upper back, greater wing coverts, remiges, and three central pairs of rectrices black; lesser and middle wing coverts and

outer two pairs of rectrices bright yellow; third pair of rectrices black at base and on edge of inner web; bend of wing and inner wing coverts yellow.

Immature, black absent; crown, back, and tail tinged yellowish green; wings dusky, with coverts edged yellow; undersurface bright pale yellow.

FIGURE 31.—Yellow-tailed Oriole, Parao Coliamarillo, *Icterus mesomelas*.

Resident. The Yellow-tailed Oriole is found in thickets, woodland edges, and clearings in the lowlands, and locally to the foothills, as at Cana, Darién. It is almost always near water. Its range in Panamá is on the entire Caribbean slope; on the Pacific slope it occurs locally from the Canal Zone eastward, becoming more common in Darién. A pair was seen several times during 1969-70 by Ridgely, Eisenmann, and others near the base of Cerro Campana, Panamá, not close to water; this is the westernmost report on the Pacific slope (Ridgely, 1976, p. 310). Beyond Panamá, the Yellow-tailed Oriole is found from south-eastern Mexico to northwestern Peru and northwestern Venezuela, but is unknown in southeastern Costa Rica on the Pacific slope or on that slope of western Panamá.

Olson (Proc. Biol. Soc. Wash., vol. 94, no. 2, 1981, pp. 363-373) found that although the races *carrikeri* and *salvinii* are poorly marked

they are still separable if their geographic limits are drawn so as to include in *carrikeri* all birds from Panamá except those from the Almirante area of Bocas del Toro, which are referable to *salvinii*. The apparent hiatus between *salvinii* and *carrikeri* along the Caribbean coast of Panamá may in large measure be an artifact of collecting, but the pattern of distribution of these 2 subspecies, as now redrawn, is one commonly observed in other polytypic species of Panamanian birds.

Icterus mesomelas is a very vocal species; I rarely observed it on my visits to Panamá between December and April when it was not singing. I find the song rather labored, but sweet in tone. Ridgely (*op. cit.*) describes it as "a series of very rich mellow whistled phrases, each phrase usually repeated several times before going on to the next. Usual and distinctive calls are *chup-cheet* or *chup-chup-cheet*, and a *weechaw*." I have also heard a *plick* or *chick*. Females sing as well as males, but their phrases are usually shorter. In Eisenmann's opinion, it is the best singer among the Panamanian orioles. The song, because of its repetition of loud, melodious, short, whistled phrases, at times suggests a rich-voiced wren. This was noted both in western Bocas del Toro and in the Canal Zone, where different races occur.

Once I saw a half dozen of these orioles feeding together on sunny branches in trees over the Western River in Almirante, Bocas del Toro. They sometimes take nectar from flowers, but most of their food seems to be insect matter—of 2 that E. A. Goldman collected at Cana, Darién, 1 had 21 ants 50%, 8 gryllid jaws and other remains 40%, 2 roach jaws 5%, a beetle 5%, and other coleopteran traces; the other had the elytron of an elatrid 3%, bits of an otiorhynchid 17%, other coleopteran remains 5%, the abdomen, etc. of a bee 5%, an ant 5%, legs of a moth 5%, jaws of an orthopteran 5%, caterpillar remains 37%, bits of snail shell 10%, a centipede 8%.

ICTERUS MESOMELAS SALVINII Cassin

Icterus Salvinii Cassin, 1867, Proc. Acad. Nat. Sci. Philadelphia, p. 51. (Costa Rica.)

Characters.—Black gular patch more extensive than in *carrikeri*; yellow areas never orangish, as in many specimens of *carrikeri*; bill usually longer.

Measurements.—Males (9 from Bocas del Toro, Costa Rica, and Nicaragua), wing 96.5-104.5 (101.6), tail 106.6-117.4 (112.7), culmen from base 24.3-27.3 (25.6), tarsus 29.9-33.5 (31.1) mm.

Females (3 from Nicaragua), wing 91.0-97.0 (94.0), tail 99.2-116.0 (108.8), culmen from base 23.7-26.0 (24.9), tarsus 26.1-30.4 (28.9) mm.

Resident. Known in Panamá only from the Almirante area of Bocas del Toro, where it has been collected at Almirante, Western River, Fruitdale, and Changuinola River. It ranges north on the Caribbean slope to Costa Rica and Nicaragua.

Pedro Galindo collected two nests at Almirante that contained no eggs on May 9 and 11, 1962. Each nest was a woven, pendant basket of long, slender, tough fibers, strongly made but with light showing here and there through the weave. Each had one margin slightly longer, evidently for firm attachment and support in suspension; like other orioles, this species hangs its nests from two adjacent horizontal branches. The outside diameter of the nests was 110×120 mm by 120 mm deep, and the inside diameter was 90×90 mm by 90 mm deep. Skutch (Pac. Coast Avif. no. 31, 1954, p. 265) found a nest of the nominate race in Guatemala that had three eggs on April 30, 1932. They were "white with the faintest tinge of blue, heavily marked on the thicker end with pale chocolate blotches, among which were mingled irregular spots of black. There were a few faint marks of pale brown over the remaining surface. These eggs measured 24.6 by 17.9, 23.4 by 17.9, and 23.8 by 17.9 millimeters." The eggs hatched after 14 days of incubation. The young had salmon-pink skin and long gray down on the head, back, shoulders, wings, and flanks; they left the nest when 12 and 13 days old.

ICTERUS MESOMELAS CARRIKERI Todd

Icterus mesomelas carrikeri Todd, 1917, Proc. Biol. Soc. Washington, 30, p. 4. (Fundación, Santa Marta, Magdalena, Colombia.)

Characters.—In many individuals the yellow areas, particularly the crown, are strongly tinged with orange; black gular patch less extensive; bill usually shorter.

A male collected at El Real, Darién on January 24, 1964, had the iris dark brown; thickened eyelid fuscous-black; mandibular rami bluish neutral gray; rest of bill black; tarsus and toes neutral gray; claws black.

Measurements.—Males (10 from Panamá), wing 89.5-98.5 (95.1), tail 98.7-116.4 (108.0), culmen from base 21.3-25.4 (23.7), tarsus 25.3-32.9 (30.3) mm.

Females (10 from Panamá), wing 86.4-92.0 (89.0), tail 97.3-104.2

(101.0), culmen from base 21.6-24.4 (23.0), tarsus 23.5-30.7 (28.7) mm.

Resident. Fairly common in lowlands on the Caribbean slope from at least El Uracillo, Coclé, to the Colombian border, and on the Pacific slope locally from Cerro Campana (at 500 m), Panamá, eastward; more common in Darién. Beyond Panamá, it occurs in northern and western Colombia and in northwestern Venezuela.

None of the birds I have collected between January and March were in breeding condition, so perhaps this race, like *salvini*, begins nesting later than most other icterids. I have no other details of breeding behavior from the range of *carrikeri*. Eisenmann (*in litt.*) saw a stub-tailed fledgling being fed by an adult at Mindi, Canal Zone, on September 12, 1965; on this day he also saw 4 adults together.

ICTERUS CHRYSATER GIRAUDII Cassin: Yellow-backed Oriole,
Chicao

Icterus Giraudii Cassin, Proc. Acad. Nat. Sci. Philadelphia, vol. 3, no. 12, 1848, p. 333. ("Bogotá," Colombia.)

Medium size; bright orange-yellow, with black forehead, throat, wings, and tail.

Description.—Length 176-210 mm. Adult male, forehead, orbital region, throat and center of upper breast, wings, and tail, black; rest of body bright orange-yellow.

Adult female, like male, but smaller and slightly duller, head, upper back, and breast tinged brown.

Immature, similar to female, but upperparts dull olive-yellow, wings and tail dusky with indistinct dull olive-green edgings.

A male collected at El Llano, Panamá, on February 4, 1962, had the iris very dark brown; base of mandibular rami light neutral gray; rest of bill black; tarsus and toes neutral gray; claws black. A female taken the same day was similar but the gray of the mandible was slightly more extensive.

Measurements.—Males (10 from Panamá), wing 85.0-97.0 (92.3), tail 87.5-103.5 (94.1, average of 9), culmen from base 20.6-23.7 (22.3), tarsus 23.2-25.6 (24.5) mm.

Females (10 from Panamá), wing 82.0-91.7 (87.8), tail 83.6-99.2 (90.7), culmen from base 20.5-23.7 (22.1), tarsus 22.3-26.2 (24.5) mm.

Resident. Fairly common in the lowlands of both slopes from Vera-

guas eastward, and found in smaller numbers in the foothills up to 900 m, particularly in Darién, where it has been collected at Cerro Tacarcuna and Cana; it inhabits forest, borders, and shrubby areas. I have seen this oriole in a wide range of habitats, from high forest in Darién to dense thorn scrub behind the beach at Nueva Gorgona, Panamá. This race is found also in northern Colombia and northern Venezuela; other forms occur north to southeastern Mexico, although it is absent in Costa Rica. Although Panamanian birds and those from parts of Colombia have been referred by some authors to the race *hondae* (e.g., Meyer de Schauensee, *Caldasia*, vol. 5, 1951, pp. 873-1112; Blake, *Check-list Birds World*, vol. 14, 1968, p. 151), Olson (*Proc. Biol. Soc. Wash.*, vol. 94, no. 2, 1981, pp. 363-373) has shown that this name can so far be applied only to the 2 type specimens from Honda, in the upper Magdalena Valley of Colombia.

I have observed the Yellow-backed Oriole in pairs and groups of up to 6 or 8 that may represent family units, since during March and April I have seen adults accompanied by birds still in immature plumage that were probably born the preceding year. Leck (*Auk*, 1974, p. 163) has seen this species feeding on the nectar of balsa tree (*Ochroma limonensis*) flowers and E. A. Goldman's notes from Cana mention it being especially common where *Heliconia* is abundant. The stomachs of 2 birds he collected there contained the following: 9 caterpillars 64%, elytra of a cistelid 1%, roach remains 20%, arachnid remains 10%, 17 seeds not determined 5%; 2 cerambycids 15%, 4 ants 20%, 2 weevils (Cryptorhynchini) 15%, an ichneumon fly 20%, 5 orthopteran jaws 10%, caterpillar skin 5%, arachnid remains 10%, bits of mollusk shell 5%. Two males collected by Strauch (*Bull. Brit. Orn. Club*, 1977, p. 64) weighed 50.1 and 57.7 g.

This oriole sings persistently throughout the day. The song is a series of 4 to 8 clear whistles going up and down the scale in a manner that sounds labored, but is nonetheless musical. When excited, they call *whink-whink-whink* rapidly. Ridgely (1976, p. 311) notes "a *teea*, *cheep-cheep*, *cheep* (the *cheep*'s nasal); also has a part-chatter, part buzzy whistle *kzwee-kzwee-kzwee-kzwee-kzwee* and a nasal *nyeh-nyeh-nyeh-nyeh*." Eisenmann (*in litt.*) has also noted a clear, whistled song of four to six notes, *pee*, *pü*, *pua-pü*, *pey*, with variations, which sounds like a tune whistled off key.

As with *I. mesomelas*, I never collected an individual of this species that was in breeding condition during my visits to Panamá from December to April. Eisenmann and Willis (*Smiths. Cont. Zool.* 291,

1979, p. 27) refer to two active nests on Barro Colorado Island in February. Major General G. Ralph Meyer flushed a bird from its nest near the Naval Station on Gamboa Road in the Canal Zone on May 15, 1941. The nest was of dried grass woven somewhat like that of an Orchard Oriole (*I. spurius*) though not so neatly or precisely made. Some of the strands of grass still had a greenish tinge. Although it was possible to see through any part of the nest, it had a firm wiry feeling and was noticeably resistant to crushing. It was placed about 7 m above the ground, being suspended at three points in a fork of a tree that was about 10 cm in diameter at the base. The outer diameter of the nest was 11 cm, the inner diameter 10 cm; the outer depth was 9 to 13 cm and the inside 6 to 9 cm. The three eggs were whitish, marked with pale purplish brown blotches primarily at the wider end of the egg and with a few dark brown scrawls scattered irregularly over the surface. They measured 24.8×17.2 , 25.0×17.0 , and 25.6×17.5 mm.

**ICTERUS GALBULA GALBULA (Linnaeus): Northern Oriole,
Parado Grande Pasajero**

C.[oracias] Galbula Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 108. (Virginia.)

Medium size; male with black head, upper back, wings, and central tail feathers, and rest of tail and body bright orange; female dingy orange on undersurface and tail, upper surface mostly mottled gray and black.

Description.—Length 162-175 mm. Adult male, head, throat, and upper back black; rest of body rich orange; most of lesser and middle wing coverts orange, rear ones black; greater coverts black, with white at base and tips; remiges black, edged white on outer web; tail feathers orange-yellow, with central pair extensively black on outer two-thirds, other feathers with little or no black (varies individually); bend of wing orange; underwing coverts orange-yellow.

Adult female, crown and nape greenish orange, with black markings varying from entirely absent to very extensive; back gray, marked in varying degrees with orange and black; rump and tail orange, varying in brightness; undersurface between yellow-orange and bright orange, paler on abdomen, sometimes with black on throat; wings blackish, with lesser coverts tipped dull orange, middle and greater coverts tipped white, and remiges with outer web edged white; bend of wing orange; underwing coverts white and pale orange.

Measurements.—Males (10 from Panamá), wing 92.0-98.0 (95.5),

tail 69.4-74.1 (71.5), culmen from base 18.1-19.9 (19.1), tarsus 21.7-24.4 (22.9) mm.

Females (10 from Panamá), wing 87.0-95.0 (91.8), tail 63.7-75.6 (68.7), culmen from base 17.8-20.9 (18.9), tarsus 18.8-24.5 (22.5) mm.

Migrant and winter visitor from the north. Common throughout, mostly in the lowlands, but in Chiriquí also reaches the highlands to over 1800 m (Ridgely, 1976, p. 311); it has also been recorded on some of the islands in the Pacific (Coiba I., Saboga I.). The winter range of the Northern Oriole extends to Colombia and northern Venezuela; the first migrants occasionally arrive in Panamá in late September and also linger into May, but most are found between early October and late April. Eisenmann (*in litt.*) reports late dates from the Canal Zone of May 11 (Fort Davis Woods) May 19 (Barro Colorado I.) and May 27 (Achiote Road, 1977, a year when N. G. Smith found many northern migrants remaining exceptionally late). In my experience the spring migration begins in the first week of February. As in North America, the Northern Oriole here is found at the edges of woodland and in open areas with trees. Individuals may spend several months at one locality; 1 banded at Almirante, Bocas del Toro, on October 7, 1963, was recaptured there January 29, 1964 (Loftin, Rogers, and Hicks, Bird-Banding 1966, p. 43).

When in Panamá, Northern Orioles often feed in flowering trees, where they take nectar as well as insects (Leck, Auk, 1974, pp. 162-163). At certain rich food sources they may become territorial, as has been reported from Costa Rica, where Schemske (Auk, 1975, p. 595) saw 1 drive hummingbirds, wrens, warblers, tanagers, and other orioles away from its section of a flowering tree. I have also seen a male Northern Oriole repeatedly chase a female from his chosen roosting spot. In another study in Costa Rica, Timken (Wilson Bull., 1970, pp. 184-188) found that Northern Orioles take some fruit, but mostly insects, while in flowering or fruiting trees, and feed primarily in early morning and late afternoon. In Panamá I have seen them lean over to probe the termite runs on the underside of tree branches. At dusk they roost communally in trees that may be used year after year, sometimes in association with Orchard Orioles (*I. spurius*); as they gather for the night Northern Orioles sometimes give a few calls. Ridgely (*in litt.*) has heard males give brief bouts of singing, sometimes in flight between trees, in March and April.

I have never seen a skin taken in Panamá that showed any of the characters of the western *I. g. bullocki*, but a female apparently of this

race was seen by M. Perrone on Barro Colorado Island, Canal Zone, on November 13, 1972 (Ridgely, 1976, p. 311).

XANTHOCEPHALUS XANTHOCEPHALUS (Bonaparte): Yellow-headed Blackbird, Chango Cabeciamarillo

Icterus xanthocephalus Bonaparte, 1826, Journ. Acad. Nat. Sci. Philadelphia, 5, p. 223. (Along the Loup River, just west of Fullerton, Nance County, Nebraska.)

Male medium sized, female small for an icterid; male black with yellow head and throat and white in wing coverts; female dusky brown with white throat and dull orange-yellow breast.

Description.—Length, male 243-262, female 192-215 mm. Adult male, all black except for rich orange-yellow head (sometimes flecked with black) and breast and extensive white patch on primary coverts; chin, lores, and small area around eye, black.

Adult female, dusky brown except for facial area and breast; lores, short superciliary stripe, moustachial stripe, and breast dull orange-yellow; throat white, sometimes yellowish; chest slightly streaked with white.

Immature male, blackish brown except for superciliary stripe, throat, and breast, which are orange-yellow.

Measurements.—Males (10 from the breeding range, taken in April), wing 137.0-149.0 (144.4), tail 101.8-114.4 (108.3), culmen from base 24.4-26.6 (25.4), tarsus 34.3-38.5 (36.8) mm.

Females (10 from the breeding range, taken in May), wing 109.0-119.5 (114.2), tail 78.9-92.9 (84.7), culmen from base 20.2-22.8 (21.6), tarsus 29.8-32.0 (31.0) mm.

Casual visitor from the north. The first record of the Yellow-headed Blackbird in Panamá is an immature male collected at the Gatún Dam, Canal Zone, on November 1, 1972, by Joseph Strauch. On January 19-26, 1980, at Tocumen Marsh, Canal Zone, up to 8 Yellow-headed Blackbirds were seen by various persons, including V. Emanuel, J. J. Pujals, and D. W. Finch; none of these birds was an adult male. In Costa Rica, a flock of 15 to 20 birds, several of which were collected, was seen on February 2-5, 1977 (F. G. Stiles and S. M. Smith, *Brenesia*, vol. 17, 1980, p. 152), so evidently the species is reaching southern Middle America irregularly. The Yellow-headed Blackbird breeds in western North America and winters primarily in the southern United States and Mexico.

The stomach contents of the bird collected by Strauch included a small grasshopper and other arthropod remains. It weighed 65.5 g (Strauch, *Bull. Brit. Orn. Club*, 1977, p. 64).

**LEISTES MILITARIS MILITARIS (Linnaeus): Red-breasted
Blackbird, Chango Pechirrojo**

E.[mberiza] militaris Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 178. (Surinam.)

Medium size; male, all black except for red throat, breast, belly, and lesser wing coverts (often all feathers are edged with buff); female, upper surface blackish, streaked buff, undersurface mostly buff, sometimes with reddish wash on belly.

Description.—Length 139-172 mm. Adult male, entirely black except for throat, breast, belly, lesser wing coverts, and bend of wing, which are scarlet-red; during much of the year most feathers are edged various shades of dark brown and buff, especially prominently on the head, which may have superciliary and central crown stripes.

Adult female, upper surface blackish with feathers edged buff; buffy superciliary and central crown stripes usually prominent; remiges and rectrices barred brown; bend of wing and a few lesser wing coverts pale red; undersurface cinnamon-buff, streaked dark brown, faintly on breast and heavily on abdomen; belly tinged pale red.

A male collected at El Real, Darién, on January 22, 1964, had the iris dark brown; bill dull black; tarsus and toes wood brown; claws dull black.

A female taken there the same day had the iris wood brown; maxilla fuscous-brown, except cutting edge, which was light dull brown; tip of mandible dull neutral gray, changing to dull buffy brown on basal half of gonys; basal half of mandible pale dull brown.

Measurements.—Males (10 from Panamá), wing 87.0-97.0 (91.5), tail 53.7-61.4 (57.6), culmen from base 19.6-21.4 (20.5), tarsus 27.2-32.3 (29.2) mm.

Females (10 from Panamá and Colombia), wing 78.0-87.0 (82.8), tail 47.1-57.4 (52.0), culmen from base 17.4-19.3 (18.4), tarsus 25.9-28.4 (27.0) mm.

Resident. Common in savannas and large fields in lowlands of the Pacific slope from Chiriquí, where it is numerous at Puerto Armuelles, to eastern Darién, at least as far east as El Real, where I collected several in 1964. With the expansion of grassy areas this species has extended its range. In 1972 Jaime Pujals found and photographed a flock of 18 birds at France Field, on the Caribbean side of the Canal Zone. More recently this species has also been seen at Gatún Dam and Escobal, Canal Zone (Ridgely, *in litt.*). This race also occurs in Costa Rica (Kiff, Condor, 1975, pp. 102-103), Colombia, northern Peru, Venezuela, the Guianas, and Amazonian Brazil; another race is found in southeastern Peru and Bolivia south to northern Argentina. The Red-

breasted Blackbird is an easily seen inhabitant of fields and savannas; it sometimes feeds near cattle, and in the nonbreeding season may form flocks of up to 100 birds. Some that Hallinan (Auk, 1924, p. 320) collected had grass seeds in their stomachs. When alarmed they crouch low in the grasses, the males turning their bright red breast away from the source of concern, but in their display flight males rise almost vertically from 8 to 16 m in the air, displaying the red breast prominently, and then drop to the ground with nearly motionless, outspread wings. The male's song, given from an elevated perch consists of "two short introductory notes followed by a long rather buzzy trill" (Ridgely, 1976, p. 312).

W. W. Brown (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1906, p. 221) collected a female in nestling plumage at Panamá City on May 26, 1904. E. A. Goldman noted that it was "breeding" at Corozal, Canal Zone, on June 15, 1911, and Jaime Pujals observed a just-fledged young being fed at Howard Air Field on July 15, 1973. J. Karr (*in litt.* to Eisenmann) found a nest with 3 eggs on August 6, 1965, near La Jagua, eastern Province of Panamá. Eisenmann has seen some displaying in March and early April, but few birds seemed to be on territory. On September 26 at Finca Santa Monica, Coclé, he saw a female carrying food in her bill; there were a number of full grown fledglings, but no song was noted. The only other details I have on the breeding biology of this species come from Suriname, where the nests Haverschmidt (Auk, 1970, p. 167) found were open cups made of grass set in a clump of grass; the nests did not have a roof or an entrance tunnel as do the nests of meadowlarks, *Sturnella*. The eggs have been described by Hellebrekers (Zool. Med. Rijksm. Nat. Hist. Leiden, vol. 24, nos. 1-2, 1942, p. 267) from those in the Penard collection as "oval, somewhat glossy . . . light bluish, light greyish blue. Spots: small spots or large blotches of light and darker reddish brown, purplish undermarkings. The eggs are very variable . . . average (50 eggs) 23.27×17.42 [mm]."

STURNELLA MAGNA SUBULATA Griscom: Eastern Meadowlark,
Llanero Oriental

Sturnella magna subulata Griscom, 1934, Bull. Mus. Comp. Zool., 75, p. 405.
(Boquete, 4,000 ft., Pacific slope of Chiriquí, western Panamá.)

Medium size; upper surface black, finely streaked brown and buff; undersurface mostly bright yellow, with a black crescent across chest.

Description.—Length 179-215 mm. Adult (sexes essentially alike, but female duller), upper surface black, with most feathers edged light

buff and brown, giving a streaked appearance; superciliary and central crown stripe light buff; wings and central tail feathers black, edged and barred brown and buff; outer four pairs of tail feathers white, partially barred on outer web; side of face whitish; thin loreal stripe extending around upper rim of eye, throat, breast, belly, and bend of wing yellow, brightest on throat; chest with a black crescent, sometimes tipped light buff; sides, flanks, and undertail coverts light buff, streaked with black; underwing coverts whitish.

A male collected at Río Grande, Coclé, on March 9, 1962, had the iris warm mouse brown; mandible except tip and lower edge of side of maxilla to near tip neutral gray; side of maxilla through nostril and entire tip, and tip of mandible fuscous-black; flattened culmen to near tip dull grayish brown; tarsus and toes light brownish white; claws fuscous. A female taken the same day was similar.

Measurements.—Males (10 from Panamá), wing 97.5-105.5 (101.7), tail 54.4-66.6 (60.9), culmen from base 29.6-35.3 (32.8), tarsus 32.4-42.0 (38.0) mm.

Females (10 from Panamá), wing 89.5-96.0 (91.8), tail 51.2-57.1 (53.9), culmen from base 27.6-31.7 (30.0), tarsus 33.0-36.9 (35.4) mm.

Resident. Common in the lowlands of the Pacific slope from Chiriquí to eastern Province of Panamá (to around El Llano in the middle Bayano Valley), inhabiting moist savannas, fields, and grasslands; less common in the highlands of Chiriquí, where W. W. Brown, Jr., collected several specimens between 1200 and 1800 m at Boquete. Other races are found from eastern North America to northern Colombia, Venezuela, and Brazil. The habits of this species are, so far as I can tell, very like those of Eastern Meadowlarks in North America. Their song is of particular interest since it seems to combine elements of *S. magna* from eastern North America and of *S. neglecta*. I found that in the Panamanian form the notes in general are those of *S. magna*, while the tone is that of *S. neglecta*; in other words, it is the song of the eastern bird with the sound effects of the western one. Chapman (My Tropical Air Castle, 1929, p. 378) came to the same conclusion. Ridgely (1976, p. 312) mentions also "a very different warbled song *tlecoo-tleedlecoo*." One of the local names I have been given in Herrera and the Province of Panamá is *chírolirio*, in evident imitation of the song. Call notes include a loud chatter, a chip, and a harsh, nasal *dzeert* or *chzeerrrt*.

I know of no descriptions of the nest or eggs of this species from Panamá. The breeding season here runs at least from January to No-

vember. Chapman (*op. cit.*) found young in nestling plumage on the wing in January 1929 near Pacora, Panamá. On February 11, 1955, at 1260 m on the grassy lower edge of the llano at El Volcán, Chiriquí, I found a small colony and collected 4 males with enlarging gonads. On March 5, 1960, at Alanje, Chiriquí, I saw a female gathering dead grass for nesting material. On March 18, 1949, at Chico, Panamá, I collected a female that was about to lay, and on March 20, 1911, E. A. Goldman collected a partly grown young at Chepo, Panamá. Eisenmann saw a bird carrying food on July 15 in Coclé and a number of short-tailed fledglings at Remedios, Chiriquí, on July 16 and 23. J. Karr (*in litt.* to Eisenmann) found a nest with three eggs on November 8, 1968, near La Jagua, eastern Province of Panamá.

A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 97.5 g.

DOLICHONYX ORYZIVORUS (Linnaeus): Bobolink, Llanero Arroceró

Fringilla oryzivora Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 179. (South Carolina.)

Rather small; male in basic plumage and female, buffy, streaked black and dark brown on upper surface; male in alternate plumage, black, with buffy nape and white lesser wing coverts, rump, and upper tail coverts.

Description.—Length 140-162 mm. Adult male in basic plumage and adult female in all plumages, upper surface blackish brown with most feathers edged various tones of buffy olive, giving streaked appearance; head with prominent cream-buff superciliary and central crown stripe; wings dark brown; throat whitish; sides of face buffy olive; rest of undersurface buff (tone varies individually), streaked dark brown on sides and flanks; underwing coverts whitish.

Adult male in alternate plumage, mostly black, with feathers often tipped buff; broad patch on hindneck of buff to buffy yellow; lesser wing coverts and scapulars, rump, and upper tail coverts white; lower back light gray; primaries with outer web edged buff; tertials and feathers of upper back broadly edged buff.

Measurements.—Males (10 from North America, taken in May and June), wing 95.4-101.0 (98.4), tail 61.4-67.3 (64.4), culmen from base 14.2-15.7 (15.1), tarsus 23.1-27.2 (25.3) mm.

Females (10 from North America, taken in May), wing 85.0-90.9 (88.1), tail 55.9-63.8 (59.5), culmen from base 12.6-14.8 (14.0), tarsus 22.8-25.7 (23.9) mm.

Migrant. An uncommon transient in Panamá between mid-Septem-

ber and late October on its way to South America and in mid-April to early May when flying north, the Bobolink is usually found on the Caribbean coast, but has also been recorded on the Pacific slope of central and eastern Panamá (Ridgely, 1976, p. 312). A female collected at Almirante, Bocas del Toro, on September 7, 1960, and another taken by Arcé in November 1864 at Chepo, Province of Panamá, (now BMNH no. 85.11.2. 194) are the earliest and latest fall records of which I am aware. Some of the other localities where it has been collected include Permé and Puerto Obaldía in San Blas (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 369) on the Caribbean coast, at Paraiso Station, "Isthmus of Panamá," by A. Hughes in 1867 (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 53), 1886, p. 448), and at Chorrera, central Province of Panamá and Yaviza, Darién, on the Pacific slope (specimens in American Museum of Natural History). The Yaviza specimen was one of "a flock of a couple of dozen" seen September 20, 1966, by F. N. Slattery (*vide* Eisenmann). On February 12, 1957, I found a female at the airstrip in Mandinga, San Blas; when I collected it 3 days later it was much emaciated, and I believe it was a bird left in some way from the fall migration. At Almirante, Bocas del Toro, D. Hicks took a migratory female on October 23, 1964, that weighed 24.9 g.

Ridgely saw 4 males at Albrook Air Force Base, Canal Zone, on May 6, 1968, the latest date so far recorded for Panamá. On May 1, 1976, Ridgely (*in litt.*) and Pujals found 3 males in a large meadow at Fort Sherman, Canal Zone; all were giving brief singing bouts from their perches in tall grass. Most Bobolinks travel to and from South America via the West Indies, with a smaller number crossing the Gulf of Mexico to the Yucatán Peninsula and then continuing through Central America. Since they travel long distances without landing, Bobolinks may be commoner flying over Panamá than the number of reports would indicate. They are usually found in small groups.

Family THRAUPIDAE: Tanagers, Tangaros, Tanagras y Fruteros

Fifty-five species of the diverse tanager family are found in Panamá. They range from the Swallow-Tanager (*Tersina viridis*), which catches insects on the wing over forest canopy, through various groups of foliage gleaners and fruit eaters, to ground dwellers like the Rosy Thrush-Tanager (*Rhodinocichla rosea*). Some are brilliantly colored or boldly marked while others are drab. Storer (Living Bird, 1969, pp. 127-136) reviews the family, suggesting some possible phylogenies for

the more specialized groups, and points to the need for much greater study of the entire New World nine-primaried assemblage before it can be satisfactorily determined whether some of the species now considered tanagers are not in fact more closely allied to parulids or emberizids. Many of the Panamanian species are little known and additional information on their life histories may be useful taxonomically. For example, members of the distinctly marked genus *Euphonia* and the related *Chlorophonia* feed primarily on mistletoe berries, for which their digestive tract is specially adapted, and are the only tanagers known to build domed nests with an entrance on the side; most other tanagers build a cup-shaped nest. The Swallow-Tanager, which nests in holes, is often placed in a separate family Tersinidae, but Sibley (Bull. Brit. Orn. Club, 1973, pp. 75-79) argues convincingly for putting it in the Thraupidae near *Tangara* and *Thraupis*.

Three North American tanagers of the genus *Piranga* are found as migrants and winter visitors. Most of the resident tanagers are indifferent singers, the exceptions being in the genera *Piranga*, *Habia*, and *Rhodinocichla*. Many tanagers are part of the mixed species flocks that roam through forest and second growth, feeding on fruit and insects.

KEY TO SPECIES OF THRAUPIDAE: TANAGERS

1. Undersurface primarily rosy or red. 2
 Undersurface not primarily red. 10
2. Wings black or blackish. 3
 Upper surface, including wings, close to color of undersurface. 7
3. Wings with two white bars. 4
 Wings unmarked. 5
4. Undersurface orangish red, large, 165 mm or more.
 male Flame-colored Tanager, *Piranga bidentata citrea*. p. 455
 Undersurface bright red, small, 140 mm or less.
 male White-winged Tanager, *Piranga leucoptera latifasciata*. p. 457
5. Undersurface rosy, back blackish.
 male Rosy Thrush-Tanager, *Rhodinocichla rosea eximia*. p. 483
 Undersurface scarlet or darker, back red. 6
6. Upper surface and undersurface scarlet.
 alternate plumage male Scarlet Tanager, *Piranga olivacea*. p. 453
 Throat darker than rest of undersurface.
 Crimson-backed Tanager, *Ramphocelus dimidiatus*. p. 440
7. Crown and upper surface uniform. 8
 Crown dark, with central red stripe. 9
8. Entire body orangish red.
 male Hepatic Tanager, *Piranga flava testacea*. p. 451
 Entire body pinkish red.
 male Summer Tanager, *Piranga rubra rubra*. p. 452

9. Tail reddish.
 male Red-crowned Ant-tanager, *Habia rubica vinacea*. p. 462
 Tail dusky, edged brownish red.
 male Red-throated Ant-tanager, *Habia fuscicauda*. p. 464
10. Undersurface all or almost all black. 11
 Undersurface not black. 17
11. Undersurface with red band across breast.
 Crimson-collared Tanager, *Ramphocelus sanguinolentus apricus*. p. 450
 Undersurface entirely black. 12
12. Rump yellow. 13
 Rump red or black. 14
13. No eye stripe.
 male Yellow-rumped Tanager, *Ramphocelus flammigerus icteronotus*. p. 448
 Long red superciliary stripe.
 male Sulphur-rumped Tanager, *Heterospingus*
 xanthopygius. p. 474
14. Rump and lower back red.
 male Scarlet-rumped Tanager, *Ramphocelus passerinii*. p. 444
 Rump black. 15
15. Entirely black, with concealed white patch on upper wing coverts.
 male White-lined Tanager, *Tachyphonus rufus*. p. 469
 Central crown stripe orange, or exposed white patch on wing coverts. . . . 16
16. Exposed white patch on wing coverts.
 male White-shouldered Tanager, *Tachyphonus luctuosus*. p. 470
 Wing entirely black, crown stripe dark orange.
 male Tawny-crested Tanager, *Tachyphonus delatrii*. p. 473
17. Undersurface entirely gray or with large area of light blue. 18
 Undersurface not entirely gray or with blue. 22
18. Undersurface entirely gray, rump yellow.
 Sulphur-rumped Tanager, *Heterospingus xanthopygius*. p. 474
 Undersurface with blue, not gray. 19
19. Undersurface entirely pale blue.
 Blue-gray Tanager, *Thraupis episcopus*. p. 435
 Undersurface only partially blue. 20
20. Throat black.
 Swallow-Tanager, *Tersina viridis occidentalis*. p. 388
 Undersurface blue and green. 21
21. Chin reddish brown, throat and breast blue.
 Bay-headed Tanager, *Tangara gyrola*. p. 426
 Throat and breast green, belly blue.
 Rufous-winged Tanager, *Tangara lavinia*. p. 429
22. Upper surface primarily black, blackish gray, or dark blue. 23
 Upper surface lighter gray, green, yellow, or brown. 39
23. Upper surface dark blue. 24
 Upper surface extensively marked with black or blackish. 33
24. Large, 130 mm or more; upper surface entirely dull blue.
 Blue-and-gold Tanager, *Buthraupis arcaei arcaei*. p. 434
 Small, upper surface glossy dark blue or violet-blue. 25

25. Crown mostly light blue.
 male Blue-hooded Euphonia, *Euphonia musica elegantissima*. p. 393
 Crown brown or yellow..... 26
26. Crown reddish brown.
 male Tawny-capped Euphonia, *Euphonia anneae*. p. 397
 Crown yellow..... 27
27. Throat yellow..... 28
 Throat dark blue..... 29
28. Yellow of forecrown extends two-thirds length of eye.
 male Thick-billed Euphonia, *Euphonia lanirostris crassirostris*. p. 408
 Yellow of forecrown extends only to front of eye.
 male Yellow-throated Euphonia, *Euphonia hirundinacea gnatho*. p. 409
29. Yellow crown extends beyond eye..... 30
 Yellow crown extends to middle of eye or less..... 31
30. White patch on tail feathers.
 male Orange-bellied Euphonia, *Euphonia xanthogaster oressinoma*. p. 395
 No white on tail feathers.
 male Yellow-crowned Euphonia, *Euphonia luteicapilla*. p. 401
31. Dark blue ends in straight line across throat, not extending to breast.
 male White-vented Euphonia, *Euphonia minuta humilis*. p. 399
 Dark blue of throat extending to upper breast..... 32
32. White on outer tail feathers.
 male Fulvous-vented Euphonia, *Euphonia f. fulvicrissa*. p. 402
 No white on tail feathers.
 male Spot-crowned Euphonia, *Euphonia imitans*. p. 405
33. Upper surface black and bright yellow..... 34
 Upper surface without bright yellow..... 37
34. Large, more than 160 mm..... 35
 Small, less than 120 mm..... 36
35. Crown red.
 male Western Tanager, *Piranga ludoviciana*. p. 454
 Crown black.
 male White-throated Shrike-Tanager, *Lanio leucothorax*. p. 467
36. Throat and undertail coverts orange, rest of undersurface white.
 male Yellow-backed Tanager, *Hemithraupis flavicollis ornata*. p. 486
 Entire undersurface bright yellow.
 male Black-and-yellow Tanager, *Chrysothlypis chrysomelas*. p. 487
37. Small, forecrown and rump bright blue.
 Golden-hooded Tanager, *Tangara larvata*. p. 417
 Large, upper surface grayish black..... 38
38. Undersurface mostly green.
 Dusky-faced Tanager, *Mitrospingus cassinii*. p. 481
 Undersurface mostly reddish brown.
 female Rosy Thrush-Tanager, *Rhodinocichla rosea eximia*. p. 483
39. Upper surface gray, orange, or brown..... 40
 Upper surface greenish or yellow..... 48
40. Upper surface gray..... 41
 Upper surface orange or brown..... 44

41. Small, less than 130 mm. 42
 Large, more than 140 mm. 43
42. Throat and breast light gray, rest of undersurface white.
 Plain-colored Tanager, *Tangara inornata*. p. 423
 Throat black, abdomen reddish brown.
 Spangle-cheeked Tanager, *Tangara dowii*. p. 431
43. Undersurface white, with light gray on sides and flanks, and black band across breast.
 Gray-and-gold Tanager, *Tangara palmeri*. p. 422
 Entire undersurface grayish olive.
 Palm Tanager, *Thraupis palmarum atripennis*. p. 439
44. Head gray, rest of upper surface orange.
 female Scarlet-rumped Tanager, *Ramphocelus passerinii*. p. 444
 Upper surface brown. 45
45. Undersurface yellow on throat or belly. 46
 Undersurface brown. 47
46. Throat yellow, rest of undersurface dull olive.
 female Red-throated Ant-tanager, *Habia fuscicauda*. p. 464
 Throat and breast dingy brown, belly yellowish.
 female White-throated Shrike-Tanager, *Lanio leucothorax*. p. 467
47. Undersurface reddish brown.
 female White-lined Tanager, *Tachyphonus rufus*. p. 469
 Undersurface dark brown.
 female Tawny-crested Tanager, *Tachyphonus delatrii*. p. 473
48. Crown blue, gray, or blackish. 49
 Crown mostly green or yellow. 55
49. Crown blue. 50
 Crown gray or blackish. 51
50. Forecrown green, back bright green.
 Blue-crowned Chlorophonia, *Chlorophonia occipitalis callophrys*. p. 391
 Forecrown reddish brown, back dull green.
 female Blue-hooded Euphonia, *Euphonia musica elegantissima*. p. 393
51. Large, more than 160 mm.
 Gray-headed Tanager, *Eucometis penicillata*. p. 478
 Less than 150 mm. 52
52. Undersurface below throat entirely yellow. 53
 White patch in center of belly. 54
53. Crown light gray, throat white.
 female White-shouldered Tanager, *Tachyphonus luctuosus*. p. 470
 Crown blackish, throat yellow.
 Pirre Bush-tanager, *Chlorospingus inornatus*. p. 495
54. White spot behind eye.
 Common Bush-tanager, *Chlorospingus ophthalmicus*. p. 490
 Long white stripe behind eye.
 Sooty-capped Bush-tanager, *Chlorospingus pileatus*. p. 497
55. Wings entirely black, black with edges green, or with white wing bars. . . 56
 Wings close to color of back. 62
56. Wings entirely black or with white wing bars. 57

- Wings black, edged green..... 60
57. Wings entirely black.
 basic plumage male Scarlet Tanager, *Piranga olivacea*. p. 453
- Wings with white wing bars..... 58
58. Upper back streaked with black.
 female Flame-colored Tanager, *Piranga bidentata citrea*. p. 455
- Upper back greenish..... 59
59. Large, more than 160 mm.
 female Western Tanager, *Piranga ludoviciana*. p. 454
- Small, less than 140 mm.
 female White-winged Tanager, *Piranga leucoptera latifasciata*. p. 457
60. Larger, more than 135 mm.
 female Swallow-Tanager, *Tersina viridis occidentalis*. p. 388
- Smaller, less than 130 mm..... 61
61. Undersurface scaled black, edged light blue.
 Speckled Tanager, *Tangara guttata eusticta*. p. 412
- Undersurface mostly bright green or bright yellow..... 62
62. Undersurface mostly bright green.
 Emerald Tanager, *Tangara florida*. p. 411
- Undersurface bright yellow.
 Silver-throated Tanager, *Tangara icterocephala*. p. 414,
63. Larger, more than 150 mm..... 64
- Smaller, less than 135 mm..... 70
64. Rump and lower back bright yellow.
 female Yellow-rumped Tanager, *Ramphocelus*
 flammigerus icteronotus. p. 448
- Upper surface uniform..... 65
65. Eye ring or central crown patch present..... 66
- Crown and side of head unmarked..... 67
66. Bright yellow eye-ring.
 Lemon-browed Tanager, *Chlorothraupis olivacea*. p. 461
- Dull orange patch on crown.
 female Red-throated Ant-tanager, *Habia fuscicauda*. p. 464
67. Undersurface bright orangish or greenish yellow..... 68
- Undersurface dull, pale yellow or yellowish green..... 69
68. Throat orange-yellow.
 female Hepatic Tanager, *Piranga flava testacea*. p. 451
- Throat purer yellow.
 Carmioli's Tanager, *Chlorothraupis carmioli*. p. 458
69. Undertail coverts light, pure yellow.
 female Summer Tanager, *Piranga rubra rubra*. p. 452
- Undertail coverts greenish yellow.
 female Scarlet Tanager, *Piranga olivacea*. p. 453
70. Smaller, less than 105 mm..... 71
- Larger, more than 113 mm..... 80
71. Undersurface with white or gray..... 72
- Undersurface yellow, green, and/or brown..... 75
72. White on undersurface..... 73
- Gray on undersurface..... 74

73. Patch of light gray on throat.
female White-vented Euphonia, *Euphonia minuta humilis*. p. 399
Throat light yellow.
female Yellow-throated Euphonia, *Euphonia hirundinacea gnatho*. p. 409
74. Forecrown brown, turning yellow.
female Tawny-capped Euphonia, *Euphonia anneae*. p. 397
Forecrown entirely yellow.
female Orange-bellied Euphonia,
Euphonia xanthogaster oressinoma. p. 395
75. Brown on belly..... 76
No brown on belly..... 78
76. Forecrown yellow.
male Olive-backed Euphonia, *Euphonia gouldi praetermissa*. p. 404
Forecrown brown..... 77
77. Feathers of brown forecrown dark at base, chestnut of undersurface paler,
less extensive.
female Fulvous-vented Euphonia, *Euphonia f. fulvicrissa*. p. 402
Feathers of forecrown entirely brown, chestnut of undersurface darker and
more extensive.
female Spot-crowned Euphonia, *Euphonia imitans*. p. 405
78. Undertail coverts brown.
female Olive-backed Euphonia, *Euphonia gouldi praetermissa*. p. 404
Undertail coverts yellow..... 79
79. Bill always thick, usually longer, 9.2-10.8 (9.8) mm.
female Thick-billed Euphonia, *Euphonia lanirostris crassirostris*. p. 408
Bill always thinner, usually shorter, 7.9-9.7 (8.7) mm.
female Yellow-crowned Euphonia, *Euphonia luteicapilla*. p. 401
80. Undersurface entirely yellow.
female Black-and-yellow Tanager, *Chrysothlypis chrysomelas*. p. 487
Some white or gray on undersurface..... 81
81. Throat orangish yellow, breast drab brown.
Yellow-throated Bush-tanager, *Chlorospingus*
flavicularis hypophaeus. p. 496
Throat and breast uniform..... 82
82. Throat, breast, and undertail coverts light yellow, rest of undersurface white.
female Yellow-backed Tanager, *Hemithraupis flavicollis ornata*. p. 486
Throat and breast orangish yellow, sides, flanks and undertail coverts green.
Tacarauna Bush-tanager, *Chlorospingus tacarcunae*. p. 494

**TERSINA VIRIDIS OCCIDENTALIS (Sclater): Swallow-Tanager,
Azulejo Golondrina**

FIGURE 32

Procnias occidentalis P. L. Sclater, 1855, Proc. Zool. Soc. London, 22 (1854), p. 249. (Bogotá collections.)

Medium size; male, mostly bright light blue with black on forehead and throat; female mostly shining dark green with whitish yellow belly.

Description.—Length 137-147 mm. Adult male, forehead, orbital region, and throat black; upper surface and wing coverts bright light

blue; remiges and rectrices black with outer webs edged blue; breast, sides, and flanks blue, barred with black on sides and flanks; center of belly through undertail coverts white; underwing coverts blue.

Adult female, upper surface bright green, slightly lighter on rump and upper tail coverts; wing coverts slightly more yellowish; remiges and rectrices black, with outer webs edged green; lores, orbital region, and throat finely barred gray and white, tinged green; breast bright green; sides and flanks barred green and light yellow; center of belly through undertail coverts light yellow; bend of wing finely barred like throat; underwing coverts gray, tipped green.

FIGURE 32.—Swallow-Tanager, Azulejo Golondrina, *Tersina viridis occidentalis*, male.

Immature male, like female, with some blue feathers scattered on body.

Measurements.—Males (10 from Colombia), wing 81.5-87.1 (83.6), tail 48.6-54.6 (51.3), culmen from base 9.6-12.1 (10.7), tarsus 12.8-15.2 (14.2) mm.

Females (6 from Colombia and Venezuela), wing 78.0-84.2 (80.8), tail 45.9-51.3 (49.3), culmen from base 9.5-11.5 (10.6), tarsus 14.3-15.6 (15.0) mm.

Resident. Rare, known from only a few records in Darién and eastern Province of Panamá. There is no definite proof that this species nests in Panamá, and as it is known to be migratory in Venezuela (Schaefer, Auk, 1953, p. 406), it is possible that the Swallow-Tanager may be only a nonbreeding visitant in Panamá. Although E. A. Goldman collected 5 males in "immature" plumage at Cana, Darién, in the spring and summer of 1928, Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 186) noted that this patchy blue and green plumage may be retained into the bird's second year. Schaefer (*op. cit.*, p. 452) reports that flocks of adults and newly fledged immatures leave the nesting area a few weeks after the young have taken their first flights from the nest, so that Swallow-Tanagers may be found far from where they nest when still quite young. Goldman collected Swallow-Tanagers in April and June of 1912, and in the spring and summer of 1928, as already mentioned. There are also reports from Tapalisa, Darién, and the hills north of El Llano, in eastern Province of Panamá, where N. G. Smith saw a group of 11 on September 3, 1973. Oustalet, quoted by Salvin and Goldman (Biol. Centr.-Amer., vol. 1, (pt. 26), 1883, p. 246) mentions that this bird was collected "sur les bords du Golfe de Darién" in 1877. Ridgely (*in litt.*) found Swallow-Tanagers common at Cana in late February-early March, mostly in the valley at 550 m (especially in open forest around the mine clearings and the air strip), but also in undisturbed tall forest on the flanks of the Pirre massif to 700 m. The birds were seen daily, generally in small groups, usually not with other species. There was no indication of breeding behavior.

This race also occurs from Colombia to Peru, Bolivia, the Guianas, and northern Brazil. Other races are found from southern Brazil to northern Argentina and in the Santa Marta region of northern Colombia.

The Swallow-Tanager inhabits woodlands with clearings, where it feeds in the canopy layer, catching insects in the manner of a flycatcher and eating fruit. The commonest call note is a frequently uttered, single sharp *tsee*, harsh and loud. The song of the male is a "metallic clinking twitter of four to seven syllables *tsee-wi-tit-tit-tit*" (Schaefer, *op. cit.*, p. 413). Schaefer found that nests were placed in cavities in cliffs, earth walls, or manmade structures, but not in tree holes, as has been reported elsewhere. The nests were 1 to 3 m from the ground. The

nest itself is a shallow cup with an outer layer of vines, creepers, moss, and soft bark; the inner layer is made of tiny palm fibers. In Venezuela, the usual clutch is three eggs, which are porcelain white in color and average 21.5×15.0 mm. Incubation is performed by the female and takes approximately 15 days. The young are hatched with a sparse coating of yellowish-pink down the same color as their skin. They are fed insects and small amounts of fruit by both parents, although the female brings in far more than her mate; males usually do not begin feeding until the young are so large that the female alone could not satisfy them. The young leave the nest cavity at 24 days of age. At this time they still have short tails and sparsely-feathered heads, but can fly 40 or 50 m without previous practice. They are attended by the female for 8 to 10 days, while the males remain on their territory. Soon the adults join the flocks formed by juveniles and, at least at the site where Schaefer studied them in Venezuela, depart for lower elevations.

The Swallow-Tanager is often placed in a separate family, largely on account of its broad, flat bill, long wings, short legs, and nesting habits. Sibley (Bull. Brit. Orn. Club, 1973, pp. 75-79), however, suggests that its specialized anatomical characters are only feeding adaptations. He concluded that *Tersina* is a tanager and is most closely related to the genera *Thraupis* and *Tangara*. Raikow (Bull. Carnegie Mus. Nat. Hist. no. 7, 1978, p. 31) similarly concludes, on the basis of its appendicular myology, that *Tersina* is a tanager, but he considers it an "aberrant" thraupid "whose intergeneric affinities are obscure" (*op. cit.*, p. 41).

CHLOROPHONIA OCCIPITALIS CALLOPHRYS (Cabanis): Blue-crowned Chlorophonia, Tanagra Cejidorada

Triglyphidia callophrys Cabanis, 1860, Journ. f. Ornith., 8, p. 331. (Costa Rica.)

Small; bright green with blue central crown, male with yellow undersurface.

Description.—Length 118-137 mm. Adult male, forehead light green; forecrown and stripe to nape dark yellow; central crown to nape light blue-violet; very thin band across nape to side of breast light blue; lores and narrow orbital ring light blue; sides of face, to edge of blue nape band, throat and upper breast, bright green, edged with fine black stripe on sides of breast; rest of upper surface and wing coverts bright shiny green; remiges black, narrowly edged green on outer web of primaries; outer web of secondaries almost entirely green; tertials green; central pair of rectices entirely green, others black on inner web,

green on outer web; sides, flanks and sides of abdomen same bright green; rest of undersurface lemon yellow; underwing coverts white.

Adult female, upper surface like male, but yellow on crown replaced by bright light green; center of belly to undertail coverts pale yellow, not sharply divided from rest of undersurface, which is light green.

Immature male, like female.

A female collected at Volcán de Chiriquí, Chiriquí, on March 2, 1965, had the iris dark brown; maxilla, except base, and extreme tip of mandible black; base of maxilla below nostril and rest of mandible dull light green; tarsus and claws brownish neutral gray; claws fuscous-brown.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 69.8-78.8 (75.8), tail 40.5-50.8 (44.6), culmen from base 10.2-12.0 (11.2), tarsus 16.2-18.9 (17.4) mm.

Females (10 from Chiriquí and Costa Rica), wing 71.8-76.5 (74.1), tail 37.6-43.7 (40.5), culmen from base 10.2-11.4 (10.6), tarsus 16.7-18.5 (17.6) mm.

Resident. Uncommon in the highlands of Chiriquí and Veraguas, where it inhabits clearings and forest borders. W. W. Brown, Jr., collected it at Boquete and Volcán de Chiriquí between 1200 and 2250 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 64) and Mönniche found it at the latter location between 1590 and 2040 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 564). Ridgely (*in litt.*) encountered it at 1050 m on the slopes above the Fortuna Dam site in central Chiriquí, on March 4, 1981. In Veraguas, Arcé collected it at Chitra, Calovévora, and Calobre (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1, (pt. 26), 1883, p. 254); here it is found down to 750 m (Ridgely, 1976, p. 314). I have seen them as high as 2370 m at Volcán de Chiriquí. This race, *callophrys*, which is also found in Costa Rica, is simply a strongly marked race of *occipitalis*, which occurs from southeastern Mexico to northern Nicaragua (Hellmayr, Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 9, 1936, pp. 13-14).

At Cerro Punta, Chiriquí, on March 4, 1955, I found 3 or 4 of these birds working quietly through the higher branches of a tall tree standing in a pasture at 2160 m on the Boquete Trail above Bajo Grande. The one I collected was a female about to lay. The stomach was a mere excrescence on the side of the alimentary canal, but appeared heavier and somewhat better developed than in the euphonias. The call note is a high-pitched, slow whistle, to which they respond when it is imitated. Ridgely (*op. cit.*) mentions a "characteristic nasal call, to some suggestive of the yapping of a small dog, *enk-enk-enk-enk*." Skutch (Pac. Coast Avif. no. 31, 1954, pp. 252-258), who has studied this

species in Costa Rica, observed that they feed mainly on fruit, and when not nesting, move about in small flocks of not more than a dozen, in which females and immature-plumaged males outnumber males in adult plumage. As with some of the euphonias, males breed before they acquire the adult plumage—half the nests Skutch found were attended by males in “immature” plumage.

The nest is a roofed structure, with a round entrance on the side, made of mosses, rootlets, and spider webs; both male and female contribute equally to its construction. It is placed high in a tree, from 12 to at least 35 m from the ground, usually on branches covered with moss and epiphytes. Skutch found pairs with adult-plumaged males building in March and those with immature-plumaged males building as late as the end of May. As mentioned above, the female I collected on March 4, 1955, in Chiriquí was about to lay. The female lays at least three eggs and does all the incubation herself. The young are fed by both parents for about 23 days, until their departure from the nest, when they are closely accompanied by their parents. The food fed the nestlings is regurgitated and could not be identified by Skutch. At one of the nests begun in March, the young left May 21, and 2 weeks later a pair of chlorophonias, presumably the same one, occupied the nest again and reared another brood, which departed July 15.

**EUPHONIA MUSICA ELEGANTISSIMA (Bonaparte): Blue-hooded
Euphonia, Tanagra Capuchiazul**

Pipra elegantissima Bonaparte, 1838, Proc. Zool. Soc. London, 5 (1837), p. 112.
(Mexico.)

Very small; male, light blue crown and nape; rest of upper surface and throat very dark blue; rest of undersurface brownish orange; female, crown, and nape light blue; rest of body green, more yellowish on undersurface.

Description.—Length 100-112 mm. Adult male, forecrown tawny, with narrow border of very dark blue; remiges and rectrices blackish, secondaries edged very dark blue; rest of crown and nape light blue, extending in a thin line to sides of breast; rest of upper surface, including wing coverts, very dark blue; remiges and rectrices blackish, secondaries edged very dark blue; throat and sides of head very dark blue; rest of undersurface ochraceous-orange, slightly darker on upper breast and abdomen and undertail coverts; underwing coverts white.

Adult female, forecrown tawny, with a narrow dusky border; rest of crown and nape light blue, extending in a thin line to sides of breast;

rest of upper surface, including wing coverts yellowish green; remiges and rectrices blackish, edged yellowish green; sides of face yellowish green; center of throat pale tawny; rest of undersurface yellow; underwing coverts white.

A male collected at El Volcán, Chiriquí, on March 17, 1965, had the iris chocolate; maxilla and tip of mandible black; base of mandible neutral gray; tarsus and toes somewhat grayish brown; claws fuscous-black. A female taken 12 days earlier was similar.

Measurements.—Males (10 from Chiriquí), wing 62.0-67.5 (64.4), tail 34.4-40.6 (38.6), culmen from base 8.4-10.0 (8.9), tarsus 13.6-15.2 (14.3) mm.

Females (10 from Chiriquí and Costa Rica), wing 63.0-66.2 (64.1), tail 32.5-34.8 (33.6), culmen from base 8.1-9.2 (8.6), tarsus 14.0-15.4 (14.7) mm.

Resident. Uncommon to locally fairly common in the highlands of Chiriquí and Veraguas. In Chiriquí it has been collected from 1050 m, at El Banco, up to 2280 m, where I took 1 on Volcán de Chiriquí; it seems commonest, however, between 1050 and 1500 m. Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 565) comments that "During the breeding season this tanager apparently is restricted to the Subtropical Zone; at other times it may be found at altitudes ranging from 1200 [360 m] to 10,000 [3000 m] feet above sea level." In Veraguas, Arcé collected it at Calovévora (Salvin, Proc. Zool. Soc. London, 1870, p. 185), and Ridgely (*in litt.*) saw several pairs above Santa Fé in early January 1974. There is an old specimen in the American Museum from Natá, Coclé, that, because of its easterly and coastal location, was probably a purchased cagebird. Beyond Panamá, this race occurs north to central Mexico; other races are found in northwestern Mexico, South America to northern Argentina, and in most of the Antilles except Cuba. The populations from southeastern Guatemala through Panamá are sometimes placed in the race *vincens* of Hartert (Bull. Brit. Orn. Clu., 1913, p. 77), but a series in the Museum of Comparative Zoology, including 18 males from Mexico to Honduras and 19 from Costa Rica and western Panamá, shows only a very faint average difference, with the northern birds having the crown faintly bluer and the southern series faintly more purple. Many in one series are not distinguishable from individuals in the other, and the name *vincens* should, therefore, not be maintained. Hellmayr (Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 9, 1936, p. 22) considered the variation "insignificant" and also suppressed *vincens*.

This species inhabits woodland borders and clearings with scattered trees and is usually found in small groups. I have seen them most often feeding on mistletoe berries. This diet is correlated with an aberrant form of the stomach (Wetmore, Auk, 1914, pp. 458-461). All euphonias that have been examined have a large, well-developed glandular proventriculus, while the stomach proper is indicated by a thin transparent membranous band or zone which passes over, without lessening in size, into the dilated end of the small intestine, lined internally with projecting villi. As mistletoe berries are readily assimilated and the process of digestion apparently is carried out entirely by secretions of the alimentary canal, the ventriculus has degenerated into a thin band and the stomach has straightened to facilitate the passage of food.

Ridgely (1976, p. 374) says this species is "rather quiet, but sometimes gives a single high *chup*, a little reminiscent of a House Sparrow." Slud (Bull. Am. Mus. Nat. Hist., 128, 1964, p. 345) describes several other notes, including a *tsoor* and a *tsyip*.

A nest and eggs of this tanager was collected by Mönniche on the Volcán de Chiriquí on May 13, 1932, (Blake, Condor, 1956, p. 388). The nest was 5 m from the ground in the crown of a small tree and was a compact cup made of moss with a few dried leaves and plant stalks, and lined with fine black rootlets. Outside dimensions were 14×11.5×7.6 cm; the interior was 6.4×9.5 cm. The two eggs measured 23.4×17.3 and 23×18 mm; they were creamy white, thickly dotted with fine spots of very dark purplish brown and dull chestnut.

Ridgely (*in litt.*) found a pair of this species building a nest on the grounds of the Dos Ríos Hotel outside Volcán on March 6, 1976. The nest was in a tree fork about 18 m above the ground. In material, it was like the one described above. Both members of the pair rapidly brought in material (*Usnea*-type mosses), and often worked together, though the female always preceded the male in flying to the nest.

EUPHONIA XANTHOGASTER ORESSINOMA Olson: Orange-bellied
Euphonia, *Tanagra* *Ventrinaranja*

Euphonia xanthogaster oressinoma Olson, 1981, Proc. Biol. Soc. Wash., 94(1), p. 102. (Hacienda Sofía, Río Samaná, Caldas, Colombia.)

Very small; male, glossy dark blue on upper surface and throat, with bright yellow crown and yellow breast and belly; female, dull yellowish green on upper surface, sides, and flanks; buffy gray on central under-surface.

Description.—Length 95-102 mm. Adult male, fore- and mid-crown

rich yellow; hindcrown, sides of head, throat, and upper breast, and rest of upper surface, including wing coverts, glossy dark blue, slightly more purple on head, nape, and throat; remiges and rectrices blackish, edged dark blue; basal third of secondaries and inner primaries white on inner web; outer pair of tail feathers with white patch on inner web; rest of undersurface rich yellow; underwing coverts white.

Adult female, forecrown dark orange-yellow, becoming yellowish green on midcrown; hindcrown and nape dark gray; rest of upper surface yellowish green; wings and tail dusky, with all feathers edged yellowish green; sides of head, chin, and sides of undersurface yellowish green; throat and breast gray, becoming pinkish buff on belly, bend of wing light yellow; underwing coverts white.

Juvenile, entirely gray, lighter on undersurface; remiges and rectrices edged yellowish green; a few yellowish green feathers on back.

Measurements.—Males (10 from Darién and Colombia), wing 59.0-69.0 (63.9), tail 26.7-45.8 (36.4), culmen from base 9.0-11.1 (9.9), tarsus 15.1-16.9 (16.2) mm.

Females (7 from Colombia), wing 59.3-62.3 (61.1), tail 33.7-38.6 (36.2), culmen from base 10.2-11.6 (10.6), tarsus 14.6-16.9 (16.3) mm.

Resident. Known in Panamá only from a few localities in the foothills of eastern Darién. It appears to be rare, but recorded sparsely from a wide elevational range. E. A. Goldman collected it in 1912 on Cerro Pirre between 1500 and 1560 m near the head of the Río Limón and 14.4 km east of Cana; the Fifth George Vanderbilt Expedition of the Academy of Natural Sciences collected it at 900 m on Mt. Sapo in 1941; and I took males on Cerro Pirre at the head of the Río Setegantí (480 m) in 1961 and on the Río Jaqué at the mouth of the Río Imamá-dó in 1947. This race also occurs in western Colombia; other races range as far as Guyana, Amazonian Brazil, and Bolivia.

There is some variation within the race *oressinoma*: birds from Darién tend to be somewhat darker, more ochraceous below, and those from Caldas, Colombia, are yellowest, but individual variation bridges the differences. *E. x. oressinoma* probably ranges into Ecuador, but Olson has not seen specimens from there referable to this subspecies. These populations were formerly recognized under the name *chocoensis* Hellmayr (Rev. Franç. Ornith., vol. 2, 1911 p. 23), but Olson, in his description of *oressinoma*, has shown *chocoensis* to be a smaller form that is restricted to the Pacific lowlands of Colombia and Ecuador.

The Orange-bellied Euphonia has been found in forest and forest borders. The bird I took at Cerro Pirre on January 28, 1961, was part

of a mixed flock of small birds feeding on figs. I was interested to find the throat filled with fig pulp, though the usual remains of mistletoe berries were in the intestine.

EUPHONIA ANNEAE Cassin: Tawny-capped Euphonia,
Tanagra Copetileonada

Small; male, crown reddish brown; throat and rest of upper surface glossy purplish blue; undersurface bright yellow; female, upper surface mostly yellowish green; undersurface gray, greenish yellow on sides and flanks.

Description.—Length 100-115 mm. Adult male, crown reddish brown; throat, lores, superciliary, and rest of upper surface, including wing coverts, glossy dark violet-blue; remiges black with outer webs edged very dark blue and with white patch at base of inner web of all remiges except two outermost primaries; rectrices black, with outer webs edged very dark blue, and large white patch on end of inner web of outermost pair; undertail coverts white; rest of undersurface rich yellow, slightly darker on breast; underwing coverts white and lemon yellow.

Adult female, forecrown orangish brown, turning yellowish green and then dark gray on most of hind crown; rest of upper surface, including wing coverts, yellowish green; remiges and rectrices blackish, edged yellowish green on outer web; side of head yellowish green; throat and breast gray, tinged yellow on forechin, and becoming pinkish buff on belly and abdomen; sides and flanks greenish yellow; underwing coverts white.

This euphonia inhabits forest and second-growth woodland, where it usually forages within 7 m of the ground, traveling in pairs or as part of small mixed flocks. As with others of its genus, this species feeds extensively on mistletoe berries. It is found primarily inside the forest, coming less often to the edge, where it feeds on the fruit of *Miconia* and other trees. Its calls include short, sharp, and nasal notes, trills, and twittering chatter. A female I collected at the Candelaria Hydrographic Station March 6, 1961, was ready to lay. Two collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 15.0 and 15.4 g.

Two races of this species are recognized, but they are poorly marked. On the basis of the U.S. National Museum series, for example, one would have to consider *E. a. rufivertex* invalid, but some specimens in other collections show the characters more clearly. The nominate race occurs on the Pacific slope of Costa Rica and in extreme western Panamá, where it is known from locations on both slopes in Chiriquí and

Bocas del Toro. The race *rufivertex* is found from both slopes of Veraguas to northwestern Colombia on the Gulf of Urabá.

Ridgely (1976, p. 315) says this species has "rather harsh conversational notes, but [is] usually silent."

EUPHONIA ANNEAE ANNEAE Cassin

Euphonia Anneae Cassin, 1865, Proc. Acad. Nat. Sci. Philadelphia, p. 172. (Santa Rosa, Costa Rica.)

Characters.—Male is more yellow, less orange, on undersurface, especially on breast; sides clearer yellow. Female is more yellowish green on sides and flanks, averaging somewhat lighter gray on foreneck, breast, and abdomen; somewhat lighter green above.

Measurements.—Males (10 from Panamá and Costa Rica), wing 62.3-68.5 (65.1), tail 31.9-38.4 (35.9), culmen from base 9.0-10.9 (10.0), tarsus 14.9-16.5 (15.7) mm.

Females (7 from Costa Rica), wing 59.0-64.2 (61.9), tail 31.2-36.1 (33.8), culmen from base 9.0-10.8 (9.8), tarsus 15.6-16.2 (15.9) mm.

Resident. Uncommon to locally common in western Chiriquí and Bocas del Toro in the foothills of both slopes, usually found between 600 and 1200 m, although I collected a male at 1740 m on Cerro Punta, Chiriquí. Elsewhere in Chiriquí it has been taken at El Volcán and Boquete. Ridgely (*in litt.*) found this species "numerous" at the Fortuna Dam site in February-March 1976. Three males in the collection of the Museum of Comparative Zoology marked "Panama (Caribbean slope)" taken at 2100 m in June 1901 come from the Caribbean slope of the Volcán de Chiriquí. In the foothills of Bocas del Toro, R. Hinds collected an immature male at 720 m on the Río Changuena. Hinds also collected a male in the Bocas del Toro lowlands, on January 15, 1980, at the IRHE dam site camp at 50 m, at the base of the mountains.

EUPHONIA ANNEAE RUFIVERTEX Salvin

Euphonia rufivertex Salvin, 1866, Proc. Zool. Soc. London, p. 71, pl. 7. (Santiago de Veraguas.)

Characters.—Male is more orange below, averaging darker on sides, which are dull yellow. Female is dull green on sides and flanks; averaging darker gray on foreneck, breast, and abdomen; somewhat duller green above.

A male collected at the Candelaria Hydrographic Station, Panamá, on March 6, 1961, had the iris dark brown; basal half of mandible

neutral gray; rest of bill black; tarsus and toes dark neutral gray; claws black. A female collected there the same day was similar.

Measurements.—Males (10 from Panamá), wing 60.9-67.8 (63.8), tail 32.3-38.8 (32.3), culmen from base 9.6-10.3 (10.0), tarsus 16.2-17.0 (16.7) mm.

Females (7 from Panamá), wing 54.0-59.8 (58.3), tail 30.9-36.5 (33.5), culmen from base 8.9-10.9 (9.7), tarsus 14.7-16.0 (15.6) mm.

Resident. Known from several locations from Veraguas to Darién. In Veraguas, R. R. Benson took a series at Guaval, Río Calovévora, on the Caribbean slope between 180 and 300 m, and Arcé found it on the Pacific slope at Santa Fé, Santiago de Veraguas, and Calobre (Salvin and Godman, *Biol. Cent.-Amer., Aves*, vol. 1 (pt. 26), 1883, p. 265). Farther east, I have collected it in Coclé at El Valle and Tigre at the head of the Río Guabal, at Cerro Campana, Cerro Azul, and the Candelaria Hydrographic Station, Panamá, and Cerro Malí and Tacarcuna Village, Darién.

**EUPHONIA MINUTA HUMILIS (Cabanis): White-vented Euphonia,
Tanagra Diminuta**

Phonasca humilis Cabanis, 1860, *Journ. f. Ornith.*, 8, p. 334. (Costa Rica.)

Very small; male, bright yellow forecrown; rest of upper surface and throat glossy dark blue; abdomen white, rest of undersurface bright yellow; female, upper surface dull yellowish green; undersurface mostly greenish yellow.

Description.—Length 79-98 mm. Adult male, forecrown rich yellow; lores, rest of head, and throat glossy dark violet-blue, becoming very dark blue on rest of upper surface, including wing coverts; remiges dusky blackish, inner secondaries white on basal third; rectrices black, with white patches on inner webs of outer two pairs; lower abdomen and undertail coverts white; rest of undersurface rich yellow; underwing coverts white.

Adult female, sides of head and upper surface, including wing coverts, yellowish green, slightly more yellow on forecrown; remiges and rectrices dusky, edged green; throat pale gray extending to sides of nape, flecked with yellow on chin; breast greenish yellow, becoming greener on sides and flanks; rest of undersurface whitish; underwing coverts white.

Immature male, upper surface yellowish green, except for yellow forecrown; throat dark violet-blue; rest of undersurface yellow on center, becoming greenish yellow on sides.

Measurements.—Males (10 from Panamá, Colombia, and Costa Rica), wing 50.0-54.2 (51.8), tail 22.3-32.1 (27.5), culmen from base 7.7-9.3 (8.2), tarsus 10.8-13.5 (12.4) mm.

Females (10 from Panamá, Colombia, and Costa Rica), wing 48.8-54.5 (51.9), tail 22.7-28.1 (26.4), culmen from base 7.9-8.7 (8.4), tarsus 12.2-13.4 (12.6) mm.

Resident. Uncommon to fairly common locally in lowlands and foothills on the Caribbean slope; more scattered on the Pacific slope. It has not been found in Chiriquí since Arcé took 2 males at Bugaba in the 1860's (Salvin, Proc. Zool. Soc. London, 1870, p. 1). Due to almost complete deforestation, it may no longer occur here. Ridgely and F. G. Stiles saw 3 above Santa Fé, Veraguas, in January 1974 (*in litt.*) and it is also recorded in eastern Province of Panamá in the Cerro Azul/Jefe area and various localities in Darién (Ridgely, 1976, p. 315). Beyond Panamá, this race ranges to southern Mexico and western Ecuador; the nominate form is found east of the Andes to central Bolivia.

This smallest of the euphonias inhabits humid forest and forest borders and almost always forages high in trees. On the Pipeline Road in the Canal Zone, where James Karr found it regularly during 1969, he never saw one below heights of 8 to 12 m; they continue to be found in this locality, in small numbers (Ridgely, *in litt.*). Like other euphonias, this species feeds extensively on mistletoe berries, but Skutch (Publ. Nutt. Orn. Club., no. 10, 1972, p. 182) believes they also take more insects and spiders than do their congeners. They are often part of mixed species flocks. Five collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed from 9.4 to 11.5 g. When feeding, males frequently utter little calls; both sexes also have a thin, sharp note.

Skutch (*op. cit.*, pp. 183-187) found three nests of this species in Costa Rica; the nest was in use between late March and August. The nests were 5 to 7 m from the ground surrounded by mosses or epiphytes and were globular with an entrance on the side. One nest was made of moss with orchid roots and living ferns, with a lining of grass blades and very fine plant fibers. Both sexes worked at nest construction. The usual clutch seems to be three eggs; they are white, heavily blotched and spotted with brown. The growth rate of these euphonias is notably slower than that of most tanagers, especially considering their small size; incubation requires at least 17 days, and the young, which hatch with very sparse down, are not feathered until about 15 days old. They are fed regurgitated food that Skutch could not identify, and leave the nest at 20 days, when they can fly well.

**EUPHONIA LUTEICAPILLA (Cabanis): Yellow-crowned Euphonia,
Bin-Bín**

Phonasca luteicapilla Cabanis, 1860, Journ. f. Ornith., 8, p. 332. (Costa Rica.)

Very small; male, crown and most of undersurface bright yellow; throat and rest of upper surface glossy dark purplish blue; female, yellowish green on upper surface; greenish yellow on undersurface.

Description.—Length 86-96 mm. Adult male, base of bill, side of face, throat, and upper breast, and upper surface, including wing coverts, glossy very dark blue, slightly more purplish on head and throat; remiges blackish, edged white on inner web; secondaries edged blue on outer web; rectrices blackish, edged blue; rest of undersurface and bend of wing rich yellow; underwing coverts white.

Adult female, entire upper surface, including wing coverts, yellowish green, slightly lighter on rump and upper tail coverts; remiges and rectrices dusky, edged yellowish green; chin, abdomen, and undertail coverts lemon yellow; rest of undersurface greenish yellow; underwing coverts white.

A male and female collected at Puerto Armuelles, Chiriquí, on March 3, 1966, both had the iris dark brown; base of maxilla below nostril and mandible except tip bluish neutral gray; rest of bill black; tarsus and toes dusky neutral; claws black.

Measurements.—Males (10 from Panamá), wing 53.2-56.0 (54.7), tail 29.9-34.3 (32.2), culmen from base 8.4-10.2 (9.1), tarsus 12.5-14.0 (13.3) mm.

Females (10 from Panamá), wing 47.5-54.8 (51.7), tail 29.0-32.4 (30.5), culmen from base 7.9-9.7 (8.7), tarsus 11.6-14.1 (13.1) mm.

Resident. Common in Pacific slope lowlands in dry, scrubby areas, savannas, and extensive clearing from Chiriquí east into Darién at least as far as El Real, where I collected a male on January 23, 1964 (this specimen had previously been reported as *E. xanthogaster* and was corrected by Olson, Proc. Biol. Soc. Wash., vol. 91, no. 2, 1981 p. 106 note). On the Caribbean side, the species is found in small numbers in lowland Bocas del Toro, where H. von Wedel collected it at Changuinola and Almirante (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 340) and in the Canal Zone area. Mönniche took 1 at 1620 m on the Volcán de Chiriquí (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 565), but it is usually not found above 900 m. This species ranges north to eastern Nicaragua, but does not extend south beyond Panamá.

This euphonia is unusual in that it inhabits a range of habitats, from open scrub in dry areas to clearings and forest edge in very humid areas, even those naturally covered with true lowland rain forest. It is

found at least occasionally in the canopy of deciduous forest. Its habits, however, differ very little from those of its forest-dwelling congeners. *E. luteicapilla* usually moves in small flocks of its own species that call almost continually; *pe-we*, *see-see*, and *beem-beem* are some renditions of their thin short notes, the last being the source of their local name, Bin-bín. It also has a thin, wiry song, and is a popular cage bird (Ridgely, 1976, p. 315). Like other euphonias, this one feeds primarily on mistletoe berries. A female collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 13.2 g.

A male that I collected at Almirante on January 16, 1955, was in immature plumage with only a few blue feathers showing on the back, but had the testes three-fourths developed toward breeding. On March 9, 1957, I found a nest of this species at Pedasí, Los Santos. It was in a partly rotted out woodpecker hole in a fence post, 13 m or so from the border of rather open, dry scrub; the hole was near the top of the post, 1.3 m above the ground. From the front edge of the nest to the lip of the opening there was a solid mass of dried, excreted mistletoe seeds. The nest itself was a bulky cup made of leaf fragments, fine twigs, and grass blades with a lining of finer plant fibers and grass blades. The eggs were white, heavily marked with brown blotches that were especially concentrated on the wider end, where they formed a ring. The eggs measured 12.4×16.6 , 12.7×17.6 , and 12.0×17.1 mm.

Skutch (Pac. Coast Avif. no. 31, 1954, pp. 241-246) found several nests in Costa Rica; they ranged in height from 1 to 35 m above the ground, but half were between 2 and 3 m. All were placed in snug crotches or crannies; both sexes participated in construction. Most clutches were of three eggs, although Skutch also found a few nests with two or four. The female does all the incubation, and the eggs hatch in 13 or 14 days. The young are fed regurgitated matter by both parents; they leave the nest at 22 to 24 days of age. Sometimes a second brood is raised.

EUPHONIA FULVICRISSA FULVICRISSA Sclater: Fulvous-vented
Euphonia, Tanagra Ventriamarillo

Euphonia fulvicrissa P. L. Sclater, 1857, Proc. Zool. Soc. London, 24 (1856), p. 276. (Santa Martha in New Grenada [locality not certain].)

Very small; forecrown yellow; rest of upper surface, throat, and upper breast glossy dark blue; rest of undersurface yellow with tawny wash in center of belly and undertail coverts; female, reddish brown forecrown; upper surface bluish green; undersurface yellowish green with tawny wash on belly.

Description.—Length 82-96 mm. Adult male, forecrown yellow; sides of head, throat, upper breast, and rest of upper surface, including wing coverts, glossy very dark blue; remiges black with outer webs edged very dark blue, and white patch on basal half of inner webs; rectrices black with outer webs edged very dark blue and white patch on inner web of outermost (sometimes 2 outermost) pair; rest of undersurface rich yellow, with wash of orange-brown on center of belly and on undertail coverts; underwing coverts white.

Adult female, forecrown brown; rest of upper surface, including wing coverts, glossy yellowish green; crown and upper back tinged green-blue slate; remiges and rectrices dusky, edged greenish yellow; undersurface greenish yellow, slightly brighter on throat, except for wash of orange-brown from center of lower breast to undertail coverts; underwing coverts white.

A male collected at El Real, Darién, on January 24, 1964, had the iris dark brown; maxilla and tip of mandible black; base of mandible bluish neutral gray; tarsus and toes dark neutral gray; claws black.

Measurements.—Males (10 from Panamá), wing 50.5-55.2 (52.7), tail 26.2-31.8 (29.4), culmen from base 9.1-10.6 (9.8), tarsus 12.9-14.8 (13.9) mm.

Females (10 from Panamá), wing 50.0-57.0 (53.1), tail 27.3-32.2 (28.8), culmen from base 8.6-10.3 (9.5), tarsus 12.3-14.8 (13.9) mm.

Resident. Common in lowlands on both slopes from central Panamá eastward. On the Caribbean slope I have collected it as far west as El Uracillo, Coclé and Chilar, Colón; on the Pacific side I know of no recent records west of Cerro Campana, Province of Panamá, where it ranges up into the foothills (Ridgely, 1976, p. 315). Arcé collected specimens in Chiriquí at Bugaba and Volcán de Chiriquí (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 26), 1883, p. 264) and there is another Arcé specimen in the Smithsonian marked "Veragua, 1875"; these old specimens in the British Museum may, on reexamination, however, prove to be either *E. imitans* or *E. gouldi*. To the east, the range of this race extends into northern Chocó, Colombia; other races occur in Colombia and in northwestern Ecuador.

This euphonia inhabits forest, forest borders, and clearings. It is usually found in small groups that may include other species: I once saw one in heavy forest at Jaqué, Darién, with a flock of White-flanked Antwrens (*Myrmotherula axillaris*), and another time, at Chilar, Colón, I took 1 with a pair of *Euphonia luteicapilla*. The Fulvous-vented Euphonia often forages in the undergrowth and lower levels of trees, below the usual levels of other euphonias. It takes many mistle-

toe berries, but Leck (Living Bird, 1971, p. 96-97) observed it at Barro Colorado Island feeding regularly on the fruit of *Pothomorphe*, *Piper marginatum*, *Piper leptocladum*, all in the pepper family, and *Lantana*. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed 10.1 gram. As they move about, these birds give a chattering *treah-treah* call.

Ridgely (*in litt.*) found a nest under construction on December 31, 1974, in the Bayano River Valley, just upstream from Majé, Province of Panamá. Both members of the pair were bringing in fibrous material to a chamber in the thickest part of a large piece of hanging moss of some kind, situated some 12 m above the ground. Both birds continued to bring in material during the heat of the day. I have no information on the eggs or young.

**EUPHONIA GOULDI PRAETERMISSA (Peters): Olive-backed
Euphonia, Tanagra Espaldiroliva**

Tanagra gouldi praetermissa Peters, 1929, Bull. Mus. Comp. Zool., 69, p. 470.
(Western River, Almirante, Panamá.)

Very small; male glossy green on upper surface with yellow forecrown; undersurface yellowish green with reddish brown and yellow on center of belly; female like male on upper surface, but yellow patch replaced by brown; undersurface greenish yellow with reddish brown undertail coverts.

Description.—Length 79-90 mm. Adult male, forecrown yellow; rest of upper surface, including wing coverts, glossy olive-green; remiges and rectrices dusky blackish, with outer webs edged yellowish green; throat, breast, and sides yellowish green; center of belly to undertail coverts reddish brown; sides of belly flecked yellow and green; underwing coverts white.

Adult female, forecrown very dark brown; rest of upper surface like male; undersurface light greenish yellow, darker on sides, to undertail coverts, which are reddish brown; underwing coverts white.

Measurements.—Males (8 from Panamá and Costa Rica), wing 52.5-57.0 (54.7), tail 21.7-28.0 (25.6), culmen from base 9.0-10.7 (10.0), tarsus 13.2-14.8 (14.1) mm.

Females (7 from Panamá, Costa Rica, and Guatemala), wing 49.9-56.8 (53.2), tail 23.1-28.5 (26.0), culmen from base 9.5-10.7 (9.8), tarsus 14.0-16.4 (15.0) mm.

Resident. Common on the Caribbean slope in the lowlands of Bocas del Toro; reported also from the Caribbean lowlands of western Veraguas. H. von Wedel collected several in Bocas del Toro during 1928

and 1929 at Changuinola, Guabo, Almirante, and Cricamola (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 340). There are also several old records from other provinces: Arcé collected it in Chiriquí at Bugaba and Volcán de Chiriquí (Salvin, Proc. Zool. Soc. London, 1870, p. 186). A pair taken by McLeannan and Galbraith on the Caribbean slope near the Panama Railroad was reported by Lawrence (Ann. Lyc. Nat. Hist. New York, vol. 7, 1861, p. 332). The male could hardly be misidentified, if adult, but there is a female in the Smithsonian collections taken by McLeannan that had been identified as *E. gouldi*, but which is actually referable to *E. fulvicrissa*. Thus it is unlikely that *E. gouldi praetermissa* extends as far east as the Canal Zone. This race ranges along the Caribbean slope north to extreme eastern Honduras; the nominate form is found north to southeastern Mexico.

This species differs from all other Panamanian euphonias in that the male lacks the yellow and dark blue plumage that generally characterizes the group. It inhabits forest, forest edges, and clearings, where it forages at all heights. It usually moves about in pairs or small groups, sometimes joining other species, such as flocks of *Myrmotherula* antwrens. One that I collected on the bank of the Western River at Almirante had the throat and gut filled with bright red plant juice that I could not identify, as there were no seeds. The stomach was membranous, like that of other euphonias I have examined. I have always found this to be a quiet and inconspicuous bird, but Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 349) records a variety of trills, chirps, whistles, and other notes from both sexes. In Ridgely's experience, these notes are delivered very softly. On February 5 and 12, 1958, I took breeding males in Almirante, but I have no details from Panamá of their nesting habits. S. M. Russell (A.O.U. Monogr. no. 1, 1964, p. 168) found the nest of the nominate race in British Honduras. It was domed and suspended from the tip of a branch about 2 m above the forest floor. It contained no eggs.

A male *E. gouldi* collected in Panamá by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 10.9 g.

EUPHONIA IMITANS (Hellmayr): Spot-crowned Euphonia,
Tanagra Coronimanchada

FIGURE 33

Tanagra imitans Hellmayr, 1936, Field Mus. Nat. Hist. Publ., Zool. Ser., 13, pt. 9, p. 63. (El Pózo, Río Térraba, Costa Rica.)

Very small; male, forecrown yellow, flecked with black; rest of upper surface, throat, and upper breast glossy dark blue; rest of undersurface

bright yellow; female, forecrown reddish brown; rest of upper surface glossy bluish green; undersurface greenish yellow with tawny stripe from center of belly to undertail coverts.

FIGURE 33.—Spot-crowned Euphonia, *Tanagra Coronimanchada*, *Euphonia imitans*, male (above), female (below).

Description.—Length 89-100 mm. Adult male, forecrown, to just past eye, yellow, with basal two-thirds of feathers black, creating a spotted appearance; sides of head, throat, upper breast, and rest of upper surface, including wing coverts and tail, glossy dark blue, slightly more purplish on crown and nape; remiges dusky blackish, edged dark blue on outer webs, inner webs white on basal half; rest of undersurface yellow; underwing coverts white.

Adult female; forecrown reddish brown; rest of crown, back, and rump glossy olive-green, tinged bluish; upper tail coverts dark yellow; lesser wing coverts like back, others dark yellow; remiges and rectrices dusky blackish with outer webs edged dark yellow; sides of head and undersurface yellowish green, except for reddish brown center of belly to undertail coverts; underwing coverts white.

Measurements.—Males (8 from Chiriquí and Costa Rica), wing 56.0-62.9 (59.9), tail 29.5-33.2 (31.9), culmen from base 9.9-11.8 (10.5), tarsus 14.2-16.4 (15.2) mm.

Females (10 from Chiriquí and Costa Rica), wing 54.6-59.6 (57.8), tail 25.6-32.4 (28.9), culmen from base 9.0-11.4 (10.0), tarsus 14.3-16.0 (15.3) mm.

Resident. Rare in the lowlands and foothills of western Chiriquí, where it has been collected at Divalá, Bugaba, and Boquerón in the lowlands and at 1200 m on Cerro Pando and at El Volcán; found also on the Pacific slope of Costa Rica, where, in some localities at least, it is common. It inhabits forests and forest borders, rarely coming into clearings with trees. Ridgely (*in litt.*) found a pair at Santa Clara (1300 m), Chiriquí, on March 22, 1979. The birds remained in lower growth of forest edge and out short distances into overgrown clearing. The birds' *treenh*, *treenh* call sounded to Ridgely identical to that of *E. fulvicrissa*.

Skutch (Publ. Nutt. Orn. Club, no. 10, 1972, pp. 188-198), who has observed this species extensively in Costa Rica, found that it forages for insects high in trees on mossy branches and among dead leaves caught in vine tangles, and also takes many berries from *Lycianthes synanthera*, *Calliandra similis*, and plants of the genus *Piper*. It also feeds on nectar. On sunny days in the beginning of the dry season this euphonia is particularly vocal; the male has a song that is a medley of clear and burry notes with some soft or warbled notes occasionally mixed in. The female also sings from time to time, and has several churring and rattling calls. Skutch found nests from March to June. They were placed 2 to 8 m from the ground and usually hidden in a dense growth of moss and epiphytes against a trunk or limb. The nest itself is a globe built of moss, rootlets, and epiphytic ferns, lined with fine fibrous material; the entrance is on the side. Both sexes work on construction. The clutch consists of three, or less often, two eggs that are white or pinkish white, speckled and blotched various shades of brown, usually more heavily on the broader end. The measurements of 13 eggs averaged 12.8×19.7 mm. At one nest the incubation period was

18 days; as in other euphonias, this is longer than most other birds of this small size. Unfortunately, Skutch never found a nest in which the young escaped predation for more than a day after hatching, and so has no information on their care.

EUPHONIA LANIROSTRIS CRASSIROSTRIS Sclater: Thick-billed
Euphonia, Piquigordo

Euphonia crassirostris P. L. Sclater, 1857, Proc. Zool. Soc. London, 24 (1856), p. 277. (New Grenada, Bogota.)

Very small; bill thicker than in other euphonias; male, bright yellow forecrown and undersurface; sides of head and rest of upper surface yellowish green; undersurface greenish yellow.

Description.—Length 97-104 mm. Adult male, forecrown to just behind eye yellow; lores, sides of head, and entire upper surface, including wing coverts, glossy dark blue, slightly more purplish on head and nape; remiges blackish, edged dark blue on outer webs and white on basal half of inner webs; rectrices blackish, edged dark blue, with large white patch on inner web of outer two pairs; entire undersurface rich yellow; bend of wing yellow; inner wing coverts white.

Adult female, sides of head and entire upper surface, including wing coverts, yellowish green; remiges and rectrices dusky brownish, with outer webs edged yellowish green; entire undersurface greenish yellow, except for lower belly, which is light yellow; underwing coverts white.

Immature male, like adult, but blue areas yellowish green, gradually replaced with blue:

A female collected at Puerto Armuelles, Chiriquí, on February 7, 1966, had the iris dark wood brown; base of maxilla below nostril, and mandible except tip bluish neutral gray; rest of bill black; tarsus and toes dusky neutral gray; claws fuscous. An immature male collected there February 11 was similar, but an adult male taken there February 14 had the iris dark reddish brown and the tarsus and toes fuscous.

Measurements.—Males (10 from Panamá), wing 59.8-63.9 (61.6), tail 32.6-38.4 (35.2), culmen from base 9.3-10.3 (10.0), tarsus 13.2-15.8 (14.4) mm.

Females (10 from Panamá), wing 57.5-62.0 (58.8), tail 32.2-35.7 (33.6), culmen from base 9.2-10.8 (9.8), tarsus 13.9-15.2 (14.7) mm.

Resident. Common in the humid lowlands and foothills along the entire Pacific slope and on the Caribbean slope from El Uracillo, Coclé, eastward. In western Chiriquí, it has been collected at Boquete as high

as 1200 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 64). Beyond Panamá, this race occurs in Costa Rica and in northern Colombia and Venezuela; other races range to Bolivia and central Brazil.

This euphonia is widespread in clearings, gardens, woodland, and forest borders, where it is usually found in groups that may often include other species. Among its calls are a sweet *chweet*, a *wheep*, and a clear *peet-peet*. Like *E. violacea* of South America, *laniirostris* mimics the calls of other birds. Morton (Wilson Bull., 1976, pp. 485-487) noted in the Canal Zone that they most often imitate the alarm calls of other species that nest concurrently and mob nest predators; in this way when their own nest is threatened they draw other species to their aid while not actually defending their nest or young themselves. Of the many euphonias that are kept as cage birds in Panamá, this species is the most popular.

Gladys C. Barnard studied this species in the Canal Zone from 1938 to 1953 (Condor, 1954, pp. 98-101) and found them nesting from March into September. Around Pedro Miguel many nested in hanging pots of ferns and orchids on suburban porches. The nests were domed, with a deeply down-curving entrance on the side under a small overhang. Four, and occasionally 5, eggs form the clutch; they are white or pinkish white thickly streaked at the larger end with dusky brown. The incubation period was found to be between 13 and 16 days; the young remain in the nest 20 or 21 days. As many as three broods may be reared by one pair in a single nest. As in other euphonias, males breed before acquiring their adult plumage.

Seven collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed from 14.2 to 16.5 g.

**EUPHONIA HIRUNDINACEA GNATHO (Cabanis): Yellow-throated
Euphonia, Tanagra Gargantamarilla**

Phonasca Gnatho Cabanis, 1860, Journ. f. Ornith., 8, p. 335. (Costa Rica.)

Very small; bill thicker than that of most other euphonias; male, forecrown yellow; sides of head and rest of upper surface glossy dark blue; entire undersurface yellow; female, upper surface yellowish green; most of undersurface greenish yellow; belly white.

Description.—Length 95-109 mm. Adult male, forecrown, ending above middle of eye, yellow; lores, sides of head, and entire upper surface including wing coverts, glossy dark blue; remiges blackish with outer webs edged dark blue and inner webs, especially of secondaries, white at base; rectrices blackish, edged dark blue, with inner webs of

outer two pairs almost entirely white; entire undersurface rich yellow; underwing coverts white.

Adult female, sides of head and entire upper surface, including wing coverts, olive-green, slightly more yellowish on forecrown and upper tail coverts; remiges and rectrices dusky blackish, with outer webs edged greenish yellow; undersurface greenish yellow, except for white belly; underwing coverts white.

Measurements.—Males (10 from Costa Rica), wing 60.5-65.2 (62.5), tail 31.6-36.7 (34.1) culmen from base 9.2-10.6 (9.9), tarsus 13.6-15.0 (14.6) mm.

Females (10 from Costa Rica and Nicaragua), wing 58.0-63.0 (60.7), tail 29.3-34.2 (31.4), culmen from base 8.2-9.8 (9.3), tarsus 13.9-15.3 (14.6, average of 9) mm.

Resident. Rare and local in western Chiriquí, where W. W. Brown, Jr., collected 2 adult males at Boquete between 1140 and 1200 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 64). These may perhaps have been re-identified as *E. laniirostris*, as R. A. Paynter, Jr. (*in litt.* to Olson) writes that there are no Panamanian specimens of *E. hirundinacea* in the MCZ collections. Because this species is so similar to *E. laniirostris*, specimen evidence of its occurrence in Panamá is still needed. Ridgely (*in litt.*) has seen 1 or 2 individuals of this species occasionally around El Volcán, most recently a female at the Dos Ríos Hotel grounds on February 3, 1976. This race is commoner in Costa Rica and northwestern Nicaragua; the nominate form ranges north to eastern Mexico.

Skutch (Pac. Coast Avif., no. 31, 1954, pp. 247-251) has observed this euphonia in Guatemala and Costa Rica, where it inhabits the tops of trees in woodland edges and partly cleared areas. It feeds extensively on mistletoe berries. The only song Skutch has heard is a short two- or three-note whistle; the female has a call similar to the male's but thinner and more trilled. In Guatemala the nesting season is from March until at least late May. The nest is placed from 1 to more than 2.5 m from the ground in a cranny or sheltered nook; it is a globular structure made of fine tendrils and other vegetation all bound with cobwebs and lined with small, dry grass blades. Both sexes assist in construction. Five eggs seem to form the usual clutch. They are white, heavily blotched with umber, especially on the blunter end; six eggs averaged 16.3×12.8 mm. The incubation period is 16 days. The young develop slowly; when 8 days old they still have few feathers, although by 15 days they are well feathered. In one nest the young left at 17 days of age.

TANGARA FLORIDA (Sclater and Salvin): Emerald Tanager,
Tangaro Esmeraldino

Calliste florida P. L. Sclater and Salvin, 1869, Proc. Zool. Soc. London, p. 416, pl. 28. (Costa Rica.)

Calospiza florida arcaei Ridgway, 1901, Proc. Washington Acad. Sci., 3, p. 149. (Veragua, Panamá.)

Tangara florida auriceps Chapman, 1914, Bull. Amer. Mus. Nat. Hist., 33, p. 188. (Buenavista, alt. 1200 ft., Nariño, Colombia.)

Small; brilliant light green, streaked with black on upper surface; male with hindcrown and rump bright yellow; undersurface bright light green.

Description.—Length 106-117 mm. Adult male, lores, base of bill, and chin black; top and rear of crown glossy dark yellow; rest of crown, band across nape, and orbital region glossy yellow-green; patch on auriculars black; upper back black, with feathers edged glossy light green, creating streaked effect; lower back, rump, and upper tail coverts dark yellow; wings black, with coverts tipped and outer webs of secondaries edged light green; rectrices black, with outer webs very finely edged light green; undersurface light green, with center of belly to undertail coverts light yellow; underwing coverts grayish.

Adult female, like male, but yellow absent from head, replaced by yellow-green.

Juvenile, like female, but duller.

Measurements.—Males (10 from Costa Rica, Panamá, and Colombia), wing 64.2-67.3 (65.9), tail 31.1-40.5 (37.2), culmen from base 10.4-13.7 (11.6), tarsus 15.2-16.4 (15.9) mm.

Females (7 from Costa Rica and Colombia), wing 62.0-66.2 (63.5), tail 35.8-39.7 (37.9), culmen from base 10.2-13.3 (11.7), tarsus 14.7-16.8 (15.9) mm.

Resident. Uncommon to locally fairly common in humid forest and forest borders in foothills on the entire Caribbean slope between 300 and 900 m and on the Pacific slope in foothills from eastern Province of Panamá (Cerro Azul/Jefe area) east through Darién (Ridgely, 1976, p. 317). R. Hinds collected a pair at 720 m on the Río Changuena, Bocas del Toro, in September 1961, and W. W. Brown, Jr., took a male at 600 m on the Caribbean slope of the Volcán de Chiriquí on June 4, 1901. In Veraguas, it has been collected at Río Calovévora (Hellmayr, Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 9, 1936, p. 96), in the Province of Panamá at Cerro Azul (750 m), and in Darién at Tacarcuna Village. Beyond Panamá, it is found in Costa Rica and western Colombia to northwestern Ecuador (two recent sightings, Ridgely, *in litt.*).

Three races of this species have been described. Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 1, 1883, p. 267), after receiving specimens from Arcé, added Veraguas to the range of the nominate form, which was originally described from a bird sent from Costa Rica. Ridgway (Proc. Wash. Acad. Sci., vol. 3, 1901, p. 149) described a race *arcaeï* from another specimen collected by Arcé labeled "Veragua"; this has proven to be only a male that had not yet acquired the yellow patch on the crown (Hellmayr, *op. cit.*). In 1914, Chapman (Bull. Amer. Mus. Nat. Hist., vol. 33, pp. 188) described a race *auriceps* from Nariño, Colombia, whose most distinctive character was having the yellow on the crown more extensive; when Hellmayr examined a specimen from Tacarcuna he found it intermediate between *auriceps* and *florida* and provisionally assigned it to the former, "mainly out of zoogeographical considerations." More recently, Eisenmann (Haffer, Amer. Mus. Novit, no. 2294, 1967, p. 46) has observed that the population from the Serranía del Darién west to Cerro Azul is also intermediate. In the more extensive series now available there are birds from Tacarcuna that are indistinguishable from Costa Rican specimens and it seems most likely that the characters of *auriceps* are due to individual variation, so that no races of the species are admitted here.

Little has been recorded on the biology of the Emerald Tanager. Ridgely (*op. cit.*) notes that it is "usually seen in small numbers, feeding quite high in the trees, generally accompanying large mixed flocks of other frugivorous birds." Hilty (Wilson Bull., 1974, p. 480) observed 1 attending an ant swarm in Colombia, a rather unusual occurrence for a species that usually feeds high in trees; several Silver-Throated Tanagers (*T. icterocephala*), with which the Emerald Tanager may have been moving, were also in attendance.

**TANGARA GUTTATA EUSTICTA Todd: Speckled Tanager,
Tangaro Salpicado**

Tangara guttata eusticta Todd, 1912, Ann. Carnegie Mus., 8, p. 202. (Boruca, Costa Rica.)

Small; upper surface mostly black with extensive green edges on feathers, creating scaled appearance; throat and breast feathers black, edged pale blue-green; belly and abdomen white.

Description.—Length 116-130 mm. Adult (sexes alike), lores black; superciliary and orbital ring bright yellow; crown and upper back black, with feathers edged bright yellow-green, producing scaled appearance; lower back through upper tail coverts bright yellow-green; wings black, with outer web of remiges edged turquoise-green; rec-

trices black with outer webs edged turquoise-green; sides of face black with feathers edged bright yellow; throat and breast feathers black, edged turquoise-green, black portions becoming narrower on belly, which is white; sides and flanks bright yellow-green with a few black spots; abdomen white; undertail coverts black, edged yellow; bend of wing white and turquoise-green; underwing coverts white.

Juvenile, like adult but back and breast less marked with black, and yellow superciliary lacking.

A male collected at the head of the Río Guabal, Coclé, on February 28, 1962, had the iris brown; maxilla black; mandible neutral gray; tarsus and toes dark neutral gray; claws dusky neutral gray. A female taken at Tacarcuna Village, Darién, on March 6, 1964, was similar.

Measurements.—Males (10 from Panamá and Costa Rica), wing 62.2-69.0 (65.7), tail 41.4-48.8 (46.4), culmen from base 11.4-14.1 (12.7), tarsus 17.0-18.6 (17.8) mm.

Females (10 from Panamá and Costa Rica), wing 63.2-66.0 (64.2), tail 43.2-45.8 (44.4), culmen from base 11.8-13.6 (12.9), tarsus 16.2-18.4 (17.3) mm.

Resident. Fairly common in foothills on the Caribbean slope between 300 and 500 m in humid forest and forest borders; on the Pacific slope has been collected in the Chiriquí highlands at Santa Clara and up to 1350 m at El Volcán, in Coclé at Tigre at the head of the Río Guabal, and in Darién at Cana and Tacarcuna Village. It is also known from the Cerro Azul/Jefe areas in eastern Province of Panamá (Ridgely, 1976, p. 317). Kennard took a female on the Boquete Trail in Chiriquí at 300 m (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 462). Ridgely (*in litt.*) has found it at Cerro Quía, Darién. This race is also found in Costa Rica on the Caribbean slope and in the Térraba Valley; other races occur in Colombia, Venezuela, northern Brazil, and Trinidad.

The Speckled Tanager is usually seen in the tree tops, where it feeds on insects and fruit. It often travels in pairs or groups of 3 or 4 and is sometimes part of the larger mixed species flocks. E. A. Goldman collected several at Cana in 1912; the stomach of 1 contained a bit of elytron of a beetle 5%, 12 seeds of *Amaranthus* with outer covering, and one seed not determined 95%; another had 12 seeds of *Solanum* 40%, about 50 small seeds not determined, and a few fragments of fruit skin 60%. The call notes include twittering weak chips and a weak *tsit* (Slud, Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 350).

A female that I collected at Tacarcuna Village on March 6, 1964, was about to lay, but I have no other information on the nesting of this

species in Panamá. Skutch (Pac. Coast Avif., no. 31, 1954, pp. 217-225) has found several nests in Costa Rica. The earliest was being built on April 10 and the latest had eggs on June 18. The nest is a compact cup, with an exterior made primarily of the rachides of the leaves of a mimosa and a few rootlets and strips of banana leaves; a typical interior had more strips of banana leaves, pieces of dicotyledonous leaf, black fungal hyphae, and a few horsehairs, with gray foliaceous lichen in the bottom of the cup. The nests Skutch found measured 7.6 to 8.9 cm in over-all diameter, 5.1 to 7 cm in height, 5.1 to 5.7 cm in inside diameter, and 3.2 to 3.8 cm in depth. The nest is placed in a leafy section of a small tree between 3 and 8 m from the ground; both male and female assist in its construction, which requires 3 days.

Each nest held two eggs; they were white, heavily mottled with brown, especially on the larger end. One measured 20.6×15.1 mm. Incubation is performed only by the female and takes 13 days; during this time she is fed by the male. Both parents feed the young a diet of fruit and insects. At 15 days the young leave the nest.

**TANGARA ICTEROCEPHALA (Bonaparte): Silver-throated Tanager,
Tangaro Cabeciamarillo**

Small; head, lower back, rump and most of undersurface bright yellow; upper back streaked yellow and black; wings and tail black, edged bright green.

Description.—Length 125-130 mm. Adult male, crown, orbital ring, lower back, and rump brilliant, rich yellow; upper back black, edged rich yellow, creating streaked appearance; upper tail coverts yellow-green; wing black, with lesser and middle coverts tipped rich yellow, outer webs of greater coverts and remiges edged brilliant yellow-green; lores, line on head below eye, and auricular region black; point of chin black; throat and upper breast pale green; rest of undersurface rich yellow; bend of wing yellow; underwing coverts white and gray.

Adult, female, like male, but duller, more greenish.

Juvenile, duller than female, with the black lines on the head obscure, and the throat, breast, and crown dull yellowish green.

The Silver-throated Tanager is common in forests and forest borders in the foothills and highlands of both slopes, usually between 600 and 1800 m, but in Chiriquí occasionally as high as 2250 m. It is sometimes part of the mixed flocks that move through the forest feeding on insects and fruit, although Buskirk et al. (Auk, 1972, p. 620) found that at Cerro Punta, Chiriquí, this species would join such flocks but not follow them. In Colombia, Hilty (Wilson, Bull., 1974, p. 480) saw a

group of 10 Silver-throated Tanagers attending an ant swarm on the forest floor. Usually, however, they feed high in trees, where they move rather slowly while searching the twigs and leaves for insects; at such times they creep over the large limbs to inspect the underside where they seek food. Among berry-bearing bushes in the undergrowth and at forest edge they are often more active. Six collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 22.0 to 24.7 g. The only notes I have heard from them are low, rather harsh chattering sounds that are audible for short distances only. Ridgely (1976, p. 317) also describes a buzzy *bzeet*.

The species ranges from northern Costa Rica through Panamá to western Colombia and western Ecuador. Three races, distinguished by depth of color, are recognized, all of them found in the Republic.

TANGARA ICTEROCEPHALA FRANTZII (Cabanis)

Callispiza (Chrysothraupis) Frantzii Cabanis, 1861, Journ. Ornith., vol. 9, pt. 2, p. 87. (Costa Rica.)

Characters.—Crown and hindneck bright yellow, the latter crossed by a partly concealed ring of pale greenish blue; foreneck and throat paler.

Measurements.—Males (10 from Chiriquí), wing 72.6-79.7 (77.1), tail 47.8-52.8 (48.4), culmen from base 11.0-12.6 (11.7), tarsus 16.9-18.8 (17.8) mm.

Females (10 from Chiriquí), wing 70.0-74.8 (72.5), tail 42.5-50.0 (46.3), culmen from base 11.0-12.4 (11.7), tarsus 17.2-18.8 (17.8) mm.

Resident. Common in the foothills and highlands of the Pacific slope from the Costa Rican border through Chiriquí to eastern Veraguas, where it was collected at Santa Fé and Chitra in the 1860's by Arcé (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 26), 1883, p. 269). On the Volcán de Chiriquí, Mönniche collected it between 1560 and 1920 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 565); W. W. Brown, Jr., collected it there and at Boquete between 1200 and 2250 m. There is 1 report to date from the Caribbean lowlands, a male caught in a mist net at Finca Williams near Milla 2 on the railroad near Almirante, on November 2, 1962, by personnel of the Gorgas Memorial Laboratory. A record of a specimen collected by J. H. Batty labeled "Cebaco Islands," far distant from the proper range (Eisenmann, Auk, 1950, p. 365), is not accepted. Two specimens collected by Arcé in Veraguas at Calovévora and Santa Fé that are now

in the British Museum show an intermediate stage toward *oresbia*, in the darker throat, somewhat duller yellow of lower surface, and duller color above.

Females I collected at El Volcán, Chiriquí, on February 12 and 23, 1960, were ready to lay. In Costa Rica, Skutch (Pac. Coast Avif. no. 31, 1954, pp. 226-234) found nests with eggs of this race from March to August. The cup-shaped nest is built of moss, small ferns, and other similar plant materials, with a lining of dry leaves and plant fibers; it is placed in a tree from 2 to 12 m from the ground. Only some males assist their mate in construction, which takes 4 or 5 days.

The clutch is two, the eggs being "dull white or grayish, rather heavily mottled all over with brown. The markings are most concentrated on the thicker end, where on some eggs they nearly conceal the ground color. The measurements of 8 eggs average 21.3 by 15.6 millimeters." The incubation period is 14 days. Both parents feed the young, which remain in the nest approximately 15 days; after fledging, the young leave their parents sooner than do other members of the genus *Tangara* that Skutch has observed.

TANGARA ICTEROCEPHALA ORESBIA Wetmore

Tangara icterocephala oresbia Wetmore, Smiths. Misc. Coll., vol. 149, no. 1, June 26, 1962, p. 9. (South face of Cerro Campana, 850 m., Province of Panamá, Panamá.)

Characters.—Decidedly darker than either *T. i. frantzii* or *T. i. icterocephala*; yellow coloration darker throughout; band on hindneck more greenish blue; foreneck and throat darker; sides and flanks darker, with a greenish yellow cast. Females have the edging on the back feathers greener, less yellowish.

Measurements.—Males (8 from Coclé and Province of Panamá), wing 72.4-77.4 (73.6), tail 45.8-47.7 (47.3), culmen from base 12.0-14.8 (12.9), tarsus 17.5-18.8 (18.3) mm.

Females (9 from Coclé and Province of Panamá), wing 68.7-72.4 (71.1), tail 43.5-47.6 (45.6), culmen from base 12.5-14.0 (13.2, average of 8), tarsus 17.8-18.8 (18.3) mm.

Resident. Common from the mountains of Coclé near El Valle east through the Province of Panamá to Cerro Campana, where it has been seen in large flocks of several dozen or more (Ridgely, 1976, p. 317).

The darker coloration of both sexes suggests the duller colors seen in females of the other races of this species. Above El Valle, I found

these birds in forested areas on Cerro Gaital, and below the open summit of La India Dormida. On Cerro Campana they range on the tree-covered slopes at elevations of 750 to 900 m.

TANGARA ICTEROCEPHALA ICTEROCEPHALA (Bonaparte)

Calliste icterocephala Bonaparte, 1851, Compt. Rend. Acad. Sci. Paris, p. 76. (Valley of Punta Playa, south of Quito, Ecuador.)

Characters.—Similar to *T. i. frantzii* of western Panamá in bright coloration, but with feathers of crown and nape more greenish basally, so that the yellow in this area appears less intense; the partly concealed ring across the base of the hindneck deeper blue; foreneck and throat faintly darker.

Measurements.—Males (10 from Darién to Ecuador), wing 71.2-75.0 (72.2), tail 44.2-48.5 (45.8), culmen from base 12.1-12.5 (12.3), tarsus 16.0-17.3 (16.8) mm.

Females (9 from Darién to Ecuador), wing 66.6-72.3 (68.7), tail 41.9-46.2 (42.7), culmen from base 12.2-14.2 (12.7), tarsus 16.2-17.5 (17.2) mm.

Resident. This race at present is recorded in Panamá from only a few localities in eastern Darién. Two specimens in the American Museum of Natural History were collected by Anthony and Ball, February 28, 1915, at 800 m elevation on the Panamanian side of Cerro Malí, and E. A. Goldman took a female on April 29, 1912, at 1600 m on Cerro Pirre. I collected a pair at Cerro Tacarcuna (1380 m) on February 28, 1964. Goldman's notes mention that the female he collected was "breeding." To the south it ranges through the western Andes of Colombia to southwestern Ecuador.

**TANGARA LARVATA (Du Bus): Golden-hooded Tanager,
Tangaro Capuchidorado**

Calliste larvata Du Bus, 1846, Esquisses Ornith., livr. 2, pl. 9. (Tabasco, Mexico.)

Small; mostly black with blue on head, wing coverts, flanks, and rump; crown, nape, and sides of face glossy golden yellow; throat darker brown.

Description.—Length 112-120 m. Adult (sexes alike), lores, orbital region, and chin black; forecrown, sides of face below eye, and edge of black chin-patch glossy light bluish violet, with a fine border of light blue; rest of crown, nape, and sides of face glossy golden yellow; upper back, breast, and sides black; lower back and rump glossy light blue; upper tail coverts black, edged light blue; greater wing coverts black,

edged light blue; remiges black, with outer webs edged brownish yellow; tail black; throat glossy reddish brown; flanks light bluish violet becoming lighter blue; rest of undersurface white; bend of wing light bluish violet; underwing coverts white.

Juvenile, lores, orbital region, and chin black, edged light blue; rest of crown, nape, sides of face green; upper back black; lower back through upper tail coverts light green; wings and tail black, with feathers edged yellowish green, slightly duller on coverts; throat buffy; breast and sides becoming black; rest of undersurface buffy white.

The Golden-hooded Tanager exhibits essentially clinal variation in its range from southern Mexico to western Colombia and northwestern Ecuador. The extremes in this cline differ considerably. The northern, nominate race is the most richly colored, with the throat deep rufous, the back of the crown and the hindneck deep golden, the cheeks deep blue, and the wing feathers including the primary coverts edged prominently with green or greenish yellow and the flanks deep blue. The southernmost race, *T. l. fanny*, has the throat, back of the crown and hindneck paler, the cheeks light blue, and the edgings on the wings nearly absent, and the flanks turquoise. Two rather variable, slightly differentiated stages in the areas in between have been recognized nomenclaturally.

In recent writings some have followed Hellmayr (Field Mus. Nat. Hist., Zool. ser., vol. 13, pt. 9, 1936, pp. 126-131) in placing these birds as races of *Tangara nigrocincta* of north-central South America, a course that does not appear appropriate. This bird differs from the *larvata* group completely in the almost lavender crown, hindneck, throat, and foreneck, green rather than blue cheeks, and the much broader blue-green edgings to the wing coverts. The only resemblance, other than that of a generic nature, is in the general color pattern. *T. nigrocincta* lacks the bright golden rufous of the throat and the prominent golden color of the back of the head and neck of *larvata*, this difference being trenchant and with no evidence of intergradation.

Tangara larvata is common in clearings, second-growth woodland, and forest borders in lowlands and foothills. It is usually found in trees, but once at Chimán, Panamá, I came across 2 in bushes at the edge of a pool where they had come down to drink, and at Almirante, Bocas del Toro, I once found 1 low down in weeds. Five collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 17.1 to 23.9 g. This species feeds on insects and berries and other small fruit. Leck (Living Bird, 1971, p. 92) noted the amount of time several fruit-eating birds spent in different parts of a tree with *Oryctanthus* berries

and found that Golden-hooded Tanagers were in the middle zone of the tree 46% of the time and in the lower zone 37% of the time. By day they move about in small groups, sometimes part of mixed species flocks, and at night, especially out of the nesting season, they gather in larger groups to roost—Skutch (Pac. Coast Avif., no. 31, 1954, p. 202) found a roost in Costa Rica with at least 17, and probably more, birds. No song has been recorded for this species; its usual note is a *tssp* used to keep members of a pair or family together. Ridgely (1976, p. 318) also notes "a repeated *tsit-tsit-tsit-tsit* often given in flight as it moves from tree to tree."

TANGARA LARVATA CENTRALIS (Berlepsch)

Calospiza larvata centralis Berlepsch, 1912, Verh. V. Intern. Ornith. Kongr., Berlin, 1911, p. 1034. (Calovévora, Veragua [Panamá].)

Characters.—Cheeks, except posterior border, deep blue.

Measurements.—Males (10 from Bocas del Toro and Costa Rica), wing 68.8-72.0 (70.2), tail 43.0-47.9 (45.9), culmen from base 11.0-12.1 (11.4), tarsus 15.2-17.7 (16.4) mm.

Females (6 from Bocas del Toro and Costa Rica), wing 66.0-69.5 (67.4), tail 41.4-44.9 (42.9), culmen from base 11.1-12.6 (11.5), tarsus 15.7-17.1 (16.6) mm.

Resident. Common in the lowlands of Bocas del Toro and on the Caribbean slope of Veraguas; in the interior it ranges east to the lowlands of northern Coclé, where I have collected it at El Uracillo. Beyond Panamá, it is found on the Caribbean slope from southeastern Nicaragua through eastern Costa Rica. In general it is like *T. l. larvata*, found from southern Mexico through Guatemala and Honduras to central Nicaragua; the population of southeastern Nicaragua (at the Río Escondido) and northeastern Costa Rica (Carillo) is somewhat intermediate, but is nearer *centralis*.

When Berlepsch described *centralis* as new, to replace "*francescae*" of Sclater, a name that he considered invalid on the grounds that it was merely an emendation of the term *fanny* of Lafresnaye, he listed a specimen from Calovévora, Veraguas, collected by Arcé, as type. Specimens from the type locality, which is on the Caribbean slope of Veraguas, differ as indicated above. Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 340) overlooked this difference in his examination of skins from the Almirante region when he recognized *franciscæ* of Sclater and placed *centralis* as a synonym.

A male I collected at Almirante, Bocas del Toro, on February 12, 1958, was in breeding condition.

TANGARA LARVATA FRANCISCAE (Sclater)

Calliste franciscae P. L. Sclater, 1856, Proc. Zool. Soc. London, 24, p. 142. (Río David, Chiriquí, Panamá.)

Characters.—Similar to *T. l. centralis*, but with violet-blue cheeks paler.

Measurements.—Males (10 from Chiriquí, and Veraguas), wing 66.8-70.0 (68.6), tail 42.7-47.7 (45.3), culmen from base 10.9-12.5 (11.6), tarsus 15.6-17.3 (16.4) mm.

Females (10 from Chiriquí and Veraguas), wing 64.5-68.2 (66.6), tail 41.4-46.7 (43.7), culmen from base 10.6-12.1 (11.6), tarsus 15.2-16.9 (16.3) mm.

Resident. Common in the foothills on the Pacific slope of Chiriquí and Veraguas, and in adjacent Costa Rica. In Chiriquí, where it ranges into the mountains near Santa Clara and El Volcán, it has been found as high as 1500 m, but usually not above 1200 m (Ridgely, 1976, p. 318). Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 24) found it uncommon in semideciduous coastal forest near Montijo Bay, on the Azuero Peninsula of Veraguas.

When Sclater listed a specimen taken by Bridges "from the tops of the high trees on the banks of the river David" under the name *franciscae* he used this term as an emendation or correction of the older name *fanny* of Lafresnaye. However, he compared his specimen with typical *larvata* of Du Bus and pointed out its characters of color difference. His name, therefore, is valid under the rules of nomenclature. The spelling *francescae* that has been used by some authors is incorrect.

Skutch (Pac. Coast Avif., no. 31, 1954, pp. 200-213) has studied this race in Costa Rica, where the several nests he found were placed from less than 2 m to 30 m from the ground, sometimes in a hole or cranny. The nest is a compact cup usually built of fibers and strips of dead leaves, all bound with cobweb, and lined with fibrous material, fungal hyphae, or leaf rachides. Both parents assist in construction, which takes 4 to 6 days. The clutch consists of two eggs. They are "dull white or pale gray, thickly sprinkled all over with brown or chocolate flecks that may be fine or coarse and that are usually heaviest and most crowded on the large end, where they may cover almost the entire surface. Some eggs bear also a few black spots, others have the ground color suffused with brown. The measurements of 25 eggs average 20.2 by 14.8 millimeters." The incubation period is 13 to 15 days. At hatching the young have pink skin, tightly closed eyes, and sparse gray down; at 10 days they are well feathered. At 14 to 16 days, when they can fly

fairly well, the young leave the nest. This species has a long breeding season—in Costa Rica from February to September—during which it may often raise two broods. Skutch has observed young from the first nest assisting the parents in feeding the young in a second nest.

TANGARA LARVATA FANNY (Lafresnaye)

Aglaia Fanny Lafresnaye, 1847, Rev. Zool. [Paris], 10, p. 72. (Buenaventura, Chocó, Colombia.)

Characters.—Similar to *T. l. franciscae* in color of cheeks, but with the light edging on primaries and coverts much reduced or absent, and the deep blue of the flanks mostly absent, the flanks being almost entirely turquoise.

A female collected at Puerto Obaldía, San Blas, on February 18, 1963, had the iris dark brown; bill black; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from eastern Panamá), wing 64.8-70.3 (68.5), tail 39.6-46.7 (43.8), culmen from base 10.6-12.2 (11.4), tarsus 15.8-17.6 (16.5) mm.

Females (10 from eastern Panamá and Colombia), wing 64.2-69.0 (66.5), tail 41.4-46.1 (43.3), culmen from base 10.7-12.0 (11.4), tarsus 14.5-16.8 (15.9) mm.

Resident. Common in the lowlands on the Pacific slope from the Canal Zone, and on the Caribbean slope from western Coclé (Chilar on the Río Indio) east to Colombia and western Ecuador. It is scarce in the Canal Zone, where Ridgely has never found it, but more common eastward. In the higher mountains of Darién, it is found as high as Cana (1445 m). Along the western edge of the range most specimens show a slight edging of blue on part or all of the black primary coverts, but where present this is less extensive than in *franciscae*. In eastern Panamá, this trace largely disappears. Most of the birds from the Canal Zone area are intermediate or more like *franciscae* in having the deep blue in the flanks.

A male I collected at El Real, Darién, on January 25, 1964, was in near breeding condition. A female I took at Puerto Obaldía, San Blas, on February 18, 1963, was laying. Chapman (Life in an Air Castle, 1938, p. 242) found it nesting at Barro Colorado Island in the Canal Zone between February and May. Dorothy M. Hobson (Year Book Indiana Aud. Soc., vol. 26, 1948, p. 23) observed a pair collecting nest material at Barro Colorado on July 13, 1947. Eisenmann (Condor, 1957, p. 257) discovered a pair there using the abandoned nest of a

Chestnut-headed Oropendola (*Psarocolius wagleri*); on August 22, 1954, it contained two fresh eggs. The tanagers entered the nest through an opening just above the widest part of the bag.

**TANGARA PALMERI (Hellmayr): Gray-and-gold Tanager,
Tangaro Origris**

Calospiza palmeri Hellmayr, 1909, Rev. Franç. Ornith., 1, p. 49. (Sipí, Río Sipí, Chocó, Colombia.)

Small (although large for a *Tangara*); mostly gray, with black on lores, around eye, on back, wings, band across breast; grayish blue-green patch on back.

Description.—Length 143-148 mm. Adult (sexes alike), lores, orbital region, and upper chin black; crown light gray; nape spotted black and light gray; upper back light blue-green in center, black on edges; lower back to upper tail coverts light gray, darkest on coverts; upper and middle wing coverts light gray; greater coverts and remiges black, with outer webs edged gray; tail black; throat white; two stripes across breast, black and glossy cream-buff; sides and flanks light gray; rest of undersurface white; underwing coverts white.

Juvenile, back gray, with upper back colors of adult tinged buffy; wings black, with middle and greater coverts edged white; tail black; undersurface white.

Measurements.—Males (7 from Darién and Colombia), wing 82.0-84.8 (83.0), tail 53.3-58.0 (55.3), culmen from base 11.8-13.9 (12.8, average of 5), tarsus 18.7-19.8 (19.1) mm.

Female (1 from Darién), wing 82.5, tail 50.2, culmen from base 12.6, tarsus 19.1 mm.

Resident. Rare and local, known in Panamá only from eastern Darién at Cana, Cerro Sapo, Cerro Quía, and Cerro Tacarcuna, where it is found in humid forest and forest borders (Ridgely, 1976, p. 318). It is also found in western Colombia and northwestern Ecuador. In April 1922, Thomas Barbour and W. S. Brooks collected a group of 4, including 1 immature, in a single tree at Cerro Sapo, below 450 m; no others were seen, and "they were quite new to the natives" (Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, 1922, p. 226). Ridgely (*in litt.*) saw a pair at Cerro Quía (550 m) on July 18, 1975. He collected 1 bird, which is now in the Gorgas Memorial Laboratory collection. The pair had been foraging independently from other birds, feeding on *Cecropia* "catkins." E. A. Goldman collected 2 males at Cana on June 10, 1912; 1 contained a wing of a beetle 2%, 9 seeds not determined 50%, 8 seeds of *Bourreria* 33%, 8 seeds of another undetermined

species 15%, the other had the legs and other remains of bees 40%, 3 seeds of Ehretiaceae (*Bourreria?*) 30%, 1 pit not determined, bits of wild fruit skin 30%. Apparently they often associate with flocks of other tanagers (Ridgely, 1976, p. 318).

**TANGARA INORNATA (Gould): Plain-colored Tanager,
Tangaro Inadornado**

Calliste inornata Gould, 1855, Proc. Zool. Soc. London, 23 ("Bogota," Colombia.)

Small; gray, with lower breast and abdomen white or buff; a bright blue shoulder patch.

Description.—Length 115-125 mm. Adult (sexes alike), upper surface and sides of the head dark gray, slightly paler on the rump; wings and tail sooty black; lesser wing coverts glossy turquoise-blue, more purplish at edge; some males with a slight tinge of blue on forecrown; lores and extreme upper throat black; foreneck, upper breast, and sides light gray; lower throat paler; lower breast, abdomen, and undertail coverts white or, in one race, buff.

Immature, some with a very faint wash of pale buff on abdomen and undertail coverts.

Juvenile, plain gray, paler below on breast and side, still paler on abdomen; undertail coverts pale buff; wings and tail sooty black.

These tanagers range in more open forests, so that I have found them most common on the Pacific side of the Isthmus. Here they frequent second growth, groves, borders of clearings, and gallery forest. When the tree growth is heavy they are seen around the borders, but also spread over the upper levels of the high tree crown, where they are concealed from below. They are found in pairs or in small groups but also gather in groups of 10 or more that move about in loose company, often with quick flitting movements of the wings and twitching tails. Ridgely (*in litt.*) finds that they usually forage independently of other species, while Moynihan (Smiths. Misc. Coll., vol. 143, no. 7, 1962, pp. 40-45) considered them significant to mixed flocks of tanagers and honeycreepers. The paired birds often glean open branches for insects and other animal food, frequently swinging head or back down to examine the underside of twigs. The drupes of berry-bearing trees and shrubs attract the larger groups. The average weight of 6 taken at Barro Colorado Island in the Canal Zone was 17.8 g (Leck, Bird-Banding, 1975, p. 203); 4 taken by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 17.4 to 19.1 g. While they are active in movements, individual groups appear to have rather limited areas in which they range. Three banded on Barro Colorado Island in Novem-

ber and December 1956 were captured there again in April and July 1963 (Crebbs, Bird-Banding, 1974, p. 264). Like a number of its relatives, this species gives low calls that sometimes are repeated rapidly, but does not appear to have a true song.

Records of specimens from the Province of Panamá indicate breeding activity is from January to July. A young bird nearly grown was taken at Chimán on February 21, 1950. A female near the Candelaria Hydrographic Station March 12, 1961, was laying; a juvenile just from the nest was collected at Utivé March 25, 1949; and near Pacora on April 2, 1950, I watched 1 gathering shreds of bark for nesting material. The following day 1 worked at nest construction on a small, nearly horizontal branch 20 m from the ground. Skutch (Pac. Coast Avif., no. 31, 1954, pp. 214-216) records a pair that in April and May 1935 built three nests in trees about the buildings in the clearing at the laboratory on Barro Colorado Island. The first nest contained two whitish, speckled eggs that soon disappeared. The nest was a cup of plant fibers bound to its support by cobwebs, covered externally by moss. A second nest was built by the female, with the male, who accompanied her on her flights, occasionally carrying nest material that he gave to her to arrange. This nest also was unsuccessful, but in a third attempt 2 young were reared. They were attended and fed by 4 adult birds, with no apparent indication as to which individuals were the parents of the brood.

Two races separated by characters of color are recognized in the Republic; one of wide range throughout the eastern half, and the other, recently discovered, is known from a few specimens from western Bocas del Toro. The nominate race is found in Colombia.

TANGARA INORNATA RAVA Wetmore

Tangara inornata rava Wetmore, 1963, Smiths. Misc. Coll., 145 (6), p. 9. (Almirante (Milla 2), Bocas del Toro, Panamá.)

Characters.—Differs from *T. i. languens* in having the throat, lower breast, abdomen, and undertail coverts distinctly pinkish buff; blue of lesser wing coverts definitely darker.

Measurements.—Males (2 from Bocas del Toro and Costa Rica), wing 68.5-70.0 (69.3), tail 44.6-45.8 (45.2), culmen from base 10.3-10.8 (10.6), tarsus 17.0-17.3 (17.2) mm.

Females (3 from Bocas del Toro and Costa Rica), wing 65.4-69.2 (67.5), tail 41.6-43.7 (43.0), culmen from base 10.9-11.5 (11.1), tarsus 17.1-18.7 (17.7) mm.

Resident. Known from western Bocas del Toro near Almirante and adjacent Costa Rica. The Plain-colored Tanager is little known in western Panamá, where it was first reported in 1960, and only 2 more have been secured since then. In late April 1980; Ridgely (*in litt.*) found it fairly common in small groups in clearings and at forest edge along the lower Changuinola River. This species may be increasing as a result of increased forest clearing. Dr. Paul Slud informs me that he has a few sight records that indicate that the range of this race extends through most of the Caribbean lowlands of Costa Rica.

TANGARA INORNATA LANGUENS Bangs and Barbour

Tangara inornata languens Bangs and Barbour, 1922, Bull. Mus. Comp. Zool., 65, p. 227. (Lion Hill, Canal Zone, Panamá.)

Characters.—Throat, abdomen, and undertail coverts white or grayish white, occasionally with a very faint wash of pinkish buff (visible only in the hand); lesser wing coverts lighter, brighter blue.

A female collected at the Candelaria Hydrographic Station, Panamá, on March 1, 1961, had the iris dark brown; base of mandible neutral gray; rest of bill black; tarsus fuscous-brown; toes and claws dull, dark neutral gray, washed somewhat with dark brown.

Measurements.—Males (10 from Panamá), wing 67.4-71.4 (68.8), tail 43.4-47.4 (45.6), culmen from base 11.0-11.6 (11.1), tarsus 16.0-17.1 (16.6) mm.

Females (10 from Panamá), wing 65.1-68.5 (66.6), tail 42.2-45.4 (43.1), culmen from base 10.4-11.5 (10.9), tarsus 15.8-17.1 (16.6) mm.

Resident. Common in the lowlands, on the Pacific slope from Cerro Campana, Panamá, and on the Caribbean slope from the upper course of the Río Coclé del Norte (Cascajal, Coclé) and the valley of the Río Indio (El Uracillo, northern Coclé; Chilar, western Colón), east across the Colombian boundary to northern Chocó; ranging up to 650 m elevation on Cerro Pirre and Cerro Tacarcuna, Darién, and to 800 m on Cerro Azul/Jefe.

Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 1, 1883, p. 273) recorded that this bird "has been included in Arcé's collections, made probably in the vicinity of Calobre," a town in the lowland hills on the Pacific slope of Veraguas midway between San Francisco and the Coclé boundary on a tributary of the Río Santa María. As the Plain-colored Tanager has never been recorded this far west on the southern side of Panamá, the locality suggested by Salvin and Godman is highly

questionable. It is more probable that these birds were among those collected at Chepo in eastern Province of Panamá, where Arcé was located for several months on his arrival in Panamá to collect for Salvin. The Smithsonian has a specimen attributed to Arcé labeled "Veragua" that was received from the dealer Boucard for which the locality given must also be considered erroneous.

**TANGARA GYROLA (Linnaeus): Bay-headed Tanager,
Tangaro Cabecibayo**

Fringilla Gyrola Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 181. (Surinam.)

Small; head reddish brown; upper surface bright green, with patch of bright blue on rump; undersurface bright blue.

Description.—Length 124-130 mm. Adult male, crown, sides of head, and chin reddish brown, with narrow band of brownish yellow on rear of crown; upper surface except for rump glossy green; rump bright blue near royal blue; lesser wing coverts rich yellow; other wing coverts yellowish green; remiges blackish with outer web edged green, narrowly on primaries, very broadly on secondaries; central pair of rectrices green, others, except for outer pair, which is entirely blackish, edged green on outer web; undersurface same blue as rump, except for abdomen and undertail coverts, which are green; thighs tawny red; underwing coverts gray.

Adult female, like male, but blue of undersurface is paler.

Immature, duller than female; head green, with a few brown feathers.

Juvenile, undersurface also green.

The Bay-headed Tanager is common in forest and forest borders in the foothills and lower highlands of both slopes. In Chiriquí and the Canal Zone area it also ranges into the lowlands. I have often seen it in groups of tanagers foraging high in trees; it also comes low down to feed on berry-bearing shrubs. Of 2 collected by E. A. Goldman at Cana, Darién, 1 contained 36 seeds of a *Bourreria* 30%, 2 seeds not determined 10%, a mass of bright brownish red fruit pulp 60%; the other had bits of a staphylinid 2% and remains of drupes with many seeds in fiber not determined 98%. Five collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 23.8 to 25.2 g. The song of this species is a series of four or five whining notes, descending in pitch; the call note is a monosyllable of the same quality.

Two races of *T. gyrola* are found in Panamá: *bangsi*, which extends from Costa Rica to western Panamá as far east as Coclé, and *deleticia*

of Darién and northern Colombia; in the Canal Zone and eastern Province of Panamá the populations are intermediate. The race *delecticia* is poorly marked with adult males having the lesser wing coverts varying from partly green to light yellow, in contrast to *bangsi*, which has the lesser wing coverts a darker, somewhat more orange-yellow. Hellmayr (Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 9, 1936, p. 146) noted that birds from the Canal Zone are intermediate; this intermediate population extends east at least as far as Cerro Azul, eastern Province of Panamá. Other races range to northern Bolivia and Amazonian Brazil.

TANGARA GYROLA BANGSI (Hellmayr)

C.[alospiza] gyroloides bangsi Hellmayr, 1911, Proc. Zool. Soc. London, p. 115. (Boquete, Chiriquí, 3,500 feet, Panamá.)

Characters.—Lesser wing coverts more extensively yellow and of an oranger cast.

A female collected at El Volcán, Chiriquí, on March 20, 1965, had the iris dark brown; maxilla and tip of mandible fuscous-black; base of mandible dull brownish neutral gray; tarsus brownish gray; toes dark brownish gray; claws fuscous.

Measurements.—Males (10 from western Panamá), wing 73.1-78.0 (76.6), tail 48.0-52.3 (50.2), culmen from base 11.6-13.9 (12.5), tarsus 15.2-17.4 (16.3) mm.

Females (10 from western Panamá and Costa Rica), wing 70.5-78.0 (74.1), tail 45.1-48.7 (46.5), culmen from base 12.0-13.5 (12.9), tarsus 15.3-17.1 (16.3) mm.

Resident. Common in forests and forest borders in foothills and lower highlands of both slopes, as far east as Coclé. In Chiriquí, it is less commonly found in the lowlands as well; here, however, it is very local, due to deforestation. Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 565-566) collected it on Volcán de Chiriquí between 1560 and 1620 m, and W. W. Brown, Jr., took it at Boquete, Chiriquí, between 1050 and 1440 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 65). On the western side of the Azuero Peninsula in Veraguas, Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 26) found it uncommon along streams 900 m and above. Kennard (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, no. 10, 1928, p. 462) collected a male on the Boquete Trail (690 m) in Bocas del Toro. In Coclé, I have collected it at El Valle and El Uracillo.

Blake (*op. cit.*) noted that the birds Mönniche collected between May 10 and June 18 had enlarged gonads. A male I took at Santa Clara, Chiriquí, on February 24, 1955, was near breeding. Skutch (Pac. Coast Avif., no. 31, 1954, pp. 235-240) has studied the nesting cycle of the Bay-headed Tanager in Costa Rica, where it breeds from February to September or October. The nest is placed in dense foliage in trees or vines from 3 to 8 m above the ground; it is a bulky open cup of moss and rootlets, within is an interior layer of leaves and grasses, and a lining of grass fragments or fungal filaments. The female does most of the construction. Two eggs form a full clutch; they are "white or dull white with a wreath of brown or chocolate spots around the large end and a sprinkling of fine dots of the same color over the remaining surface. One set has shell marks of pale lilac intermixed with the brown." Four eggs had average measurements of 20.2×13.8 mm. Incubation is performed by the female alone and takes 13 or 14 days. Both parents feed the young, which fledge at 15 or 16 days of age. Some pairs raise two and possibly three broods a year. Mönniche (Blake *op. cit.*) collected a bird with gonads slightly enlarged on November 22.

TANGARA GYROLA DELECTICIA (Bangs)

Calospiza gyroloides delecticia Bangs, 1908, Proc. Biol. Soc. Washington, 21, p. 160. (San Antonio, western Andes of Colombia, altitude 1600 feet.)

Characters.—Lesser wing coverts varying from partly green to light yellow.

A male collected at Cerro Malí, Darién on February 22, 1964, had the iris dark mouse brown; maxilla and tip of mandible dull black; base of mandible dull brownish neutral gray, browner on lower margin of rami; tarsus, toes, and claws neutral gray; posterior margin of tarsus dull brownish white.

Measurements.—Males (10 from eastern Panamá), wing 72.8-80.0 (77.0), tail 46.0-51.2 (47.9), culmen from base 12.1-14.5 (12.9), tarsus 14.9-18.1 (16.3) mm.

Females (10 from eastern Panamá), wing 71.5-76.2 (73.9), tail 45.0-48.7 (46.1), culmen from base 12.3-13.7 (13.0), tarsus 14.4-17.7 (16.4) mm.

Resident. Uncommon in the Canal Zone and vicinity, more common in eastern Province of Panamá and in Darién. As discussed above, the population of the Canal Zone and Cerro Azul area is intermediate between this race and *bangsi*. Beyond Cerro Azul, it has been

found in the eastern Serranía de Majé. In eastern Darién it is common on Cerro Pirre and Cerro Tacarcuna. There are 2 records from Cerro Sapo on the Serranía de Sapo, on the Pacific side east of the Gulf of San Miguel. On the Caribbean side, H. von Wedel collected several in the hill country of San Blas back of Puerto Obaldía (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 370). On March 23, 1949, I shot a pair from high tree tops at Cerro Azul; they were moving actively through the branches with other birds, and were very near breeding. A female taken March 17, 1950, at Cerro Chucantí, Panamá, was laying. Ridgely (*in litt.*) observed a bird carrying nesting material on the Pipeline Road, Canal Zone, on April 23, 1976.

TANGARA LAVINIA (Cassin): Rufous-winged Tanager,
Tangaro Alirrojizo

Small; entire plumage glossy; head reddish brown; upper surface bright green, with wash of dark yellow on nape and upper back; patch of reddish brown on wings; undersurface mostly same green with turquoise on belly and throat.

Description.—Length 119-131 mm. Adult male, head reddish brown; upper surface bright green with wash of dark yellow on nape and upper back; most of wing coverts same green; outer middle and greater coverts and lower half of outer web of primaries yellowish brown; remiges dusky with green on remainder of outer webs; rectrices dusky, with central pair green and outer webs of all but outermost pair green; throat and belly turquoise, rest of undersurface green; thighs pale brown; underwing coverts grayish.

Adult female like male, but blue, browns, and yellow paler; brown of head sometimes entirely absent.

Immature, like female, but with green head and very little blue on undersurface.

The Rufous-winged Tanager is an uncommon and little known species that inhabits humid forests and forest borders. It seems to be very localized, and has been reported from a variety of elevations, from the lowlands, where Benson took 1 in the Madden Forest in the Canal Zone, on August 8, 1931, through the foothills on the Caribbean slope (300-900 m) (Ridgely, 1976, p. 319), and the mountains of Chiriquí and Veraguas (Griscom, Bull. Mus. Comp. Zool., vol. 78, 1935, p. 374). Ridgely (*op. cit.*) feels, however, that it is primarily a bird of the foothills. H. von Wedel (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 341) collected a female on the Boquete Trail in Bocas del Toro, but the

elevation is not stated. I collected a female in Coclé at Tigre (475 m) at the head of the Río Guabal. It has also been taken in eastern Province of Panamá in the Cerro Azul/Jefe area, and in the foothills of eastern Darién. Ridgely (*op. cit.*) notes that "in central Panama [it is] most easily seen on Cerro Santa Rita and in the Cerro Jefe area."

Two races are recognized in Panamá, *dalmasi* of western and central Panamá, and nominate *lavinia* of eastern Panamá, western Colombia, and northwestern Ecuador. A third race, *cara*, is found from eastern Guatemala to Costa Rica.

I know of little that has been recorded on this bird's habits. Ridgely (*op. cit.*) says "very similar to Bay-headed Tanager and often occurs with it, but seems always to be outnumbered by it."

TANGARA LAVINIA DALMASI (Hellmayr)

Calospiza lavinia dalmasi Hellmayr, 1910, Rev. Franç. Ornith., 1, p. 162. (Veragua, western Panamá.)

Characters.—Only a small spot of blue on chin, not extending to breast as in nominate *lavinia*.

A female taken March 1, 1962, at the head of the Río Guabal in Coclé had the iris mouse brown; maxilla and extreme tip of mandible fuscous-brown, shading over a short space into neutral gray; base of mandible dull buffy white; tarsus and toes dull neutral gray; pads dull honey yellow.

Measurements.—Males (9 from Panamá and Costa Rica), wing 70.5-75.5 (72.4), tail 41.0-46.0 (43.5), culmen from base 11.0-13.4 (12.4), tarsus 14.3-17.0 (15.8) mm.

Females (2 from Veraguas), wing 65.0-67.3. (66.2), tail 37.7-39.2 (38.5), culmen from base 12.6, tarsus 15.5-16.2 (15.9) mm.

Resident. Uncommon and local in foothills of Chiriquí and both slopes of Veraguas, where Benson and Gaffney collected a female on the Río Calovévora on September 10, 1926. Arcé also collected several in Veraguas. The only one I have ever seen is a female I found resting quietly in a tree crown at Tigre (475 m), at the head of the Río Guabal in Coclé. In the Canal Zone, R. R. Benson took 1 on August 8, 1931, in what is now the Madden Forest. In December 1965 and January 1966, Eugene S. Morton collected 3 males in eastern Province of Panamá at Cerro Azul between 750 and 900 m that are very clearly of this race; this is farther east than *dalmasi* was previously known to occur. The specimens are now in the American Museum of Natural History.

TANGARA LAVINIA LAVINIA (Cassin)

Calliste Lavinia Cassin, 1858, Proc. Acad. Nat. Sci. Philadelphia, p. 178. (Isthmus of Darién, New Grenada.)

Characters.—A long thin stripe of blue extending from center of throat to breast.

Measurements.—Males (10 from Colombia), wing 62.9-71.0 (67.0), tail 39.6-43.0 (41.3), culmen from base 9.7-12.2 (11.0), tarsus 13.6-17.3 (15.4), mm.

Females (5 from Colombia), wing 64.6-66.9 (65.6), tail 36.8-41.3 (39.3), culmen from base 10.3-12.2 (11.0), tarsus 13.6-16.3 (14.7) mm.

Resident. Uncommon and local in the foothills of eastern Darién, and beyond Panamá in northern Colombia and northwestern Ecuador. I know of no specimens from Panamá except the type, now lost, which has only the imprecise designation "Isthmus of Darién." Collecting is necessary to determine the actual range of this form in Panamá.

**TANGARA DOWII (Salvin): Spangle-cheeked Tanager,
Tangaro Carirrayado**

FIGURE 34

Small; upper surface black with pale green spots on nape and patch on rump; throat black; rest of undersurface reddish to light brown.

Description.—Length 118-129 mm. Adult (sexes alike), head, throat and back to rump dull black; spots of pale green on rear crown, nape, and cheek, or spots of reddish brown on crown and pale green and buff on nape; rump pale green; wings and tail black with all feathers edged dark blue; throat spotted with this blue and/or pale green; some black spotting on breast; rest of undersurface ochraceous-buff or tawny; underwing coverts buffy-white.

This is a rare and little known species that has two very well-marked, disjunct populations, one in the mountains of Chiriquí, Veraguas, and Bocas del Toro, the other in the highlands of eastern Darién. These have in the past been treated as separate species. Slud (Bull. Amer. Mus. Nat. Hist. vol. 128, 1964, pp. 353-354) has found it in Costa Rica (where Ridgely believes it to be more numerous than in western Panamá) in forest, forest borders, and in tree-scattered clearings next to forest. It travels in pairs or small groups, often with other tanagers and warblers. It searches the foliage and branches from the understory to medium height in trees. The only known vocalizations are thin *tit* or *tsit* notes, sometimes in a twitter.

FIGURE 34.—Spangle-cheeked Tanager, Tangaro Carirrayado, *Tangara dowii*.

TANGARA DOWII DOWII (Salvin)

Calliste dowii Salvin, 1863, Proc. Zool. Soc. London, p. 168. (Rancho Redondo de San José, Costa Rica.)

Characters.—Crown spotted with reddish brown; upper tail coverts tawny and light blue; edging on remiges same color as on wing coverts; undersurface rich tawny.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 70.5-75.0 (72.4), tail 45.2-50.0 (47.0), culmen from base 10.2-12.0 (11.2), tarsus 16.1-19.1 (18.2) mm.

Females (10 from Chiriquí and Costa Rica), wing 69.5-72.5 (71.1), tail 45.1-49.1 (47.2), culmen from base 10.1-11.8 (11.1), tarsus 17.0-18.9 (18.2) mm.

Resident. A rare or local inhabitant of highland forest in Chiriquí, Veraguas, Bocas del Toro, and adjacent Costa Rica, where it is found at higher elevations than any of its Central American relatives. In Costa Rica, Ridgely (*in litt.*) has seen it up to about 2800 m. Arcé collected 2 on the Cordillera del Chucú, Veraguas, in 1869 (Salvin, Proc. Zool. Soc. London, 1870, p. 187). In Chiriquí, W. W. Brown, Jr., (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 65) collected it at Volcán de Chiriquí and Boquete between 1200 and 2250 m, and Olson obtained a specimen at about 2100 m on Cerro Horqueta. Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 566) collected it at Volcán de Chiriquí between 1500 and 1950 m, and at Camp Holcomb (1500 m), Holcomb Trail, Bocas del Toro, the only record from the Caribbean slope. Of the birds Mönniche collected, those taken between March 23 and May 16 had active gonads.

The only recent sightings known to Ridgely (*in litt.*) are of 2 birds seen by Paul Donahue on January 30, 1980, near Santa Clara, Chiriquí, and 1 bird seen by N. G. Smith on April 8, 1975, above Santa Fé, Veraguas.

TANGARA DOWII FUCOSA Nelson

Tangara fucosus Nelson, 1921, Smiths. Misc. Coll., 60(3), p. 17. (Mount Pirri (at 5,000 feet altitude) near head of Río Limón, eastern Panamá.)

Characters.—Crown spotted with pale green; rump and upper tail coverts green, turning to light blue; edging on remiges lighter than on wing coverts; black feathers of throat edged blue; undersurface ochraceous-buff.

Measurements.—Males (6 from Darién), wing 70.4-74.3 (72.4), tail 44.6-50.4 (47.9), culmen from base 10.8-12.0 (11.3), tarsus 17.6-18.8 (18.2) mm.

Females (3 from Darién), wing 69.8-72.0 (70.9), tail 45.2-47.3 (46.6), culmen from base 11.0-11.5 (11.3), tarsus 17.3-18.4 (17.9) mm.

Resident. Known only from specimens collected at Cerro Pirre and Cerro Malí in eastern Darién. E. A. Goldman took 4 at Cerro Pirre between 1500 and 1560 m near the head of the Río Limón, during April and May, 1912; he noted that the pair taken April 22 was "breeding." More recently, R. Hinds shot a male at the airfield at El Real (550 m) on August 9, 1965. Pedro Galindo collected 4 on Cerro Malí at 1440 m, 6.4 km west of the summit, during May 1962 and May and June 1963. Cerro Pirre, the type locality, is a separate mountain mass,

divided from other highlands by the broad valley of the Río Tuira. The Cerro Malí birds are very faintly darker buff on the lower breast and abdomen.

BUTHRAUPIS ARCAEI ARCAEI Sclater and Salvin: Blue-and-gold
Tanager, Tangaro Oriazul

Buthraupis arcae P. L. Sclater and Salvin, 1869, Proc. Zool. Soc. London, p. 439, pl. 31. (Cordillera del Chucú, Veraguas, Panamá.)

Small; entire upper surface dark blue; throat blackish; rest of under-surface yellow, brightest on breast.

Description.—Length 133 mm. Adult (sexes alike), lores black, entire head and upper surface dark blue; wings and tail black, with feathers edged dark blue; throat blackish; rest of undersurface rich yellow, brightest on breast.

Measurements.—Males (2 from Veraguas), wing 83.8-87.5 (85.7), tail 46.6-48.6 (47.6), culmen from base 17.4-19.2 (18.3), tarsus 21.6-22.6 (22.1) mm.

Females (4 from Veraguas), wing 84.0-86.5 (85.5), tail 43.1-45.8 (44.1), culmen from base 16.0-18.2 (16.9), tarsus 20.4-22.8 (21.7) mm.

Resident. Fairly common, but very local, in the foothills of Chiriquí, Veraguas on both slopes, and in eastern Province of Panamá. Arcé collected it in 1869 and 1870 in Veraguas on the Cordillera del Chucú and at Calobre. Elsewhere in Veraguas, J. H. Batty collected 2 females in 1901 at Chitra, and in 1926 Benson and Gaffney took a male and female on the Río Calovévora, on the Caribbean slope, at 300 and 450 m, respectively. On January 4, 1974, Robert Ridgely, with R. Hinds, F. G. Stiles, and J. D. Ridgely, found at least 25 on the road above Santa Fé to the Continental Divide (870 m). In Chiriquí, it is known only from the Fortuna Dam site (900-1100 m) on the Río Chiriquí east of Boquete. Here Ridgely (*in litt.*) saw several in late February and early March 1976. A male taken there February 29, 1976, is now in the Gorgas Memorial Laboratory collection. Ridgely noted that it was quite common rather far out along the road to the Divide; none were seen close to Alto de Piedra or on the Cerro Tute ridge trail. The birds were usually in small groups or pairs, generally with flocks of other tanagers, usually rather high. They gave a distinctive loud, sharp *tseeee*, *teh-teh-teh*; sometimes only one *teh* was given, other times up to four.

In eastern Province of Panamá, the Blue-and-gold Tanager has been seen in the Cerro Jefe area (Ridgely, 1976, p. 319). The racial status

of birds from this locality is uncertain. Another race is found on the Caribbean slope of Costa Rica, where Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 354) has observed it foraging for small fruits. The only vocalization Slud ever heard was an occasional weak *tsick*.

**THRAUPIS EPISCOPUS (Linnaeus): Blue-gray Tanager,
Tangaro Azulejo**

Tanagra Episcopus Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 316. (Cayenne.)

Medium size; body pale blue-gray, darker on back; lesser wing coverts bright royal blue; rest of wings and tail paler, near turquoise-blue.

Description.—Length 143-147 mm. Adult (sexes alike), head and entire undersurface pale blue-gray; slightly darker on sides; back darker blue-gray, sharply marked from nape, becoming bluer on rump and upper tail coverts; lesser wing coverts shiny royal blue; middle and greater coverts paler; primaries blackish, with outer web edged bright blue, becoming increasingly dull, toward blue-gray, which is the color of inner secondaries; tail feathers blue-gray, slightly brighter on edge of outer webs; underwing coverts pale blue-gray.

The Blue-gray Tanager is an abundant and widespread bird found throughout Panamá except in the higher mountains. It inhabits woods, borders, shrubby clearings, and gardens; in towns it may become extremely tame. It is found on islands off both coasts, on two of which—Coiba off the Pacific coast and Isla Escudo de Veraguas off the Caribbean—it has evolved distinct subspecies.

The mainland race, *cana*, ranges north to southeastern Mexico and south to northwestern South America. The populations of Mexico through Panamá have at times been separated under the name *diacomus* Lesson 1842 (type locality, Realejo, Nicaragua). Hellmayr (Field Mus. Nat. Hist. Zool. Ser., vol. 13, pt. 9, 1936, p. 244) expressed doubt as to the validity of this form, and Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 566) combined it with *cana*, in which he was followed by Storer (in Peters, Check-list Birds of the World, vol. 13, 1970, p. 318). The supposed differences in coloration of these taxa are not sufficient to permit the consistent separation of individual specimens.* The race

*Although Wetmore recognized the race *diacomus*, on the basis of darker dorsal coloration, I believe that his decision resulted to a large extent from differences in specimen preparation. Wetmore's skins from Panamá are more compact, with the

dilucida (Thayer and Bangs, Bull. Mus. Comp. Zool., 46, 1905, p. 157) attributed to the Pearl Islands is likewise not discernable. Other races of this species range to the Guianas, Brazil, and northern Bolivia.

The Blue-gray Tanager is similar in behavior to the Palm Tanager (*T. palmarum*), with which it has been known to interbreed (Haverschmidt, Bull. Brit. Orn. Club, 1966, pp. 5-6). It feeds in vegetation of every level, moving rapidly and often flying long distances from site to site. Its food includes both animal and vegetable matter; 1 collected by E. A. Goldman at Portobelo, Colón, contained bits of caterpillar skin 18%, remains of a bug 6%, less of a small hymenopteran 1%, orthopteran remains 5%, about 20 seeds imbedded in fiber, undetermined 70%. Once at the Officers Club dining room at Albrook Field, Canal Zone, I watched 1 at sunrise hover repeatedly under the eaves searching for something; in the end it seized a half-inch-long spider from the center of a 2-foot web and flew away. When feeding on drupes, the birds squeeze them in the bill to extract part of the pulp, and then drop the seed. Leck (Living Bird, 1971, p. 96) recorded that on Barro Colorado Island, Canal Zone, Blue-gray Tanagers commonly ate the fruit of *Hamelia* and *Cecropia*; 2 that he weighed there averaged 37.2 g (Bird-Banding, 1975, p. 203). Two males collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 31.5 and 32.0 g.

Buskirk et al. (Auk, 1972, p. 620) found that at Cerro Punta, Chiriquí, Blue-gray Tanagers joined passing mixed species flocks, but usually did not follow them. Even when they are seen only in pairs or small groups, Blue-gray Tanagers may be much more common in an area than they seem. Once at Taboguilla Island, Panamá, I called about 50 into two trees by squeaking. At night they often gather to roost together in large numbers; I have seen scores come into a few trees in the evening, at Aguadulce, Coclé, in January, and Puerto Obaldía, San Blas, in March, when one might presume them to be nesting. They usually arrive in pairs.

This is a noisy and sometimes belligerent species: at Volcán, Chiriquí, I once saw 1 dive repeatedly at a male Northern Oriole (*Icterus galbula*) that tried to perch in a dead tree top over the forest. Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 55) describes the

necks retracted, which has the effect of making the mantle contrast more markedly with the head. Carriker's specimens from Colombia, on the other hand, are more loosely constructed and have the neck more extended, so the contrast between head and mantle is less and consequently the overall appearance is somewhat lighter. S. L. O.

song as "a fast, sibilant, twittering *tsu tsu tseéwee tsu-tseéwee tsu-tseéwee tseéwee tseéwee*, with variations. Calls are *chup*; also *chucep*; also *seeee*."

THRAUPIS EPISCOPUS CANA (Swainson)

T.[angara] cana Swainson, 1836, Ornith. Drawings, pt. 3, pl. 37. (no locality; Caracas, Venezuela designated by Hellmayr, 1924, Archiv. f. Naturg., ser. A, 90(2), p. 185.)

Tanagra (Aglaia) diaconus Lesson, 1842, Rev. Zool., 5, p. 175. (Realejo, Nicaragua.)

Tanagra cana dilucida Thayer and Bangs, 1905, Bull. Mus. Comp. Zool., 46, p. 157. (San Miguel Island, Bay of Panamá.)

Characters.—Lighter, especially on sides than either insular race.

A male collected at Puerto Armuelles, Chiriquí, on February 2, 1966, had the iris dark brown; maxilla and tip of mandible black; rest of mandible neutral gray; tarsus and toes dull neutral gray; claws fuscous. Females I have collected were similar.

Measurements.—Males (10 from Panamá), wing 80.0-90.1 (85.9), tail 59.8-64.0 (61.7), culmen from base 12.2-14.7 (13.6), tarsus 16.1-19.4 (17.6) mm.

Females (10 from Panamá), wing 84.0-88.0 (85.5), tail 58.2-65.4 (60.6), culmen from base 13.4-14.5 (14.0, average of 9), tarsus 16.4-19.2 (17.9) mm.

Resident. Abundant and widespread throughout Panamá, up to around 1800 m (but scarce above 1200 m) in the western highlands (Ridgely, 1976, p. 319). Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 566) collected it on the Volcán de Chiriquí between 1560 and 1620 m.

This species has a very long breeding season; in the Canal Zone it has been recorded nesting from January (Chapman, My Tropical Air Castle, 1929, p. 383) to August (Arbib and Loetscher, Auk, 1935, p. 327). The nest may be placed anywhere from on the ground to 35 m up in a tree, or in a man-made structure like an old shed; sometimes the nests of other birds, either abandoned or active, are usurped. Both sexes participate in construction. A nest found by Major General G. Ralph Meyer at Pacora, Panamá, was cup shaped, made of grass, plant fiber, inner bark, and small twigs and vines, and lined with fine grass, bark of a vine, and aerial rootlets. Other descriptions of nests are similar. Two eggs form a clutch; they are "grayish white, very thickly marked with brown, denser towards the larger end" (Hallinan, Auk, 1924, p.

322). The measurements of 32 eggs examined by Skutch (Pac. Coast Avif. no. 31, 1954, p. 196) averaged 22.7 by 16.0 mm. The incubation period is 12 to 14 days; at several nests that Skutch observed, 1 nestling hatched a day before the other. The young are fed by both parents and remain in the nest 17 to 20 days. Often a second brood is raised, with the parents sometimes beginning nest construction while still feeding the fledged young from the first brood.

THRAUPIS EPISCOPUS CAESITA Wetmore

Thraupis virens caesita Wetmore, 1959, Smiths. Misc. Coll., 139 (2), p. 23. (Isla Escudo de Veraguas, Bocas del Toro, Panamá.)

Characters.—Similar to *T. e. cana*, but darker, particularly below; central lower surface nearly uniform in shade from throat to undertail coverts; sides definitely darker; bill longer and heavier; larger than *T. e. cumatilis*.

Measurements.—Females (3 from Isla Escudo de Veraguas, including the type), wing 87.5-90.1 (88.4), tail 60.1-62.8 (62.3), culmen from base 16.4-18.0 (17.1), tarsus 20.4-20.7 (20.6) mm.

Resident. Fairly common on Isla Escudo de Veraguas, off the base of the Valiente Peninsula of Bocas del Toro. I did not expect that this widely distributed tanager would be represented by a distinct form on this small island, and the 3 specimens, all females, were taken merely as a matter of routine during my visit in 1958. Comparison has been made with a series of skins including 15 females of *T. e. "diaconus"* and 21 of *T. e. cana*. In none of these is there a duplication of the characters on which the race *caesita* is based.

THRAUPIS EPISCOPUS CUMATILIS Wetmore

Thraupis virens cumatilis Wetmore, 1957, Smiths. Misc. Coll., 134(9), p. 94. (Isla Coiba, Panamá.)

Characters.—Sides and flanks darker blue than in *T. e. cana*; underwing coverts, especially the outer ones, darker; smaller than *T. e. caesita*.

Measurements.—Males (2 from Isla Coiba, including the type), wing 87.4-89.0 (88.2), tail 63.0-63.4 (63.2), culmen from base 14.4-14.7 (14.5), tarsus 19.0 mm.

Females (3 from Isla Coiba), wing 82.6-86.8 (84.1), tail 59.6-60.4 (59.9), culmen from base 13.7-14.8 (14.2), tarsus 18.8-19.5 (19.2) mm.

Resident. Common on Isla Coiba, Veraguas, on the southern side of Bahía Damas near Salinas and María, and casual elsewhere on the island during my visit in 1956. In April 1976, Ridgely (*in litt.*) found this species widespread on the island.

In accordance with their usual habits, I often saw these tanagers flying for considerable distances across the high forest crown, or over the clearings. One was seen on Isla Ranchería February 4. They are birds of such strong flight that I would have expected that they might regularly cross to the distant mainland, so it was a great surprise to determine that they represented a distinct subspecies.

THRAUPIS PALMARUM ATRIPENNIS Todd: Palm Tanager,
Tangaro Azulejo Alinegro

Thraupis palmarum atripennis Todd, 1922, Proc. Biol. Soc. Washington, 35, p. 92.
(Guápiles, Costa Rica.)

Medium size; body grayish olive, with a sheen of violet-gray; wings and tail blackish.

Description.—Length 150-169 mm. Adult male, entire body grayish olive, with sheen of violet-gray; slightly more yellowish olive on fore-crown and superciliary; wing coverts grayish olive on base of outer webs; tail sooty blackish; underwing coverts grayish olive.

Female, like male, but with little or no violet sheen.

A female collected at Las Palmitas, Los Santos, on January 21, 1962, had the iris mouse brown; base of gonys and lower edge of rami dark neutral gray; rest of bill black; tarsus except extreme lower end dull neutral gray; lower end, toes, and claws dark fuscous-brown.

Measurements.—Males (10 from Panamá), wing 88.0-94.5 (91.2), tail 61.8-68.0 (65.7), culmen from base 13.9-15.7 (14.6), tarsus 17.3-19.3 (18.4) mm.

Females (10 from Panamá), wing 88.2-93.0 (90.6), tail 63.0-67.0 (65.2), culmen from base 14.2-16.3 (15.2), tarsus 18.3-20.1 (18.8) mm.

Resident. The Palm Tanager is common in gardens, shrubby areas, and woodland and forest borders throughout the lowlands of both slopes, except in the drier regions of the Pacific lowlands from southern Veraguas to western Province of Panamá, where it is absent. In Chiriquí, it has been found as high as 1350 m, where Frank Hartman collected a male at El Volcán on February 18, 1949. In April 1976, Ridgely (*in litt.*) regularly saw this species around the houses of the Campamento Central on Coiba Island, where it had not been reported previ-

ously. This race ranges as far north as Nicaragua and south to northern Colombia and extreme northwestern Venezuela; other races occur south to Bolivia, Paraguay, and southeastern Brazil.

T. palmarum closely resembles the more common Blue-gray Tanager in behavior, although I have never found it as tame; its diet is a mixture of fruit and insects, for which it occasionally flycatches, as well as gleaning the foliage and branches. It is indeed frequently in palm trees. I have often seen them in groups of a dozen, and they are frequently part of mixed species flocks. At the mouth of the Río Tuquesa in Darién, I was interested to find them ranging regularly through the very high tree crowns in the original forest; where this has been cleared they come down lower. One taken by Leck (Bird-Banding, 1975, p. 203) weighed 37.8 g; a male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 38.5 g. Eisenmann describes the song as somewhat like that of the Blue-gray Tanager, "but with a distinct 'r' sound: *súsuri súsuri, sree sree sree, súsuri súsuri súsuri*, with variations. Calls are *see-ee* with a rising or questioning inflection, and *see-you* with a falling inflection" (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 55).

The Palm Tanager nests from late January (Chapman, Life in an Air Castle, 1938, p. 242) until at least June. The nest is often placed in a natural or artificial cranny, frequently in a palm tree. One from Almirante, Bocas del Toro, was a cup with thick heavy walls and base of rather coarse materials including a variety of fibers mixed with some moss; the rim and lining were of narrow, flat, long leaves. It measured 150×150 mm., with the cup 50 mm deep. As far as I know, the eggs and care of the young of this race have not been described. Belcher and Smooker (Ibis, 1937, p. 535) have found eggs of the Trinidad race *T. p. melanoptera*: "ten eggs average 24×17.7 mm.; they are quite indistinguishable in the individual egg from those of the Blue Tanager, but when a series is looked at the eggs of *T. palmarum* seem rather larger and rounder."

RAMPHOCELUS DIMIDIATUS Lafresnaye: **Crimson-backed Tanager,**
Sangrethoro Común

FIGURE 35

Medium size; male, head, breast, and upper back rich dark red; rest of body lighter red; wings and tail black; female similar, but much duller.

Description.—Length 148-166 mm. Adult male, head, upper back, throat, and breast dark red; center of belly black; rest of body shining scarlet-red, slightly darker on undersurface; wings and tail black.

Adult female, head and throat dark brown; upper back dark brownish red, brightest on upper tail coverts; wings and tail blackish brown; rest of undersurface light brownish red.

Immature, like female, but duller.

FIGURE 35.—Crimson-backed Tanager, Sangretoro Común, *Ramphocelus dimidiatus*, male (above), female (below).

The Crimson-backed Tanager is widespread and common in the lowlands (except in continuously forested areas) and in partially cleared areas in foothills of both slopes of Panamá. It is more abundant on the Pacific slope, and on the Caribbean side is absent from Bocas del Toro. A separate race is found in the islands of the Pearl Archipelago, and another on Isla Coiba, off the Pacific coast of Veraguas. In the past, populations from mainland Panamá have been divided among three races: nominate *dimidiatus*, supposedly in Darién, *albirostris* (= *pallidirostris* Hellmayr) of Chiriquí, and *isthmicus* in between. In the large series now available at the Smithsonian, it is evident that age and individual variation account for the differences previously attributed to geography. Herein all the birds of mainland Panamá are referred to the nominate form, which ranges to Colombia and western Venezuela. Similarly, it also appears that the race *molochinus* (de Schauensee, Proc. Acad. Nat. Sci. Philadelphia, vol. 102, 1950, p. 136) of the upper Magdalena Valley of Colombia may be indistinguishable from the nominate form.

This species inhabits forest edge, shrubby areas, clearings, and gardens; at Balboa, Canal Zone, I have seen several feeding at a ripe mango on the ground and coming to drink at a dripping faucet. In the wild, especially in the islands, they are shy and more likely to be found in

forest. On Isla Cébaco, off Veraguas, I once found several dozen gathered in a communal roost in a stand of *Heliconia*; some birds rested on the tops of the leaves while others were sheltered below. By day, these tanagers are usually found in smaller, noisy groups of 3 to 6 individuals. Their calls include a variety of nasal, hoarse, and plaintive notes; the male also has a sweeter, three- or four-note song delivered mainly at dawn. Moynihan (Auk, 1962, pp. 650-680) analyzes the calls and associated behavior patterns. The stomach of 1 collected by Goldman at Corozal, Canal Zone, held bits of caterpillar skin 57%, spider remains 3%, bits of a pentatomid 5%, about 75 seeds of *Miconia* sp. 30%, vegetable rubbish 5%. Twelve collected by Burton (Bull. Brit. Orn. Club, 1975, p. 86) and Strauch (Bull. Brit. Orn. Club, 1977, p. 65) ranged in weight from 23.8 to 34.0 g.

RAMPHOCELUS DIMIDIATUS DIMIDIATUS Lafresnaye

Ramphocelus dimidiatus Lafresnaye, 1837, Mag. Zool. [Paris], 7, cl. 2, p. 2, pl. 81 and text. (Cartagena, Colombia.)

Ramphocelus dimidiatus isthmicus Ridgway, 1901, Proc. Washington Acad. Sci., 3, p. 150. (Frijole Station, Panamá R.R.)

Ramphocelus dimidiatus albirostris Griscom, 1933, Auk, 50, p. 307. (Divalá, Pacific slope of western Chiriquí.)

Ramphocelus dimidiatus pallidirostris Hellmayr, 1936, Field Mus. Nat. Hist. Publ. Zool. Ser., 13, pt. 9, p. 256; new name for *Ramphocelus dimidiatus albirostris* Griscom, preoccupied by *Tanagra albirostris* Boddaert, 1783.

Characters.—Very similar to the insular races, but in the male the black of the belly is more extensive, and the reds, particularly of the rump, are lighter, more orange, and less scarlet.

A male collected at Las Palmitas, Los Santos, on January 28, 1962, had the iris reddish brown; maxilla and tip of mandible black; base of mandible white, shading to neutral gray at base, gonys, and sides adjacent; tarsus, toes, and claws black. A female taken there on January 22 had the iris reddish brown; base of maxilla and mandible dull brownish dark neutral gray, slightly paler on swollen base of mandible; rest of maxilla dusky neutral gray; tarsus and toes dusky neutral gray; claws black.

Measurements.—Males (10 from Panamá), wing 75.5-81.5 (78.8), tail 64.8-74.6 (71.6), culmen from base 15.7-18.1 (16.5, average of 9), tarsus 17.4-20.7 (19.2) mm.

Females (10 from Panamá), wing 74.0-82.0 (76.5), tail 64.4-74.4 (68.8), culmen from base 16.4-18.6 (17.3), tarsus 17.9-20.8 (19.8) mm.

Resident. Common on the entire Pacific slope in the lowlands and in partially cleared foothills, occasionally up to 1620 m, where it has been collected on Volcán de Chiriquí (Blake, *Feldiana: Zool.*, vol. 36, no. 5, 1958, pp. 566-567); less common on the Caribbean slope, where it is absent in Bocas del Toro.

In Panamá, the nesting season runs from January to at least July. Skutch (*Pac. Coast Avif.*, no. 31, 1934, pp. 166-175) has found nests with young in the Canal Zone from February 19 to May 17, and L. L. Jewel found a nest there with two eggs on June 11 (Stone, *Proc. Acad. Nat. Sci. Philadelphia*, vol. 70, 1918, p. 278). Ridgely (*in litt.*) saw a male repeatedly carrying food to a dense shrubby border on July 24, 1975. Some pairs may attempt to rear two or three broods in a season. The female builds the nest alone, although she may be accompanied by her mate. The nest is placed in a shrub or tree, from 1.3 to 5 m from the ground. It is cup shaped and made of twigs, bits of bark, rootlets, grasses, and dead leaves, lined with fine rootlets. Two eggs are laid; they are light blue, thickly marked at the larger end with black spots and scrawls. Average measurements of four eggs are 22.4 and 17.1 mm (Skutch, *Auk*, 1945, p. 25). The incubation period is 12 days. The young are born with pink skin and sparse, long, gray down; they are fed berries by both parents and leave the nest at approximately 11 days of age. Young of the season's earlier broods may remain in their parents' territory and continue to be fed even after the parents have begun caring for another brood.

RAMPHOCELUS DIMIDIATUS LIMATUS Bangs

Ramphocelus limatus Bangs, 1901, *Auk*, 18, p. 31. (San Miguel Island, Panamá.)

Characters.—Very similar to nominate *dimidiatus*, but in the male the black of the belly is reduced and the reds, particularly of the rump, are more scarlet, less orange.

Measurements.—Males (10 from the Pearl Islands), wing 71.3-79.4 (75.5), tail 64.9-71.4 (67.4), culmen from base 16.0-17.9 (16.9), tarsus 17.9-20.0 (18.8) mm.

Females (9 from the Pearl Islands), wing 71.0-76.5 (73.4), tail 65.5-70.6 (67.8), culmen from base 15.7-17.7 (16.5), tarsus 18.2-19.8 (18.8) mm.

Resident. Common in the Pearl Archipelago, off the Pacific coast of Panamá, on Isla del Rey (San Miguel), San José, Pedro González, Cañas, Saboga, Santelmo, Bayonita, and Isleta Málaga. On my visits to the Pearl Islands, in 1944, 1946, and 1960, this tanager was numerous

in the heavy forests. The birds were found frequently in small parties of half a dozen or more, with a predominance of those in immature plumage. They frequently uttered a low *chewp chewp*. At the end of February 1944 they were mating. A male in immature dress taken February 12 had the testes half developed.

RAMPHOCELUS DIMIDIATUS ARESTUS Wetmore

Ramphocelus dimidiatus arestus Wetmore, 1957, Smiths. Misc. Coll., 134 (9), p. 97. (Isla Coiba, Panamá.)

Characters.—Darkest of the races of *R. dimidiatus*; male similar to *R. d. limatus* in having the black of the belly reduced, but deeper red throughout, especially on the abdomen; female decidedly darker.

Measurements.—Males (8 from Isla Coiba, including the type), wing 74.3-78.9 (77.3), tail 65.5-70.0 (67.9), culmen from base 16.6-19.6 (17.4), tarsus 19.3-21.3 (20.6) mm.

Females (7 from Isla Coiba), wing 73.3-75.2 (74.3), tail 65.5-69.7 (67.5), culmen from base 17.6-18.5 (18.2), tarsus 20.2-21.8 (21.0) mm.

Resident. Common on Isla Coiba, off the Pacific coast of Veraguas. This tanager comes frequently into the trees and shrubbery around the habitations, but is more usually seen in the lower woodlands back of the beaches and near the river mouths. On my visit to Isla Coiba in 1956, I was interested to find them equally common in the high crown of the tall virgin forest inland. In 1976, Ridgely (*in litt.*) found them much more frequently in undergrowth. They may come out in the open to feed, but at any alarm retreat to cover behind leaves and creepers; at the same time they have considerable curiosity and are easily called by squeaking.

**RAMPHOCELUS PASSERINII Bonaparte: Scarlet-rumped Tanager,
Sangretoro Negro**

Medium size; male entirely black except for lower back through upper tail coverts, which are bright red; female, head, wings, and tail drab dark brown; rest of body mostly yellow-ocher with orange band across breast.

Description.—Length 160-165 mm. Adult male entirely velvety black, except for lower back through upper tail coverts, which are bright red (scarlet in nominate *passerinii*, slightly more orange in *costaricensis*).

Adult female, head gray-brown; upper back orange-brown; rest of

upper surface yellow-ocher (darker, more orangish in *costaricensis*), darkest on upper tail coverts; wing coverts as upper back; remiges and rectrices drab dark brown; throat dingy buff; band across breast greenish orange (*passerinii*) or dark orange (*costaricensis*); rest of undersurface yellow-ocher (more greenish in *passerinii*, more brownish in *costaricensis*).

At least some immature males appear to change into adult plumage in an irregular manner, as individuals with scattered black feathers in the plainer immature dress, and others with varying mixtures in the extent of the black, are frequent. In occasional birds the red of the adult plumage is modified to orange, and orange or reddish hues may appear as a wash or a definite pattern over parts of the body. Early workers, with limited material were misled by the more striking aberrations, and described several as distinct species.

The Scarlet-rumped Tanager is common in gardens and second growth in the lowlands of Bocas del Toro and Chiriquí and the Pacific slope of Veraguas. Nominate *passerinii* is found on the Caribbean slope from Panamá north to southeastern Mexico. *R. p. costaricensis* is confined to the Pacific slope of western Panamá and Costa Rica. This tanager inhabits the vegetation that grows up after forest has been cleared; in the Chiriquí highlands, it is regularly found to 1200 m in suitable habitat, and I have seen it as high as 1560 m in low growth bordering recently cleared land near El Volcán. It feeds on a variety of fruits and insects, for which it will glean foliage, forage on the ground, or flycatch. Frequently it forms groups: Moriarty (Wilson Bull., 1977, p. 152) observed 34 flocks in Costa Rica, of which 5 were mixed with other species; he found that in larger flocks this tanager has an increased foraging rate, an increased group movement, and usually feeds higher in the tree canopy than when in smaller groups. Skutch (Pac. Coast Avif., no. 31, 1954, pp. 123-165) found groups of at least a dozen roosting together.

The Scarlet-rumped Tanager has a variety of call notes, including a nasal *ac* or *wac*, a dry *pzzt*, and a sharp *whip*. A scolding note is slightly higher in sound than that of *R. dimidiatus*, but, aside from this very minor difference, is the same in the 2 species. Skutch found that *R. p. costaricensis* is a more frequent and forceful singer than the nominate race; the song is an endlessly repeated, somewhat robinlike, simple phrase of three or four notes.

The Gorgas Memorial Laboratory banding station at Almirante, Bocas del Toro, has recovered many Scarlet-rumped Tanagers banded there in earlier years. The lengthiest recovery of which Dr. Pedro

Galindo has record is of 1 banded October 23, 1962, and recovered April 11, 1967.

RAMPHOCELUS PASSERINII PASSERINII Bonaparte

Ramphocelus passerinii Bonaparte, 1831, *Antologia* [Florence], 44 (130), p. 164. (Guatemala.)

Characters.—Adult male with red of lower back and rump scarlet. Female and immature males with band across breast greenish orange.

Measurements.—Males (10 from Bocas del Toro and Costa Rica), wing 73.1-78.5 (76.1), tail 64.7-70.8 (67.6), culmen from base 15.7-17.8 (16.6), tarsus 22.0-23.8 (23.0) mm.

Females (10 from Bocas del Toro and Costa Rica), wing 71.8-76.7 (74.7), tail 65.1-70.9 (68.2), culmen from base 15.0-17.3 (16.6), tarsus 21.5-23.5 (22.6) mm.

Resident. Common in the lowlands of Bocas del Toro from the Costa Rican border to Cricamola, and inland to 225 m on the Río Changuena. Throughout the Almirante-Changuinola region, this is a widely distributed bird in regions bordering cultivation, and in areas near shorelines or streams where forest growth is sufficiently low or scattered to allow the suitable open conditions. Low second growth and brushy field boundaries are especially favored. Around Almirante Bay, I found them on various islands, including Roldan and Coco Cays and Shepherd (Pastores) Island. They were especially common above the mangrove swamps on Río Occidental, Quebrada Nigua, and Quebrada Garay.

In Panamá, the nesting season is from early March through July. The female alone builds the nest, which is concealed in thick foliage in a tussock of grass, shrub, or tree from 3 to 7 m from the ground. The nest is a compact, thick-walled, strongly woven cup. Three collected at Almirante by Pedro Galindo in May and June of 1962 had bases of large leaves, sides of fibers and rootlets, and a lining of fine delicate hairlike fibers. One nest measured 120×120 mm, with an inside depth of 45 mm. Five sets of eggs of *R. p. passerinii* in the Smithsonian collected by C. W. Richmond on the Río Escondido in southeastern Nicaragua numbered two eggs each. These vary in form from oval to long oval. The color is very pale grayish blue, marked with small irregular black spots or fine irregular lines, mainly about the larger end. Their measurements average 23.5×16.6 mm. The incubation period is 12 days, and the young leave the nest 11 or 12 days later.

Bonaparte named the species in honor of Dr. Carlo Passerini of Florence, who had the specimen in his cabinet, but who was expected

to place it in the collections of the Museo Zoologico of Florence or those of the University of Pisa. The bird was originally supposed to have come from Cuba, which was the type locality given in the original description, though Bonaparte (*Consp. Gen. Av.*, vol. 1, 1850, p. 242) later gave this as "Mexico vel Cuba." Berlepsch (*Proc. V. Int. Orn. Congr.*, 1912, p. 1060) suggested Guatemala as an appropriate locality, which is accepted here.

RAMPHOCELUS PASSERINII COSTARICENSIS Cherrie

Ramphocelus costaricensis Cherrie, 1891, *Auk*, 8, p. 62. (Pozo Azul de Pirris, Costa Rica.)

Characters.—Adult male with red of upper surface lighter than scarlet. Female and immature male with band across breast dark orange.

A male collected at Puerto Armuelles, Chiriquí, on January 30, 1966, had the iris bright reddish brown; tip of bill black; rest of bill pale neutral gray, changing to grayish white in swollen base of mandibular rami; inside tip of maxilla and inside cutting edge of mandible and tip dull black; tarsus and toes fuscous-black; claws narrowly dark neutral gray at base changing to black at tips.

Measurements.—Males (10 from Chiriquí), wing 74.5-81.0 (78.9), tail 64.9-73.0 (68.7), culmen from base 16.3-18.7 (17.1), tarsus 22.0-23.5 (22.6) mm.

Females (10 from Chiriquí), wing 73.3-78.8 (76.1), tail 66.0-70.9 (69.0), culmen from base 16.5-18.5 (17.4), tarsus 21.5-23.8 (22.4) mm.

Resident. Common in lowlands and foothills of Chiriquí and western Veraguas, where I collected an immature male on June 9, 1953, on the upper Río Bubí near El Zapatillo. Near El Volcán, Chiriquí, it ranges as high as 1300 m. Like the race of the Caribbean side, *costaricensis* is found in pairs or small groups that are decidedly shy and tend to remain hidden. As they do not decoy to squeaking, they are often hard to see, and still more difficult to obtain as specimens.

Records indicate that males may breed before attaining adult plumage. Cherrie (*Auk*, 1893, p. 278) writing of their breeding in Costa Rica, states that when he collected both parents of a nest, a majority of the males were "wearing the same dress as the females." Others were in mottled plumage, and some in definitive plumage. A male, with testes enlarging toward breeding condition that I shot at Buena Vista, above Concepción, Chiriquí, on March 1, 1960, was in immature plumage except for a few black feathers scattered over the head and breast. This pattern of feathering is seen so commonly through the nesting

period as to indicate that at least some males pair in this stage.

I found birds feeding regularly on drupes of various small trees and shrubs. On the coastal plain below Alanje they ranged and fed in the same thickets as those occupied by *Ramphocelus dimidiatus*, but not in mixed company with them.

RAMPHOCELUS FLAMMIGERUS ICTERONOTUS Bonaparte:
Yellow-rumped Tanager, Frutero de Rabadilla Amarilla

R[h]amphocelus icteronotus Bonaparte, 1838, Rev. Zool. [Paris], 1, p. 8. (Ecuador.)

Medium size; adult male entirely velvety black except for lower back through upper tail coverts, which are rich lemon yellow; female with head, upper back, wings, and tail grayish brown; rest of body pale lemon yellow, lightest on undersurface.

Description.—Length 150-170 mm. Adult male, entirely velvety black, except for lower back through upper tail coverts, which are rich lemon yellow.

Adult female, crown, upper back, and wing coverts grayish brown; rectrices slightly darker brown; rest of upper surface pale lemon yellow; undersurface pale lemon yellow, brightest on breast; sometimes undersurface is whitish, tinged yellow.

Immature male, like female, but more or less marked with black.

A male collected at Puerto Obaldía, San Blas, on February 16, 1963, had the iris dull red; extreme tip of bill black, rest neutral gray; tarsus and toes dark neutral gray; claws black.

Measurements.—Males (10 from Panamá), wing 79.1-84.0 (82.0), tail 67.0-74.4 (69.4), culmen from base 16.0-18.2 (17.0), tarsus 22.8-24.6 (23.7) mm.

Females (10 from Panamá), wing 71.2-82.1 (77.6), tail 64.6-71.4 (67.9), culmen from base 15.0-18.0 (16.6), tarsus 21.8-24.2 (23.0) mm.

Resident. Common in shrubby areas in the lowlands of the Caribbean slope from Cricamola, Bocas del Toro, eastward; more local on the Pacific slope. Arcé (Salvin, Proc. Zool. Soc. London, 1867, p. 139) collected it on the Pacific slope at Santiago in Veraguas, but as this is such an unusual location the bird may have been caged. I have taken it in Coclé at the head of the Río Guabal and at 750 m at El Valle, where I saw several. Ridgely (*in litt.*) netted a female above Santa Fé, Veraguas, in January 1974. It has been collected at many localities in the Canal Zone (but is scarce or seasonal on the Pacific slope) and farther east in the Province of Panamá and in Darién. Ridgely (*in*

litt.) found it abundant in the partially cleared lower and middle Tuira Valley, Darién. On the western slope of the Western Andes of Colombia it intergrades with nominate *flammigerus* (Sibley, Proc. Am. Phil. Soc., vol. 102, no. 5, 1958, p. 452), which replaces *icteronotus* at higher elevations in the Cauca Valley. Preliminary examination reveals that females and immatures from Ecuador are much greener, less brownish or gray, above than are most birds from Colombia and Panamá. Thus, it is possible that the Panamanian birds should take the name *varians* Lafresnaye 1847 (type locality, Buenaventura, Colombia).

The Yellow-rumped Tanager is often a conspicuous bird in the bushy edges of forest clearings. They are usually seen in pairs or small groups. When resting in the open, they constantly jerk the tail and often twitch their wings; once I saw 1 chase a male Crimson-backed Tanager (*R. dimidiatus*). One collected by E. A. Goldman at Portobelo, Colón, contained the remains of a beetle 10%, and 75 rubiaceous seeds with drupes 90%. Five collected by Burton (Bull. Brit. Orn. Club, 1975, p. 86) and Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 30 to 35 g. The vocalizations I have heard from this species are a scolding *chewp* and a note from the female that is exactly like that of the House Sparrow (*Passer domesticus*).

The nesting season runs from at least mid-February, when in 1959 I saw 1 gathering nest material at the mouth of the Río Paya, Darién, until mid-May, when in 1957 Charles Handley found a nest with eggs near the Río Cangandí, Mandinga, San Blas. In courtship, the male displays before the female by expanding the yellow rump feathers so that the color shows below the line of the wings; at the same time, he frequently turns the back to her and quivers his wings slightly, while the female hops about nervously. Once, I saw 2 males displaying together before 1 female. Although this courtship behavior seems to depend on the bold contrast of yellow rump against black body, males still in immature plumage also breed. A nest that I found at the Candelaria Hydrographic Station, Panamá, was 2 m from the ground in a small shrub. The nest foundation was of long slender roots of epiphytes, some of them as much as 7 m long, with mixed fragments of dried, dead leaves. On top of this was a deep, open cup made of the same rootlets compactly coiled, also mixed with fragments of dead leaves; the inner lining was of finer, softer rootlets. The nest contained two eggs of light blue, spotted irregularly with black, mainly near the large end; they measured 24.9×16.9 and 24.1×17.2 mm. A nest found by E. A. Goldman at Lion Hill, Canal Zone, contained three eggs. Other nests found in Panamá have been as high as 5 m in trees.

RAMPHOCELUS SANGUINOLENTUS APRICUS (Bangs): Crimson-collared Tanager, Frutero Sanguinolento

Phlogothraupis sanguinolenta aprica Bangs, 1908, Proc. New England Zool. Club, 4, p. 31. (Carrillo, Costa Rica.)

Medium size; entirely black except for red on center of crown, nape, and band across breast, and on upper and lower tail coverts.

Description.—Length 178-183 mm. Adult (sexes alike), entirely black, except for dark scarlet-red on center of crown, nape, sides of neck, and band across breast, on upper and lower tail coverts, and on underwing coverts. Bill pale bluish.

Juvenile, dark brown, with orangish red feathers on crown and upper and lower tail coverts.

Measurements.—Males (10 from Costa Rica and Nicaragua), wing 85.5-92.0 (88.7), tail 69.4-77.6 (73.5), culmen from base 15.9-18.9 (17.3, average of 9), tarsus 18.4-21.3 (19.9) mm.

Females (10 from Costa Rica and Nicaragua), wing 82.0-92.6 (87.4), tail 69.8-78.7 (75.0), culmen from base 15.4-17.6 (16.6), tarsus 18.6-22.3 (20.6) mm.

Resident. Evidently uncommon and local in widely scattered areas in the western half of the Republic. In Bocas del Toro, it has been collected at Almirante in the lowlands and at 720 m on the Río Changuena and seen near the IRHE dam site camp on the lower Río Changuinola (Ridgely *in litt.*). In Veraguas, Ridgely and F. G. Stiles collected 1 and saw another on January 4, 1974, at 870 m on the Pacific slope near Santa Fé, where it has been seen subsequently by other observers. One was seen by N. G. Smith along the Río Trinidad, on the Caribbean slope north of Cerro Campana, Province of Panamá, in March 1966 (Ridgely, 1976, p. 321). Beyond Panamá, this race is found north along the Caribbean slope to Honduras; the nominate race ranges from there to southeastern Mexico. This species was formerly placed in the monotypic genus *Phlogothraupis*, but Storer (Check-list Birds World, vol. 13, 1970, p. 310) has indicated its evident affinities by placing it in *Rhamphocelus*.

The Crimson-collared Tanager is not gregarious like other members of the genus *Ramphocelus*, but is usually seen singly or in pairs. It inhabits thickets and second growth at the edges of forest, and forages from a few yards to 7 m above the ground. Slud (Bull. Amer. Mus. Nat. Hist., vol. 28, 1964, p. 356) describes the song as "composed of measured, metallic, rather penetrating, sibilant short phrases, with high-pitched sissing notes randomly interspersed. . . . The call is a rising slow 'whirsst' or 'chweerst' like that of a Palm Tanager." Wharton

Huber (Proc. Acad. Nat. Sci. Philadelphia, vol. 84, 1932, p. 245) described a nest of this race found in Nicaragua. It was a cup about a meter from the ground in a bush and made of leaves, small vines, plant stalks, grass heads, and green moss, lined with fine brown plant stems. The nest contained three eggs; one was "etain blue, spotted and scrawled with dark brown and blackish brown and an occasional faint mark of lavender mostly around the larger end." It measured 24.2×16.4 mm.

**PIRANGA FLAVA TESTACEA (Sclater and Salvin): Hepatic
Tanager, Frutero Hepatico**

Piranga testacea P. L. Sclater and Salvin, 1868, Proc. Zool. Soc. London, p. 388.
(Chitra, Veraguas, Panamá.)

Medium size; bill blackish; adult male, entire upper surface dark red; undersurface dark red, with lighter tone on throat and center of belly; female, entire upper surface greenish yellow and undersurface dark yellow, with more greenish wash across breast; immature male, like female irregularly tinged red.

Description.—Length 159-170 mm. Adult male, entire upper surface, including wing coverts and tail, dark red; remiges dusky with outer webs dark red; breast, sides, and flanks slightly lighter and brighter red, intergrading with more orange-red of throat, belly, and undertail coverts; underwing coverts orange-red.

Adult female, entire upper surface, including wing coverts and tail, greenish yellow; remiges dusky, with outer webs edged greenish yellow; undersurface dark yellow, becoming more greenish on breast, sides, and flanks; underwing coverts dark yellow.

Immature male, like female irregularly tinged red.

Measurements.—Males (10 from Panamá), wing 84.6-92.8 (88.7), tail 63.1-71.2 (68.4), culmen from base 18.5-20.9 (19.9), tarsus 17.1-20.3 (18.8) mm.

Females (10 from Panamá and Costa Rica), wing 82.5-90.2 (87.9), tail 63.9-74.7 (68.9), culmen from base 18.3-20.9 (19.8, average of 9), tarsus 17.6-20.0 (18.9) mm.

Resident. Common but local in the foothills of both slopes, mostly between 600 and 1200 m. I have collected it at El Volcán, Chiriquí, as high as 1260 m, at El Valle, Coclé, and in the Province of Panamá at Cerro Campana and Cerro Chucantí. Arcé (Salvin, Proc. Zool. Soc. London, 1870, p. 187) collected it in Veraguas at Calovévora and Chitra. Ridgely (*in litt.*) has found it at Santa Fé, Veraguas, and Cerro Azul/Jefe, Province of Panamá. In Darién, it has been taken near Cape Garachiné (Griscom, Amer. Mus. Novit. no. 282, 1927, p.

10) and at Cana, by E. A. Goldman. This race is also found in Costa Rica; other races occur from the southwestern United States to Bolivia, northern Argentina, and Uruguay.

At Cerro Campana, I noted that this was one of the common birds at the edge of forest or where trees are rather open; here it ranged fairly high, but occasionally came down into the lower branches. I found this species somewhat shy and difficult to observe, although during the month of March, to which my encounters with it were limited, I heard it calling almost constantly wherever it occurred. Calls given year round include a high-pitched *chip-i-ty*, *chip-i-ty*, *chicky-tick-tick*; the song is a series of rising and falling phrases, like a typical *Piranga* but higher pitched. On March 18, 1950, at Cerro Chucantí, they seemed to be preparing to breed, as I found them in pairs and males appeared to be on territory. French (A Guide to the Birds of Trinidad and Tobago, 1973, p. 415) records a Trinidad nest "made of dry grass, situated amidst the sprouting vegetation of a trimmed forest tree at the edge of a clearing 20 ft. above ground. The 2 eggs were greenish, spotted with brown. Both parents fed the young." One that Goldman collected at Cana contained a phasmod 25%, a tenebrionid 10%, a bee 10%, about 100 seeds not determined 55%. Cruden and Hermann (Auk, 1977, p. 594) observed Hepatic Tanagers chasing orioles away from feeding trees in Mexico. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 36.7 g.

Ridgely (*in litt.*) has noticed that on Cerro Azul this is one of the few tanagers to persist in heavily disturbed agricultural areas with patches of thinned woodland. In the areas where most of the scarcer *Tangara* species and others were still found into the late 1960's, now only this remains in any numbers.

**PIRANGA RUBRA RUBRA (Linnaeus): Summer Tanager,
Frutero Comeabejas**

Fringilla rubra Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 181. (South Carolina.)

Medium size; adult male, upper surface rosy red; undersurface slightly lighter; female, upper surface yellowish green; undersurface dull yellow; immature male like female with irregular red splotches.

Description.—Length 158-168 mm. Adult male, upper surface, including wing coverts and tail, rosy red; remiges dusky with outer webs edged rosy red; undersurface pinkish red; underwing coverts pink.

Adult female, upper surface yellowish green; more yellow on fore-crown; remiges dusky yellow; tail brownish yellow; undersurface and underwing coverts dull yellow.

Immature male, like female, but with irregular red splotches.

Measurements.—Males (10 from Panamá), wing 91.0-96.0 (94.6), tail 65.2-70.7 (68.8), culmen from base 18.7-19.6 (19.2), tarsus 15.8-19.1 (16.9) mm.

Females (10 from Panamá), wing 87.1-94.0 (89.9), tail 59.3-69.5 (66.1), culmen from base 17.5-19.3 (18.7), tarsus 16.0-18.3 (16.9) mm.

Migrant and winter visitor from the north. Very common throughout the lowlands and foothills; in the Chiriquí highlands it has been collected as high as 2250 m (though more numerous below 1800 m) on Volcán de Chiriquí (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 567). It has also been taken at many of the islands off the Pacific Coast and at Isla Escudo de Veraguas and Isla Bastimentos, Bocas del Toro, off the Caribbean Coast. The Summer Tanager has been recorded in Panamá from September 3 (Eisenmann, *Smiths. Misc. Coll.*, vol. 117, no. 5, 1952, p. 55) until April 22 (Loftin and Olson, *Carib. Journ. Sci.*, vol. 3, no. 4, 1963, p. 195). Most individuals depart in March. I have seen a flock of 30 in a single tree in December. Summer Tanagers winter from Mexico to northern Bolivia and Amazonian Brazil.

The Summer Tanager frequents second-growth woodlands, gardens, and shrubby areas when in Panamá. Many that I have collected here had the stomach filled with small, stingless, black bees, and once I watched one prying into a bees' nest. Buskirk et al. (*Auk*, 1972, p. 620) observed that Summer Tanagers at Cerro Punta, would join but not follow the local interspecific flocks of insectivores. Seven Summer Tanagers captured at Cerro Punta during April 1968 had an average weight of 30.3 g; this is 3.3 g more than 3 taken there a month earlier (Leck, *Bird-Banding*, 1975, p. 202). One killed at Almirante, Bocas del Toro, while migrating south on October 13, 1963, weighed 31.8 g (Rogers, *Bird-Banding*, 1965, p. 116). A male collected by Strauch (*Bull. Brit. Orn. Club*, 1977, p. 65) in January weighed 28.9 g.

The Summer Tanager is not known to sing while in Panamá, but does frequently give its distinctive call, *pitichuck* or *pi-tuck*.

PIRANGA OLIVACEA (Gmelin): Scarlet Tanager, Frutero Escarlata

Tangara olivacea Gmelin, 1789, *Syst. Nat.*, 1(2), p. 889. (New York.)

Medium size; male in alternate plumage, entire body scarlet, with wings and tail black; male in basic plumage, mostly olive-yellow with black wings and tail; female mostly olive-yellow.

Description.—Length 155-171 mm. Adult male in basic plumage,

upper surface yellowish green; wings and tail black, with underwing coverts and edge of inner webs of remiges white; undersurface yellow tinged greenish. Adult male in alternate plumage, wings and tail black; entire body scarlet.

Adult female, like male in basic plumage, but rump and upper tail coverts are color of back; wings and tail dusky gray, with feathers edged yellowish green; underwing coverts and edge of inner web of remiges white.

Measurements.—Males (10 from North America, taken in May), wing 92.0-99.0 (95.6), tail 61.4-70.2 (65.8), culmen from base 15.0-16.8 (15.9), tarsus 16.7-18.8 (17.6) mm.

Females (10 from North America, taken in May), wing 89.0-96.0 (93.7), tail 60.0-66.7 (63.0), culmen from base 15.2-16.9 (16.4), tarsus 16.8-19.2 (17.7) mm.

Migrant and winter visitor from the north. Uncommon migrant throughout from early October to mid-November and during March and April; the latest record is of a male seen on May 1, 1976, at Fort Sherman, Canal Zone, by Ridgely and J. Pujals. In winter it may be a rare resident in the lowlands. I collected 1 on Isla Coiba, Veraguas, on January 7, 1960. The only other presumed wintering record is of a female seen at Majé on the Río Bayano, eastern Province of Panamá, on January 26, 1973, by Ridgely, Eisenmann and J. A. Gwynne. W. W. Brown, Jr., collected 2 likely migrants on Saboga Island in the Pearl Island Archipelago on April 9, 1904 (Thayer and Bangs, *Bull. Mus. Comp. Zool.*, vol. 46, 1905, p. 159). Most of the population winters in western Amazonian South America south to northern Bolivia. One taken at Almirante, Bocas del Toro, on October 13, 1963, weighed 35.5 g; Rodgers (*Bird-Banding*, p. 1965, p. 116) estimated that it had enough fat to fly another 1774 km. In Panamá this species is usually found in second-growth woodland, forest borders, and forest canopy. It is often seen singly with mixed flocks. It is not known to sing in Panamá.

**PIRANGA LUDOVICIANA (Wilson): Western Tanager,
Frutero Occidental**

Tanagra ludoviciana Wilson, 1811, *Amer. Ornith.*, 3, p. 27, pl. 20, fig. 1. (About two miles north of Kamiah, Idaho County, Idaho.)

Medium size; male, head scarlet; body, except for upper back, bright yellow; upper back, wings, and tail black; wings with two yellowish bars; female, mostly yellowish green above, wings and tail dusky gray; undersurface greenish yellow.

Description.—Length 161-171 mm. Adult male, head, throat, and sometimes upper breast scarlet, darkest on lores and superciliary; rest of body except for upper back bright yellow; upper back, wings, and tail black; middle wing coverts and tips of greater wing coverts pale yellow, forming two bars; underwing coverts white and pale yellow.

Adult female, crown, nape, rump, and upper tail coverts olive-yellow; rest of upper surface yellowish green; greater coverts tipped dingy white; lores and chin sometimes tinged red; undersurface yellow tinged green; underwing coverts white and pale yellow.

Measurements.—Males (10 from North America, taken in May), wing 91.3-99.0 (95.0), tail 62.1-73.0 (67.6), culmen from base 15.7-17.8 (16.5), tarsus 18.0-20.1 (18.6) mm.

Females (10 from North America, taken in May and June), wing 89.7-99.5 (93.2), tail 63.6-71.1 (68.4), culmen from base 15.7-18.5 (16.9), tarsus 16.9-19.9 (18.5) mm.

Casual. This species has been collected once in Panamá, on February 15, 1960, when I took a male on the Silla de Cerro Pando, 1500 m, El Volcán, Chiriquí. On March 22, 1974, 4 individuals, 2 of them male, were seen more or less separately in woodland patches and in trees shading coffee plantations near Santa Clara (1200 m) by J. Baird and others (Ridgely, *in litt.*). The normal winter range is from Mexico to Costa Rica.

PIRANGA BIDENTATA CITREA van Rossem: **Flame-colored Tanager,**
Frutero Flamigero

Piranga bidentata citrea van Rossem, 1934, Trans. San Diego Soc. Nat. Hist., 7, p. 367. (Boquete, Chiriquí, Panamá.)

Medium size; adult male bright reddish orange with wings and tail blackish, spotted white; female, undersurface yellow; crown greenish yellow; back black and yellow stripes; wings and tail blackish, spotted white. Immature male, like female with red coming in on head and breast.

Description.—Length 165-178 mm. Adult male, head and entire undersurface bright reddish orange; small black patch at auriculars; feathers of upper back black, edged brownish red, creating striped effect; rump and upper tail coverts brownish red; wings blackish, middle and greater coverts and tertials tipped whitish, and outer web of remiges finely edged red; rectrices dusky blackish, edged red; outer three pairs tipped white; underwing coverts reddish orange.

Adult female, crown, nape, and sides of head greenish yellow, with small blackish patch at auriculars; feathers of upper back blackish,

edged yellowish green, creating striped effect; rump and upper tail coverts yellowish green; wings blackish, with lesser coverts tipped yellowish green, middle and greater coverts and secondaries tipped white, and outer web of remiges edged yellowish green; rectrices blackish, edged yellowish green; outer three pairs tipped white; throat and breast rich yellow, becoming paler on rest of undersurface; underwing coverts pale yellow.

Immature male, like female with red coming in on head and breast.

A male collected at Volcán de Chiriquí, Chiriquí, on March 4, 1965, had the iris mouse brown; maxilla and extreme tip of mandible black; rest of mandible dark neutral gray; tarsus fuscous-brown; toes fuscous-black with lower surface of pads dull honey yellow; claws black.

Measurements.—Males (10 from Chiriquí), wing 93.5-101.0 (96.9), tail 71.1-78.7 (75.0), culmen from base 18.8-20.3 (19.6), tarsus 19.2-20.4 (19.6) mm.

Females (10 from Chiriquí), wing 84.0-95.3 (90.9), tail 69.2-76.8 (73.2), culmen from base 17.3-20.5 (18.6), tarsus 16.9-20.9 (19.1) mm.

Resident. Common in the highlands of western Chiriquí, where I have collected it on the Volcán de Chiriquí as high as 2280 m. This race is found also in Costa Rica; other races range north to northern Mexico. In Chiriquí, it inhabits forests, borders, and clearings. It was widely distributed through the woodland at Potrero Verde and above, near El Volcán, in 1955, when I also observed 1 in a solitary tree in a pasture on Cerro Punta and saw 2 males in a berry-bearing tree in dense scrub at the lower edge of the llano near El Volcán. It is also common at Boquete. When van Rossem described this race he remarked that he had examined specimens from Veraguas, but I have no record of any taken in that province, except those collected by Batty labeled "Brava I., Veraguas," an undoubtedly erroneous location.

Males that I collected on March 13, 1955, at El Volcán were approaching breeding condition. The only call I heard from them was a slightly explosive note, *chit-tuck*; Ridgely (1976, p. 322) describes the song as "a rich but somewhat throaty caroling." Two nests collected by Mönniche at Volcán de Chiriquí on March 19 and May 10, 1932, were cups loosely constructed of dry twigs, small roots, and tendrils, and lined with fine grass stems. Outside dimensions were 12.7×6.4 cm; the interior was 7.6×3.8 cm. One was in a tangle of bushes and vines 1 m from the ground; the other was 2.5 m from the ground in a coffee tree. One nest contained two eggs, the other had three; both sets were

partly incubated. The eggs are pale blue lightly speckled with reddish brown intermixed with dark lavender; most spots are at the larger end. The eggs of one clutch measured 23.1×17.8 , 23.4×18.0 , and 22.5×17.2 mm. (Blake, Condor, 1956, p. 388).

PIRANGA LEUCOPTERA LATIFASCIATA Ridgway: White-winged Tanager, Frutero Aliblanco

P.[iranga] leucoptera latifasciata Ridgway, 1887, Manual North Amer. Birds, p. 457. (Costa Rica and Veragua.)

Small; male bright red with black around eyes, on wings and tail; wings with two white bars; female, upper surface greenish yellow; wings and tail grayish, with two white bars on wings; undersurface bright yellow.

Description.—Length 121-138 mm. Adult male, lores, orbital region, and chin black; rest of body bright scarlet-red except for black patches from shoulder to side of upper back; wings and tail black, with middle and greater coverts tipped white, forming two bars; underwing coverts white.

Adult female, upper surface yellowish green; wings dark gray with middle and greater coverts edged white, forming two bars; rectrices dark gray; throat and breast dark yellow, becoming lighter on rest of undersurface; underwing coverts and edge of inner web of rectrices white.

A male collected at El Volcán, Chiriquí, on February 28, 1965, had the iris very dark brown; base of maxilla below nostril, and most of basal part of mandible neutral gray; pads underneath toes yellowish brown; claws black.

Measurements.—Males (10 from Chiriquí), wing 68.3-72.8 (70.5), tail 52.6-60.8 (56.5), culmen from base 13.9-15.3 (14.6), tarsus 15.7-17.6 (16.4) mm.

Females (10 from Chiriquí and Costa Rica), wing 63.8-74.0 (68.4), tail 50.4-58.1 (54.6), culmen from base 12.9-15.3 (14.2), tarsus 15.9-17.7 (17.1) mm.

Resident. Fairly common in the highlands of Chiriquí and Veraguas above 1500 m. Ridgely (*in litt.*) once found this species at Fortuna (1000 m), Chiriquí. I found a pair at Cerro Punta (2250 m), Chiriquí. It has been collected in Chiriquí at Cerro Punta, Volcán de Chiriquí, Boquete, and Santa Clara and in Veraguas by Arcé at Calobre and Calovévora (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1 (pt. 27), 1883, p. 295). This race also occurs in Costa Rica, and others are found north to Mexico and from Colombia to central Bolivia.

The White-winged Tanager inhabits forests and forest edges. Ridgely (*in litt.*) notes that occasionally it comes to patches of woods around Volcán, Chiriquí. Most of the times I have seen this species it was high in trees, often foraging with other small birds, and moving very much like a warbler. A call note *chick-ut* is the only vocalization I have heard.

**CHLOROTHRAUPIS CARMIOLI (Lawrence): Carmiol's Tanager,
Frutero Aceitunado**

Medium size; upper surface entirely yellowish green; undersurface mostly greenish yellow.

Description.—Length 150-161 mm. Adult (sexes alike), entire upper surface, including wing coverts and tail, dark yellowish green; side of head slightly lighter; greenish yellow, becoming green on flanks; underwing coverts greenish yellow.

Carmiol's Tanager is a common inhabitant of undergrowth in humid forests and forest borders in the foothills of the Caribbean slope and more locally on the Pacific slope from Veraguas eastward. Three races are found in Panamá: the nominate form, which occurs only in the Almirante Bay area of Bocas del Toro, and ranges north on the Caribbean slope to Nicaragua, *magnirostris* of Veraguas and Coclé, and *lutescens* of the Canal Zone area eastward to Darién. Another race is found in southern Colombia and southeastern Peru.

This tanager moves through the undergrowth in noisy groups that utter a variety of chattering and scolding calls. The groups vary in size from a few individuals to up to a hundred, such as a flock I saw once at Cerro Azul, Panamá. Only occasionally are they joined by other species, most often by *Tachyphonus delattrii*. Many observers have remarked on the similarity of their calls to those of *Turdus grayi*. I was surprised to discover that this species also has a song of clear, whistled notes that sounds much like that of the Cardinal (*Cardinalis cardinalis*). The stomach of one I collected contained fragments of a large beetle. Five weighed by Karr (Condor, 1971, p. 110) at Cerro Azul were between 32.4 and 34.5 g.

CHLOROTHRAUPIS CARMIOLI CARMIOLI (Lawrence)

Phoenicotheruapis carmioli Lawrence, 1868, Ann. Lyc. Nat. Hist. New York, 9, p. 100. (Angostura, Costa Rica.)

Characters.—Undersurface more greenish, less yellow, than in any other race.

Measurements.—Males (10 from Costa Rica and Nicaragua), wing 85.0-91.5 (88.6), tail 60.2-71.3 (67.1), culmen from base 18.9-20.3 (19.6), tarsus 20.1-23.4 (21.9) mm.

Females (10 from Costa Rica and Nicaragua), wing 84.0-90.5 (86.4), tail 62.4-70.0 (65.2), culmen from base 19.4-21.4 (20.2), tarsus 21.4-23.7 (22.4) mm.

Resident. In Panamá found only in the Almirante Bay area of Bocas del Toro. Carriker (Ann. Carnegie Mus., vol. 6, no. 4, 1910, p. 841) records it between 300 and 750 m in the foothills near the Sixaola River. On the Boquete Trail, it has been collected between 390 and 540 m (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 342). Ridgely (*in litt.*) found this species in small numbers at the IRHE projected dam site on the lower Río Changuinola. Peters noted that "the specimens of the Almirante Bay region show an approach to *C. c. magnirostris* Griscom in having a slightly heavier bill, with the upper mandible a trifle swollen basally; otherwise they do not differ from a large series of *carmioli* to which I believe they should be referred." Wharton Huber (Proc. Acad. Nat. Sci. Philadelphia, vol. 84, 1932, p. 246) found the nest and eggs of this race in Nicaragua. The nest was "compactly built of small sticks, leaves and green moss, lined with very fine light brown plant stems, and on top of this lining a thin layer of black hair-like fibers. The two eggs are creamy white spotted and speckled with several shades of brown and lavender. A broad wreath of lavender and brown around the larger end. They measure 26.3×16.9, 24.1×16.7 mm."

CHLOROTHTRAUPIS CARMIOLE MAGNIROSTRIS Griscom

Chlorothraupis carmioli magnirostris Griscom, 1927, Amer. Mus. Novit., no. 280, p. 18. (Santa Fé (2000 ft.), Veraguas, western Panamá.)

Characters.—Very similar to nominate *carmioli*, but bill both longer and heavier; chin and throat slightly lighter, more yellowish, less green.

A female collected at the head of the Río Guabal, Coclé on February 27, 1962, had the iris light mouse brown; maxilla and anterior half of mandible dull black; base of mandible dusky neutral gray.

Measurements.—Males (10 from Veraguas), wing 87.5-96.0 (90.5), tail 60.6-75.6 (66.1), culmen from base 19.6-22.8 (21.1), tarsus 21.6-23.0 (22.4) mm.

Females (5 from Veraguas and Coclé), wing 84.8-92.5 (87.9), tail 63.1-67.9 (66.3), culmen from base 20.3-21.9 (21.2), tarsus 21.6-23.3 (22.3) mm.

Resident. Local in foothills of both slopes of Veraguas and Coclé. Rex R. Renson collected it in Veraguas at Santa Fé (600 m) on the Pacific slope and on the Río Calovévora on the Caribbean side. In January 1974, Ridgely (*in litt.*) found it at Santa Fé up to 900 m. On May 16, 1953, I collected a male in gallery forest at about 360 m, near La Arena, 16 km west of Soná, Veraguas, and on February 27, 1962, I collected a female at Tigre (1425 m) at the head of the Río Guabal, Coclé, where it was with a small flock of forest birds moving along a quebrada.

CHLOROTHAUPIS CARMIOLI LUTESCENS Griscom

Chlorothraupis carmioli lutescens Griscom, 1927, Amer. Mus. Novit., no. 280, pl. 18. (Tacarcuna, eastern Panamá.)

Characters.—Very similar to nominate *carmioli*, but undersurface slightly more yellowish, less tinged with green.

A male collected at the Peluca Hydrographic Station, Colón, had the iris wood brown; mandible and narrow line along cutting edge of maxilla neutral gray; rest of maxilla dull blackish neutral gray; tarsus, toes, and claws neutral gray.

Measurements.—Males (10 from Province of Panamá), wing 83.2-94.0 (88.7), tail 61.4-69.2 (65.2), culmen from base 19.2-22.4 (20.0), tarsus 20.8-23.2 (22.1) mm.

Females (10 from Province of Panamá), wing 80.8-90.3 (88.0), tail 61.7-68.5 (64.2), culmen from base 18.3-21.0 (20.0), tarsus 20.7-24.1 (20.3) mm.

Resident. Fairly common from the Canal Zone area (Pipeline Road area), where it has only recently been found (Ridgely, 1976, p. 322), east along the entire Caribbean slope, and more locally along the Pacific slope. I have collected it in the Province of Panamá at Cerro Azul and between 180 and 510 m on Cerro Chucantí, and in Colón at the Peluca Hydrographic Station. In Darién, it is known from Cerro Malí and Cerro Tacarcuna, where I took 1 at 1440 m, but not from the Cerro Pirre massif; in San Blas, Wedel collected it at Permé, Obaldía, and Ranchon (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 370). On March 6, 1963, I found a nest at Armila, San Blas, that contained an addled egg and a young bird 5 or 6 days old. The nest was about 2 m from the ground in the top of a forest shrub. The young bird's head, dorsal pteryla, and humeral tract had filamentous brownish gray down, abundant and about 15-16 mm long; its open gape was edged with clear white.

**CHLOROTHRAUPIS OLIVACEA (Cassin): Lemon-browed Tanager,
Frutero Cejiamarillo**

Orthogonys olivaceus Cassin, 1860, Proc. Acad. Nat. Sci. Philadelphia, p. 140.
(Río Truandó, northwestern Colombia.)

Medium size; entirely yellowish green except for yellow lores, ring around eye, and throat.

Description.—Length 150-164 mm. Adult male, lores and ring around eye bright yellow; entire upper surface, including wings and tail, olive-green; chin and throat bright yellow, finely streaked at sides with green; undertail coverts yellow; rest of undersurface yellowish green, with wash of yellow in center of belly; bend of wing yellow; underwing coverts yellow and green.

Adult female, like male, but slightly lighter, more yellow, on under-surface.

Measurements.—Males (10 from Darién), wing 85.6-93.3 (90.6), tail 61.2-68.2 (64.5), culmen from base 18.8-21.3 (20.0), tarsus 21.3-23.6 (22.1) mm.

Females (10 from Darién and Colombia), wing 82.1-90.6 (86.4), tail 55.5-69.0 (62.5), culmen from base 18.0-21.2 (20.3), tarsus 20.1-22.8 (21.4) mm.

Resident. Fairly common in the lowlands and foothills of eastern Darién and, beyond Panamá, in Colombia and northwestern Ecuador. It has been collected at Cerro Sapo (900 m) (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mon. no. 6, 1944, p. 44) and by E. A. Goldman at Cana between 600 and 1050 m. I have found it at Jaqué, Río Jaqué, and at 550 m at Cana. Ridgely (1976, p. 323) also lists it for Cerro Quía and Cituro.

In habits and vocalizations, this species is very similar to *Chlorothraupis carmioli*. When I have encountered them, they were ranging low down in undergrowth, giving low chattering calls. Goldman noted the contents of the stomachs of 2 he collected at Cana: 1 held bits of caterpillar 60%, two fragmentary ants 30%; bits of a weevil 5%, other Coleoptera 5%; the other contained a small scarabaeid 10%, bits of a rhyncophoran 15%, a wasp 10%, more than 5 ants 55%, 7 seeds of *Solanum* sp. 10%, three other minute seeds not determined. Three collected by Burton (Bull. Brit. Orn. Club, 1975, p. 86) at Cerro Pirre weighed from 36 to 41 g. In July 1975, Ridgely (*in litt.*) found them one of the most numerous of forest interior birds at Cerro Quía; he saw them in groups of 2-6 individuals. On three occasions Ridgely saw fledged young being fed.

**HABIA RUBICA VINACEA (Lawrence): Red-crowned Ant-tanager,
Frutero Hormiguero Coronirrojo**

Phaenicothraupis vinacea Lawrence, 1867, Proc. Acad. Nat. Sci. Philadelphia, 19, p. 94. (New Grenada, line of Panamá Railroad.)

Habia rubica aurantiicapilla Aldrich, 1937, Sci. Publ. Cleveland Mus. Nat. Hist., 7, p. 132. (Cerro Viejo, altitude 3000 ft, between the headwaters of the Negro and Mariato Rivers, 18 miles east of Montijo Bay, Veraguas, Panamá.)

Medium size; adult male, dull red, with brighter patch on center of crown; female and immature male mostly olive with orange-yellow patch in center of crown.

Description.—Length 162-177 mm. Adult male, center of crown between coral red and scarlet, edged blackish; rest of upper surface, including wing coverts, dull red; remiges and rectrices slightly brighter; entire undersurface slightly lighter red, brighter on throat.

Adult female, center of crown orange-yellow; rest of upper surface olive; throat tinged yellow; breast, sides, flanks, and undertail coverts olive-brown; center of undersurface lighter.

Immature male, like female.

A female collected at El Copé, Coclé, on February 21, 1962, had the iris light mouse brown; maxilla dull black, except cutting edge, which, with mandible, was fuscous-brown; tarsus fuscous-brown; toes grayish fuscous-brown.

Measurements.—Males (10 from Panamá), wing 86.8-97.0 (89.7), tail 74.4-81.8 (78.2), culmen from base 17.1-19.3 (18.6), tarsus 21.8-24.7 (22.7) mm.

Females (10 from Panamá), wing 77.5-85.8 (82.5), tail 70.8-76.8 (73.5), culmen from base 17.5-19.1 (18.2), tarsus 20.8-23.1 (22.0) mm.

Resident. Fairly common but local in forest and woodlands on the Pacific slope in lowlands and foothills; in the Canal Zone area, where it is scarce, it also occurs locally on the Caribbean slope in the middle Chagres River Valley (Ridgely, 1976, p. 323). In Chiriquí, W. W. Brown, Jr., collected it at Boquete and Volcán de Chiriquí between 1200 and 2250 m. This race is also found in Costa Rica; 16 other races, ranging from central Mexico to northeastern Argentina and southeastern Brazil, are recognized.

Birds from west of the Canal Zone were separated by Aldrich (1937, Sci. Publ. Cleveland Mus. Nat. Hist., 7, p. 132) under the name *aurantiicapilla*, a race that has not generally been admitted. The scarcity of specimens from the Canal Zone eastward makes comparison difficult, but the few available specimens do not appear to be con-

sistently distinguishable, due in part to considerable individual variability.

The Red-crowned Ant-tanager inhabits the undergrowth of woodland and forest, where it is easily confused with the similar Red-throated Ant-tanager (*H. fuscicauda*). Willis (Auk, 1960, pp. 154-155) found that in British Honduras *H. rubica* usually forages at a higher level in the understory layer of the forest than does *H. fuscicauda* and rarely descends to the ground. Ant-tanagers generally travel in pairs, at certain seasons accompanied by their young of the preceding year. Willis (Wilson Bull., 1960, p. 105) lists several species with which they sometimes feed. Despite their name, they seldom follow swarms of army ants. Rolled-up, dried leaves are of particular interest to them, and they peer above and below themselves as they move along a branch. The stomach of 1 collected at Cana, Darién, by E. A. Goldman contained the head and other remains of an otiorhynchid near *Lachnopus* 5%, fragments of a large cerambycid 13%, a smaller species 2%, bits of small scarabaeid 3%, elytron of a curculionid 1%, bits of a large ant 6%, pieces of caterpillar skin 15%, mantis remains 15%, bits of medium-sized millipede 20%, 28 seeds of *Solanum* sp. 20%.

Whenever I have encountered this species, it greeted me with a wren-like, scolding chatter. It also has a loud and clear song of phrases like *peter, peter, peter* or *cheer, cheer, cheer* repeated at length without pause. Willis, who studied the voice and courtship of this species in British Honduras (Condor, 1960, pp. 73-87), saw that the male raised the bright central crown feathers when singing at dawn.

The only information on the nesting of this species in Panamá is a report (Toucan, vol. 4, no. 9, 1977 pp. 3-4) of a nest in a wooded area of Albbrook Air Force Base, Canal Zone, that held 3 young August 13-17, 1977. Skutch (Pac. Coast Avif. no. 31, 1954, pp. 176-182) has studied this race in Costa Rica, where it breeds from February at least to June. The nest is usually placed between 2 and 4 m from the ground; it is a broad and shallow cup made of rootlets and fibers woven so thinly that the eggs may be seen from below. The clutch is two or three eggs, which are "dull white or have a faint bluish tinge and are marked with speckles and blotches of pale brown or cinnamon, sometimes also with chocolate spots, which are gathered in a wreath around the large end and sparingly scattered over the remaining surface." Average measurements are 24.3×17.7 mm. Incubation is performed only by the female; Skutch was unable to determine the incubation period. The young hatch with pink skin and sparse, long, gray down; they are fed insects by both parents and have pin feathers by their eighth day. All

the nests Skutch watched were destroyed by predators, so he was not able to discover the length of the nestling period.

**HABIA FUSCICAUDA (Cabanis): Red-throated Ant-tanager,
Frutero Hormiguero Gargantirojo**

Medium size; adult male with entire body dull red, brighter, scarlet-red on center of crown and throat; female with upper surface olive, throat pale yellow, and rest of undersurface olive-buff.

Description.—Length 177-195 mm. Adult male, median stripe of crown scarlet-red; rest of upper surface dull red; wings and tail dusky brown, edged dull red; chin gray; throat scarlet-red, fading to light dull red on breast, center of belly, and undertail coverts; sides and flanks darker.

Adult female, upper surface and tail near olive; wing feathers dusky brown, edged olive; chin gray; throat pale yellow, becoming olive-buff on breast, darker on sides, flanks, and undertail coverts.

Immature male, like female, sometimes more brownish on upper surface.

The Red-throated Ant-tanager is very common in the more humid lowlands and lower foothills on most of the Caribbean slope and more local on the Pacific side. In the Canal Zone area it is very common on the Pacific side (Ridgely, *in litt.*). The nominate form is known in Panamá only from Almirante Bay area of western Bocas del Toro; it ranges north to southern Nicaragua. The race *willisi* is found from Veraguas to western San Blas on the Caribbean side and on the Pacific side locally in Veraguas, western Province of Panamá, and the Canal Zone. Other races occur north to southeastern Mexico and on the Caribbean coast of Colombia.

This species inhabits the undergrowth of forest and second-growth woodland. It moves about in small, noisy groups even when breeding. In 1911, E. A. Goldman noted that it was usually in the company of ant-thrushes, along the lines of traveling ants, but others have found it less of a regular ant-follower. In his field notes Goldman wrote "when one is shot some of the others are likely to come and alight near the fallen bird, showing at the same time considerable excitement." Olson (Bird-Banding, 1965, p. 113) also witnessed this sort of concern: when extricating a female from a mist net she began calling and an excited male appeared and put on a convincing "broken-wing act" on the ground of the trail; when the female was released she joined the male and they fluttered wings and rubbed bills. The usual calls of this ant-tanager are harsh and grating, but the male also has an infrequently

heard song of three clear notes, *do, cheh, wheet* (Ridgely, 1976, p. 323).

Seven collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 34.2 to 42.0 g.

HABIA FUSCICAUDA FUSCICAUDA (Cabanis)

Phoenicothera fuscicauda Cabanis, 1861, Journ. f. Ornith., 9, p. 86. (Costa Rica.)

Characters.—Male differs from *willisi* in having throat less brilliantly red, undersurface more shaded with gray, the red tending toward brownish or orange, crown more orange, less pure red; female differs in having brownish band across breast, throat less yellow, rest of undersurface more brownish, crown more ochraceous-yellow, less greenish.

Measurements.—Males (9 from Bocas del Toro, Costa Rica, and Nicaragua), wing 96.5-103.0 (100.9), tail 85.6-92.4 (89.3), culmen from base 18.9-22.6 (20.6), tarsus 22.8-26.0 (24.6) mm.

Females (10 from Bocas del Toro, Costa Rica, and Nicaragua), wing 84.9-96.0 (91.0), tail 77.7-87.3 (82.0), culmen from base 17.1-21.0 (19.1), tarsus 22.3-25.9 (24.2) mm.

Resident. Known in Panamá only from the Almirante Bay region of Bocas del Toro, where I found it around Almirante. H. von Wedel collected several at Changuinola, Almirante, Western River, and Cricamola (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 342) and Austin Smith took it at Sibube on the Río Sixaola and Zegla on the Río Teribe (specimens in the Havemeyer Collection at the Peabody Museum, New Haven, Conn.). In April 1980, Ridgely (*in litt.*) found this race uncommon in undergrowth at forest edge near the IRHE dam site camp on the lower Río Changuinola; the birds he saw were in pairs.

HABIA FUSCICAUDA WILLISI Parkes

Habia fuscicauda willisi Parkes, 1969, Proc. Biol. Soc. Washington, 82, p. 238. (Boca del Río Indio, Colón, Panamá.)

Characters.—Male has throat more brilliantly red; red of rest of undersurface tending toward pinkish or bluish rather than toward brownish or orange; crest purer, less orange-red; female has throat deeper, more brilliant yellow; little or no brownish band across breast; crown more greenish yellow, less ochraceous-yellow.

A female collected at Juan Mina, Canal Zone, on January 10, 1961, had the iris wood brown; bill dusky neutral gray; tarsus and toes

fuscous; claws dark neutral gray; gape including a narrow line on cutting edge of maxilla dull white.

Measurements.—Males (10 from Panamá), wing 94.9-105.0 (100.4), tail 86.0-93.3 (90.5), culmen from base 18.6-21.8 (20.0), tarsus 24.0-27.9 (25.6) mm.

Females (10 from Panamá), wing 86.8-96.0 (91.4), tail 77.1-85.3 (80.3), culmen from base 17.6-20.0 (18.7), tarsus 22.1-24.9 (23.4) mm.

Resident. Common in the lowlands and lower foothills of the Caribbean slope from El Uracillo, Coclé, to Mandinga, San Blas; more local on the Pacific slope, where I have found it at Soná, Veraguas, El Valle, Coclé, Cerro Campana, Panamá, in the Canal Zone area, east to the middle Bayano River Valley (Majé area) (Ridgely, *in litt.*) A series of 9 specimens from Santa Fé, Veraguas, in the American Museum of Natural History was judged by Parkes (Proc. Biol. Soc. Washington, vol. 82, 1969, p. 239) to be intermediate between *willisi* and the nominate race. He also mentions a report of several pairs at Puerto Obaldía, San Blas, at the Colombian border; birds from this region might possibly pertain to the Colombian race, *erythrolaema*. A record of a male from the Río Lara, Darién collected by Festa in 1895 and published by Salvadori and Festa (Bol. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 14, no. 339, 1899, p. 4) is probably an erroneously identified *H. rubica*.

In the Canal Zone, the breeding season seems to run at least from May to August. Arbib and Loetscher (Auk, 1935, p. 327) found it breeding during July and August. Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 279) mentions a nest with two fresh eggs collected on May 14; this was "in a cluster of orchids on a vine eight feet up; a cup made of dead leaves wound tightly with green vines and lined with brown rootlets." A nest found by Major General G. Ralph Meyer in the Madden Forest Reserve on May 30, 1941, was similar. It held three glossy white eggs that measure 23.9×17.1 , 24.1×17.5 , and 23.4×17.3 mm. A male in drab female plumage collected by Olson in the Canal Zone on April 20, 1963, had the testes fully developed (Olson, Bird-Banding, 1965, p. 113).

This species shows considerable individual variation, but a specimen collected by Olson near Albrook Field, Canal Zone, on March 15, 1963 (USNM no. 534191) and identified as female with undeveloped ovaries, but possibly mis-sexed, is worthy of special mention as it has a very distinct orange median crown stripe, similar to that of *H. rubica*,

although not as yellow (in most females of *fuscicauda* the crown stripe is absent or inconspicuous). The throat is more orange than in most females of *fuscicauda* (in *H. rubica* the throat is greenish). This specimen may be an aberrant immature male *H. f. willisi*.

LANIO LEUCOTHORAX Salvin: White-throated Shrike-Tanager,
Frutero Follajero Gargantiblanco

Lanio leucothorax Salvin, 1864, Proc. Zool. Soc. London, p. 581. (Tucurriqui, Costa Rica.)

Medium sized; bill hooked at tip; male, upper surface black with yellow triangle on upper back; most of undersurface yellow; female, upper surface brown; undersurface mostly yellow.

Description.—Length 178-200 mm. Adult male, sides of head and entire upper surface, including wings and tail, black, except for rich yellow triangle on upper back and white innermost wing coverts (sometimes concealed); forechin black; throat white, becoming pale buff on breast; abdomen and undertail coverts black; underwing coverts white.

Adult female, crown brownish olive, becoming bright brown on back, brightest on rump; feathers of wings and tail dusky, edged brown; sides of head dark gray; throat and upper breast pinkish buff tinged gray; rest of undersurface dull yellow, tinged brown on flanks and undertail coverts; underwing coverts light brown.

This species is rare and local in Panamá. One race, *ictus*, is known only from the Boquete Trail in Bocas del Toro, where it was collected in 1926 and 1928. Another form, *melanopygius*, occurs in the Pacific lowlands and foothills of Chiriquí and Veraguas, and adjacent Costa Rica. Other races are found from northwestern Costa Rica to eastern Honduras, and the very closely related *L. aurantius*, with which *leucothorax* may be conspecific, ranges from Honduras north to southeastern Mexico.

The shrike-tanager is a bird of forest and forest borders. At Puerto Armuelles, Chiriquí, I once found a pair at the border of a small tract of forest in an area where the tree crown was high and space below was open except for long vines that stretched down in loops toward the ground. The birds perched on them or on branches below the crown, at intervals making forays among the leaves, where they perched briefly and then came back to the more open section again. I admired their active, sweeping flights. I found small orthoptera and small homoptera in the stomachs of the specimens I obtained. The tongue is narrow and sharply pointed. Slud (Bull. Amer. Mus. Nat. Hist. vol. 128,

1964, pp. 361-362) found that in Costa Rica it occurs singly, in two's, or three's and takes fruit as well as insects. He describes a wide variety of call notes and a full-bodied song of several rich *chee* notes.

LANIO LEUCOTHORAX ICTUS Kennard and Peters

Lanio leucothorax ictus Kennard and Peters, 1927, Proc. New England Zool. Club, 10, p. 1. (Boquete Trail, 2300 feet altitude, northwestern Panamá.)

Characters.—In male, feathers of rump are broadly tipped with yellow.

Measurements.—Male (1 from Bocas del Toro, the type), wing 103, tail 95, culmen from base 25, tarsus 18.5 mm.

Female (1 from Bocas del Toro), wing 97, tail 96, culmen from base 23.5, tarsus 19.5 mm.

Resident. Known only from the Boquete Trail in western Bocas del Toro, where Kennard collected 2 at 690 m in March, 1926, and H. von Wedel collected 3 others between 450 and 600 m in March 1928. I am not aware of any more recent sightings. In their original description, Kennard and Peters found this population intermediate in every respect between nominate *leucothrorax* and *L. l. melanopygius* of the Pacific slope of Panamá and Costa Rica.

LANIO LEUCOTHORAX MELANOPYGIUS Salvin and Godman

Lanio melanopygius Salvin and Godman (ex Ridgway MS), 1883, Biol. Centr.-Amer., Aves, 1, p. 305. (Bugaba, Chiriquí, Panamá.)

Characters.—Rump of male is entirely black.

A male taken at Puerto Armuelles, Chiriquí, on March 13, 1966, had the iris dark brown; bill black; tarsus dark dull brown, changing at lower end to black with this color continuing over toes and claws. A female collected the same day was similar.

Measurements.—Males (9 from Panamá and Costa Rica), wing 95.0-109.4 (101.9), tail 86.4-95.0 (91.4), culmen from base 19.8-22.0 (20.9), tarsus 17.0-19.4 (18.3) mm.

Females (10 from Panamá), wing 89.5-100.0 (95.6), tail 80.3-86.0 (83.3), culmen from base 19.5-20.7 (20.1), tarsus 16.2-19.5 (18.1) mm.

Resident. Rare and local in the lowlands and foothills of Chiriquí and Veraguas. Arcé collected it during the 1860's in Veraguas at Santa Fé, Santiago de Veragua, Chitra, and Calovévora, which is on the Caribbean slope. Benson and Gaffney collected another at Calové-

vora in 1926, and Benson took several at Santa Fé in 1925. In Chiriquí, I have found it at Puerto Armuelles and Buena Vista, Brown collected 9 at Divalá (Bangs, Auk, 1901, p. 369), Arcé took it at Bugaba (Salvin, Proc. Zool. Soc. London, 1867, p. 139) and M. E. Davidson collected 1 at Barriles.

A nest found by Austin Smith in Costa Rica on May 8, 1932, was in a low bush near a stream, well within forest. Two eggs in the collection of the Western Foundation of Vertebrate Zoology are white with bold chocolate brown and grayish brown spots predominating slightly toward the large ends. They measure 25.60×17.70 and 25.10×18.32 mm. Ridgely (*in litt.*) is unaware of any recent reports from Chiriquí. N. G. Smith saw 2 above Santa Fé, Veraguas, on April 8, 1975.

TACHYPHONUS RUFUS (Boddaert): White-lined Tanager,
Frutero Albilineo

Tangara rufa Boddaert 1783, Tabl. Planches Enlum., p. 44. (Cayenne.)

Medium size; male entirely black except for innermost wing coverts which are white; female, upper surface reddish brown; undersurface reddish tawny.

Description.—Length 165-181 mm. Adult male, entirely glossy black, except for innermost upper wing coverts, underwing coverts, and body at base of wing, which are white.

Adult female, upper surface, including wings and tail, reddish brown, with inner webs of primaries duskier; undersurface reddish tawny, lightest on throat and brightest across breast and on undertail coverts.

A male collected at Juan Mina, Canal Zone, on January 15, 1961, had the iris dark brown; maxilla, tip of mandible, and line of gonys black; base of mandible neutral gray; tarsus and toes fuscous. A female collected the same day was similar except that the base of the bill was duller gray and the rest duller black.

Measurements.—Males (10 from Panamá), wing 80.4-88.0 (85.5), tail 75.9-82.7 (80.1), culmen from base 18.6-19.8 (19.1, average of 8), tarsus 19.6-24.4 (22.6) mm.

Females (10 from Panamá and Colombia), wing 79.9-85.0 (82.2), tail 74.9-83.4 (78.8), culmen from base 18.1-20.4 (19.0), tarsus 21.1-24.5 (22.9) mm.

Resident. Fairly common in lowlands on the entire Caribbean slope; on the Pacific slope it is more irregular: in 1966 I found it at Puerto Armuelles in Chiriquí and there are several recent sight reports from cleared areas around Boquete (Ridgely, 1976, p. 324), while

farther east it is known from scattered locations and in small numbers in the Province of Panamá, the Canal Zone, and Darién. Beyond Panamá, this species is found in Costa Rica and south to Peru and northern Argentina.

White-lined Tanagers usually move about in pairs. They seem to feed primarily on fruit. The male I found at Puerto Armuelles was in a grove where birds had gathered to feed on figs. At Juan Mina, Canal Zone, I once saw a pair feeding on an ear of corn that had been opened by some other animal. E. A. Goldman's notes from the Canal Zone mention seeing a female with the flowering parts of a false banana in her mouth. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 30.9 g and a female 27.5 g. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 363) found this species usually silent, delivering only occasionally a song of "seed-eater like musical chirps" or a "weak metallic 'sip'." A nest found at Gatún in the Canal Zone on May 7, 1911, was in a clump of leaves of wild banana 7 m from the ground. The two eggs measured $.70 \times .94$ and $.71 \times .96$ inches and were gray, spotted and scrawled with black (Stone, Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 279). I have no other information on the breeding of this species.

TACHYPHONUS LUCTUOSUS d'Orbigny and Lafresnaye: White-shouldered Tanager, Frutero Espaldiblanco

T.[achyphonus] luctuosus d'Orbigny and Lafresnaye, 1837, Mag. Zool. [Paris] 7, cl. 2, p. 29. (Guarayos, Bolivia.)

Small; male all black except for white wing coverts and, in one race, orange patch in center of crown; female, upper surface olive-green (one race with gray head); throat whitish, rest of undersurface yellow.

Description.—Length 125-141 mm. Adult male, entirely black except for inner upper wing coverts and underwing coverts, which are white, and in one race, *nitidissimus*, yellow-orange central crown-patch.

Adult female, upper surface including wing coverts and tail, olive-green; in one race, *panamensis*, head and nape are gray; remiges dusky, edged greenish yellow; throat dingy whitish; rest of undersurface dark yellow, becoming more greenish on sides and flanks; underwing coverts white.

The White-shouldered Tanager has an interestingly disjunct range in Panamá, with 2 decidedly uncommon races confined to lowlands of the westernmost parts of the Republic and a third race that is common from northern Coclé and the Canal Zone eastward. Each of the races

is well marked; it would be interesting to know if this species does in fact occur in the intervening areas and what such populations look like. The species as a whole ranges from Honduras to northern Bolivia and central Brazil.

This tanager inhabits humid second-growth woodland, forest and forest borders. In groups of 3 to 6 it is often a part of mixed foraging flocks; I have seen it feeding at all heights, by itself, with other native birds, (typically Lesser Greenlets and shrike-vireos) and with groups of migrant warblers, including Bay-breasted and Chestnut-sided Warblers. A pair I observed at El Uracillo, Coclé, was feeding on berries in second growth. When the males display, they puff up the white wing coverts to the point where the rest of the body is often obscured. Occasionally, I have been scolded by a male displaying like this and flicking its wings. Its only vocalizations are a series of *tsir* or *tsit* notes. Three collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 13.3 to 15.0 g.

The only descriptions of the nest and eggs I have are from Trinidad (Belcher and Smooker, Ibis, 1937, pp. 538-539) where Smooker found two nests: "The first, at the Heights of Oropuche, northern range, 4 April, 1925, was a fairly deep cup of dried grasses lined with fine fibres: it was placed in a tangle of undergrowth five feet from the ground. There were three fresh eggs. They are roundish-ovals, slightly glossy, marked on a ground of rich buff with spots and blotches of two shades of rich reddish-brown placed unevenly over the surface, but predominating at the larger end. Average: 20×16.4 mm. The second nest was collected 3 June, 1931, near Valencia, a few miles south of the other and at a lower level; the nest was similarly built and was placed in a small bush at three feet from the ground. The eggs, however, differ considerably. They have the ground-colour pale creamy-white, with a few specks, spots, and streaks and an occasional blotch of blackish-brown, and faint undermarkings of pale grey. They are rounded, and the shell glossy. Incubation had begun. Average 19.1×15.8 mm."

TACHYPHONUS LUCTUOSUS NITIDISSIMUS Salvin

Tachyphonus nitidissimus Salvin, 1870, Proc. Zool. Soc. London, p. 188. (Bugaba, Chiriquí, Panamá.)

Characters.—Male, white on wing restricted as in *axillaris*; a crown-patch of yellow to orange; base of mandible conspicuously light-colored. Female like *axillaris* in general, but more yellowish green above and somewhat brighter yellow below.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 66.0-73.0 (70.2), tail 54.5-60.9 (58.1), culmen from base 14.7-16.7 (15.4, average of 9), tarsus 15.5-18.1 (17.0) mm.

Females (9 from Chiriquí and Costa Rica), wing 62.3-67.5 (64.8), tail 47.6-59.7 (54.4), culmen from base 14.0-15.1 (14.5, average of 8), tarsus 15.2-17.6 (16.3) mm.

Resident. Rare in the lowlands of western Chiriquí, where Arcé collected it at Bugaba and Divalá (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1, pt. 28, 1884) and J. H. Batty took it at Boqueron and David. The specimens at the American Museum of Natural History collected by Batty labeled Iguaros I., Medidor I., and Cébaco I., all off the coast of Veraguas are probably falsely labeled. This race also occurs in adjacent Costa Rica.

Ridgely (*in litt.*) comments that this form is probably close to being extirpated in Panamá; he knows of no recent records.

TACHYPHONUS LUCTUOSUS AXILLARIS (Lawrence)

Chlorospingus axillaris Lawrence, 1874, Ann. Lyc. Nat. Hist. New York, 10, p. 395. (Talamanca, Costa Rica.)

Characters.—Male with white of wing coverts less in amount; some with partly concealed yellow in center of crown. Female differs from *panamensis* in having crown and nape like back, and from *nitidissimus* in having throat yellowish like rest of undersurface.

Measurements.—Males (10 from Bocas del Toro and Costa Rica), wing 64.0-68.5 (66.1), tail 54.2-59.3 (56.9), culmen from base 12.5-15.1 (14.3), tarsus 14.9-18.4 (16.3) mm.

Females (7 from Bocas del Toro and Costa Rica), wing 59.0-63.2 (61.2), tail 51.1-56.2 (53.9), culmen from base 13.8-15.8 (14.6, average of 6), tarsus 15.4-16.8 (16.4) mm.

Resident. Known in Panamá only from western Bocas del Toro, where it is uncommon. It was first collected there by Kennard, who took a female at 300 m on the Boquete Trail, March 9, 1926 (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 463). Benson collected a male and female at Almirante during May of 1927, and 4 immature females there on September 7 of that year, and H. von Wedel took other specimens on the Boquete Trail and at Changuinola in 1928 and 1929 (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 342). North of Panamá, *axillaris* is found along the Caribbean slope to eastern Honduras.

TACHYPHONUS LUCTUOSUS PANAMENSIS Todd

Tachyphonus luctuosus panamensis Todd, 1917, Proc. Biol. Soc. Washington, 30, p. 128. (Gatún, Canal Zone, Panamá.)

Characters.—Male has white wing coverts longer and more extensive; white more extensive at bend of wing so that little or no black is visible. Female has gray crown and nape; crown sometimes tinged green.

A male and female collected at the Candelaria Hydrographic Station, Province of Panamá, on March 5, 1961, both had the iris dark brown; base of mandible neutral gray; rest of bill black; tarsus and toes dark neutral gray; claws black.

Measurements.—Males (10 from Panamá), wing 63.4-67.5 (65.1), tail 50.5-55.2 (53.0), culmen from base 13.4-15.9 (14.6), tarsus 16.1-17.2 (16.8) mm.

Females (10 from Panamá), wing 57.7-61.3 (59.8), tail 47.1-52.3 (49.9), culmen from base 13.8-14.8 (14.3), tarsus 16.2-17.9 (17.1) mm.

Resident. Common in lowlands of the Caribbean slope from Coclé and on the Pacific slope from the Canal Zone eastward to the Colombian border. At Cerro Azul, eastern Province of Panamá, it has been found as high as 600 m. In Darién, it has been recorded at Cana (600 m) (Ridgely, *in litt.*). It is also found in Colombia, western Ecuador, and western Venezuela. Ridgely believes he and F. G. Stiles saw a pair of this form above Santa Fé, Veraguas, on January 5, 1974; they noted much white on the wing and no yellow on the crown.

E. A. Goldman noted that 1 he collected at Gatún, Canal Zone, on May 15, 1911, was "in breeding condition." Common as this race is, I have no other information on its nesting behavior.

TACHYPHONUS DELATRII Lafresnaye: Tawny-crested Tanager,
Frutero Crestileonado

Tachyphonus Delatrii Lafresnaye, 1847, Rev. Zool. [Paris], 10, p. 72. (Buena-ventura, Colombia.)

Small; male entirely black with dark orange central crown-patch; female entirely dark brown.

Description.—Length 136-150 mm. Adult male, entirely black with dark orange central crown-patch.

Female, upper surface dark brown; remiges and rectrices blackish brown, undersurface olive-brown.

Immature male like female.

A male collected at the head of the Río Guabal, Coclé, on February 26, 1962, had the iris bright reddish brown; base of mandible greenish gray; rest of bill, tarsus, toes, and claws black. A female taken there 2 days later had the iris dull reddish brown and the bill entirely black.

Measurements.—Males (10 from Panamá), wing 73.0-76.5 (74.5), tail 63.3-66.8 (65.0), culmen from base 14.9-16.2 (15.5), tarsus 17.8-19.6 (18.8) mm.

Females (10 from Panamá and Costa Rica), wing 65.0-69.5 (66.8), tail 54.6-65.2 (59.8), culmen from base 13.4-15.4 (14.4), tarsus 17.1-19.2 (18.2) mm.

Resident. Locally common in the lowlands on the Caribbean slope; on the Pacific slope it has been found in the foothills of Veraguas at Santa Fé by Arcé in the 1860's and by Ridgely and F. G. Stiles in the 1970's (Ridgely, 1976, p. 325), and in Darién. In eastern Province of Panamá, Eisenmann and J. Pujals found this species "surprisingly common" on the El Llano-Cartí road on March 28-29, 1975; there is also a male specimen in the Gorgas Memorial Laboratory collected by R. Hinds at Saíno Madronio in the Bayano River Valley. Beyond Panamá, it ranges from Nicaragua to northwestern Ecuador.

This species inhabits humid forest and forest borders, where I have seen it everywhere from low growth to the tree crown, but usually in lower and middle levels. It customarily moves about actively in groups of 6 to 20, sometimes joined by other species. The male presents a striking appearance when raising the dark orange feathers of the central crown. As they move about, these tanagers constantly utter sharp squeaking notes. A bird that E. A. Goldman collected contained bits of elytra of a beetle 4% and fragments of 25 ants of two species 96%. None that I collected showed any signs of breeding, and I know of no published information on this subject. Ridgely (*in litt.*) saw a female carrying nesting material on the Pipeline Road, Canal Zone, on April 3, 1976.

**HETEROSPINGUS XANTHOPYGIUS (Sclater): Sulphur-rumped
Tanager, Frutero Hormiguero Cejiescarlata**

Medium size; bill hooked at tip; male of nominate race black, with stripe over eye white, becoming red, and patches of bright yellow on lower back and lesser wing coverts; female of nominate race and both sexes of *H. x. rubrifrons* entirely gray, darker on upper surface, with bright yellow lower back.

Description.—Length 150-168 mm. Adult male of nominate race, thin stripe over eye, beginning beyond lores, white, becoming broader,

scarlet, and extending to nape; lower back bright yellow; central lesser wing coverts bright yellow; rest of upper surface, including tail and rest of wings, black; becoming slightly more grayish in center of belly; sides at base of wing and underwing coverts white.

Adult female of nominate race and both sexes of *H. x. rubrifrons*, upper surface very dark gray, except for bright yellow lower back, rump, and upper tail coverts; wing coverts dark gray; remiges and rectrices black; undersurface lighter gray, tinged yellow on undertail coverts; sides at base of wing and underwing coverts white.

Immature male of nominate race, like adult with gray undersurface gradually replaced by black; black feathers of upper back tipped greenish.

This species is represented in Panamá by two races, the nominate form, of eastern Darién and Colombia, and *rubrifrons* of the entire Caribbean slope, and eastern Costa Rica. A third race, *berliozi*, is found in western Colombia and northwestern Ecuador. The name *rubrifrons*, seemingly more applicable to the other forms of the genus, the males of which have prominent patches of red on the head, was applied to a specimen that had evidently been stained by some sort of fruit that made the feathers appear reddish (Lawrence, Proc. Acad. Nat. Sci. Phila., 1867, p. 94). Many authors have maintained *rubrifrons* as a separate species from *H. xanthopygius* but both Hellmayr (Cat. Birds Am., pt. 9, 1936, p. 345) and Storer (Check-list Birds World, vol. 13, 1970, p. 288) considered it to be no more than a hen-plumaged subspecies of *xanthopygius*. Specimens of *rubrifrons* are somewhat smaller, with less robust bills than the other forms of *Heterospingus*, but the differences between females would ordinarily probably not be accorded more than subspecific significance. Males of *rubrifrons*, however, differ greatly from those of the other forms of the genus in lacking the black plumage, red supra-auricular stripes, and the yellow patch on the lesser upper wing coverts. There is no evidence of intergradation between *rubrifrons* and *xanthopygius*, but the ranges of the two are not certainly known to coincide, so this is inconclusive.*

The Sulphur-rumped Tanager inhabits humid forests and forest bor-

*Haffer (Bonner Zool. Monogr. no. 7, 1975, p. 167) cites "Wetmore (1965 and pers. comm.)" as collecting both *rubrifrons* and *xanthopygius* on the Río Jaqué, but Wetmore (Oiseau, vol. 35, 1965, p. 159) actually only mentions the nominate form as occurring there, and there is but a single specimen of *Heterospingus* in the Smithsonian collections from the Río Jaqué, this being a female of *H. x. xanthopygius*. Haffer also appears to have erred in including Cerro Sapo and Pucro in the range of *H. x. rubrifrons*, and his distribution maps of the forms of *Heterospingus* are thus somewhat misleading. S.L.O.

ders, usually foraging high in trees, but coming lower in clearings. It is often part of large mixed flocks of other tanagers, caciques, and honeycreepers. The stomach of 1 collected by E. A. Goldman at Cana, Darién, held legs of an otiorhynchid 5%, other coleoptera of two species 80%, an ant 5%, 4 seeds of Oleaceae 10%. Leck (Living Bird, 1971, p. 92) observed this species feeding on berries of a mistletoe (*Oryctanthus* sp.) in a tree on Barro Colorado Island, Canal Zone, and found that out of 98 visits the birds spent 42% of their time in the top zone of the tree, 37% in the middle, and 21% in the bottom. Ridgely (*in litt.*) once counted a group of 14 as they departed a fruiting melastomaceous tree on the Pipeline Road, Canal Zone. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 363) has heard these birds give squeaky, rapid, chattering and *tsip* notes.

The genus *Heterospingus* differs from *Tachyphonus* in having the space around the nostrils densely feathered.

HETEROSPINGUS XANTHOPYGIUS RUBRIFRONS (Lawrence)

Tachyphonus rubrifrons Lawrence, 1865, Proc. Acad. Nat. Sci. Philadelphia, p. 106. (Line of Panamá Railroad, near Lion Hill Station.)

Characters.—Smaller than nominate *xanthopygius*; both sexes have plumage of female *xanthopygius*, but with yellow more extensive on undertail coverts.

A female collected at the head of the Río Guabal, Coclé, on February 28, 1962, had the iris dull reddish brown; bill black; tarsus and toes dark neutral gray.

Measurements.—Males (7 from Panamá and Costa Rica), wing 78.0-83.2 (81.1), tail 57.4-64.4 (60.5), culmen from base 17.6-19.8 (19.0), tarsus 19.2-20.7 (19.9) mm.

Females (5 from Panamá), wing 76.5-80.0 (78.1), tail 54.0-55.8 (54.9), culmen from base 18.2-19.3 (18.7, average of 4), tarsus 19.3-20.7 (19.9) mm.

Resident. Uncommon and local in lowlands and lower foothills of the Caribbean slope from western Bocas del Toro to eastern San Blas, and on the Pacific slope at the headquarters of the Río Pacora and elsewhere in the Cerro Azul/Jefe area, Province of Panamá. Found also in eastern Costa Rica.

This race has been recorded in Bocas del Toro near Almirante, at the Changuinola Dam site, and on the Río Occidente, in Coclé at the head of the Río Guabal, in the Canal Zone area at Lion Hill, where

McLeannan collected the type, Barro Colorado Island (Eisenmann, Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 56), Cerro Santa Rita, and in the upper Chagres Valley, where I secured a female on the Río Boquerón, and in San Blas at Puerto Obaldía (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 371). There is one report from the Pacific slope of Veraguas—a bird seen June 14-16, 1977, by J. Wall and D. Wilcove above Santa Fé (Ridgely, *in litt.*). Elsewhere on the Pacific slope, I collected a male in the forest of Bajo Grande on the upper course of the Río Pacora, in the Cerro Azul, on March 23, 1949. It also occurs in the lowlands of the Bayano Valley, where on December 29, 1974, Ridgely (*in litt.*) saw a pair at Majé; they were carrying nesting material to a high, epiphyte-covered branch 20 m over the ground.

The bird taken on the Boquerón was found in second growth at the edge of the heavy forest, in company with a group of *Chlorothraupis olivacea*. Ridgely has seen this species in flocks with *Caryothraustes* and *Tachyphonus delatirii*.

HETEROSPINGUS XANTHOPYGIUS XANTHOPYGIUS (Lawrence)

Tachyphonus xanthopygius P. L. Sclater, 1855, Proc. Zool. Soc. London, 22 (1854), p. 158, pl. 69. (Bogotá collections.)

Characters.—Male plumage as described above, entirely different from male *rubrifrons*; female differs from both sexes of *rubrifrons* by its larger size and less yellow on undertail coverts.

A female collected at Pucro, Darién, on February 8, 1964, had the iris dark red; thickened eyelid fuscous-black; bill fuscous-black; tarsus and toes dark neutral gray; claws dusky neutral gray.

Measurements.—Males (10 from Darién and Colombia), wing 88.1-92.0 (90.0), tail 63.9-69.2 (66.9), culmen from base 17.1-20.7 (19.5), tarsus 18.1-21.2 (20.2) mm.

Females (7 from Darién and Colombia), wing 83.3-90.2 (86.0), tail 60.3-68.8 (64.4), culmen from base 17.4-20.2 (18.7), tarsus 18.6-20.7 (19.8) mm.

Resident. Probably not uncommon, but difficult to see or collect in eastern Darién, where it has been taken at Cana (550 m) by E. A. Goldman, at El Real on the Río Tuira by W. B. Richardson, and by me at Pucro and the mouth of the Río Imamadó on the Río Jaqué. Barbour took a bird in nestling plumage on the Río San Antonio on the slopes of Cerro Sapo on April 25, 1922 (Bangs and Barbour, Bull. Mus. Comp.

Zool., vol. 65, 1922, p. 228). R. Hinds collected a gray-plumaged bird, probably an immature male, at Alturas de Nique on March 22, 1972; the specimen is in the Gorgas Memorial Laboratory collection. It is also found in northern Colombia to Norte de Santander.

Barbour's specimen came to a feeding tree attractive to other forest birds. He observed others working like orioles about the blossoms in a high treetop. Goldman's notes record that his pair were found in the high tree crown in heavy forest. When the male was shot, the female followed it to the ground. My specimen from the Río Imamadó was taken from a band of small birds moving through the intermediate and higher level in green forest. In northern Colombia, M. A. Carriker, Jr., observed them feeding at wild fig trees growing in dense forest.

Ridgely (*in litt.*) has found this bird only high in forest canopy, usually in pairs (sometimes up to 3-4), and almost always consorting with other tanagers. The birds give a sharp *dzeet* call note, reminiscent of *Tersina*. Often they perch quite in the open on the tops of trees for extended periods; at the edge of forest or in small clearings they come lower down.

**EUCOMETIS PENICILLATA (Spix): Gray-headed Tanager,
Frutero Hormiguero Cabecigris**

Tanagra penicillata Spix, 1825, Av. Spec. Nov. Brasil, 2, p. 36, pl. 49, fig. 1.
(Fonte Boa, Rio Solimões, Brazil.)

Medium size; crown feathers slightly elongated, forming a crest; head and throat gray; upper surface dark greenish yellow; undersurface bright yellow.

Description.—Length 160-176 mm. Adult (sexes alike), head, nape, and throat gray; upper surface, including wing coverts and tail, yellowish green; remiges with outer web yellowish green, inner web dusky blackish; undersurface rich yellow, darker, on breast, sides, flanks, and undertail coverts; underwing coverts yellow and gray.

Immature, upper surface slightly more greenish than in adult; gray areas replaced with green.

The Gray-headed Tanager is a denizen of undergrowth in humid forest and second-growth woodland in the lowlands and foothills, ranging into the lower highlands in western Chiriquí. Two races, with ranges detailed below, are found in Panamá. Beyond Panamá, it is found from southeastern Mexico to Bolivia and southern Brazil.

This is one of the tanagers that most regularly follows swarms of army ants, not to eat the ants, but to pursue what they flush; it is therefore often seen with antbirds. A female collected by Strauch (Bull.

Brit. Orn. Club, 1977, p. 65) weighed 29.5 g. When by themselves, Grey-headed Tanagers are usually found singly, in pairs, or with their full-grown young. E. A. Goldman noted that these birds often cling to the sides of upright stems a few meters over the ground, but also alight 5 to 7 m from the ground. Skutch (Pac. Coast Avif. no. 31, 1954, pp. 183-184) describes the song as "long-continued, complex in form, always sweet and appealing. . . . delivered in a modest, subdued voice. *Whichis whichis whichery whichis whichú* . . ." The male may sing while following army ants or may move to the middle elevations of the taller trees to deliver the song. Calls include various soft and hard *chip* notes.

EUCOMETIS PENICILLATA STICTOTHORAX Berlepsch

Eucometis spodocephala stictothorax Berlepsch, 1888, Auk, 5, pp. 451-452. (Chiriquí, Panamá.)

Characters.—Crown dark gray; throat solid gray; breast slightly streaked with gray.

A male collected at El Volcán, Chiriquí, on March 23, 1965, had the iris bright reddish brown; bill black, tarsus light brown; toes grayish brown; claws dull slate.

Measurements.—Males (10 from Panamá and Costa Rica), wing 86.0-94.5 (89.5), tail 73.8-81.2 (76.8), culmen from base 16.2-18.6 (17.1), tarsus 20.3-22.8 (21.3) mm.

Females (10 from Panamá and Costa Rica), wing 83.0-92.5 (86.3), tail 70.3-78.3 (74.2), culmen from base 16.0-18.4 (16.9), tarsus 20.3-22.3 (21.3) mm.

Resident. Uncommon in lowlands and foothills of Chiriquí and Veraguas as far as Santa Fé, where Arcé collected it (Salvin, Proc. Zool. Soc. London, 1867, p. 139) and the western Azuero Peninsula, where Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 24) found it uncommon in semi-deciduous coastal forest near Montijo Bay. In the highlands of Chiriquí it has been collected up to 1620 m on the Volcán de Chiriquí (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 568); at Boquete, W. W. Brown, Jr., took 4 between 1200 and 1440 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 66). This race is also found in adjacent southwestern Costa Rica.

I collected a laying female at Soná, Veraguas, on June 4, 1953, and found an immature in full juvenal plumage there 9 days later. Skutch (Pac. Coast Avif. no. 31, 1954, pp. 184-188) has studied its nesting in detail in Costa Rica, where the breeding season is from March to August. The nest is built by both members of the pair; it is a thin-

walled, shallow cup placed from 0.7 to 3 m from the ground and made mainly of rootlets. One nest was 10 cm in outside diameter by 5 cm high; the cavity was 7.5 by 5 cm in diameter by 4 cm deep. Two eggs are the usual clutch, although occasionally three are found. They are "pale blue-gray, heavily overlaid and mottled with shades of dark brown, which on the thick end almost masks the ground color." The measurements of twelve eggs average 24.2×17.3 mm. The incubation period is 14 to 16 days. The young are fed insects and can fly considerable distances when they leave the nest at 11 or 12 days.

EUCOMETIS PENICILLATA CRISTATA (DuBus)

Pipilopsis cristata Du Bus, 1855, Bull. Acad. Roy. Sci., Lettr. et Beaux-Arts de Belgique, 22 (pt. 1), p. 153. (Colombia.)

Characters.—Crown, nape, and sides of throat silvery greenish gray; crown slightly more crested than in *stictothorax*; center of throat streaked with white.

Measurements.—Males (10 from Panamá), wing 88.0-91.2 (89.5), tail 73.0-80.8 (76.7), culmen from base 15.5-18.8 (17.3), tarsus 20.3-22.1 (21.0) mm.

Females (10 from Panamá), wing 82.3-90.0 (86.4), tail 72.6-79.0 (76.0), culmen from base 15.7-18.6 (17.3), tarsus 19.7-21.7 (20.9) mm.

Resident. Uncommon in lowlands on the Pacific slope from La Campana, western Province of Panamá, where on March 6, 1951, I found 2 in forest near the Río Camarón, east to the Colombian boundary, and on the Caribbean slope from El Uracillo, Coclé, where I took a male February 29, 1952, eastward. The Smithsonian has 2 specimens taken by Heyde and Lux in 1889 at Chitra, Veraguas, and Cascajal, Coclé. The race is also found in northern Colombia and western Venezuela.

In Panamá, there are records of breeding from March through July. Brown collected a female with an egg in the oviduct on March 25, 1900 (Bangs, Proc. New England Zool. Club, vol. 2, 1900, p. 29); Eisenmann (Smiths. Misc. Coll. vol. 117, no. 5, 1952, p. 56) found a nest on Barro Colorado Island, Canal Zone, with an egg that hatched July 11, 1948. The nest and eggs are similar to those of *E. p. stictothorax*. R. A. Johnson (Proc. Linn. Soc. New York, nos. 63-65, 1954, pp. 57-58) noted that at Barro Colorado Island this species was a regular attendant at the raiding swarms of the ant *Eciton burchelli*, but did not follow them outside its territory.

**MITROSPINGUS CASSINII (Lawrence): Dusky-faced Tanager,
Frutero Carisucio**

Medium size; upper surface very dark gray; with dark yellow triangular patch on crown; throat gray, rest of undersurface greenish yellow.

Description.—Length 155-187. Adult (sexes alike), lores, broad areas around eye, and side of head black; triangular patch on crown dark yellow; rest of upper surface dark gray, sometimes tinged greenish; wings and tail blackish brown; chin black, becoming gray on throat; undersurface dark yellowish green, lightest on breast; underwing coverts gray.

The Dusky-faced Tanager inhabits humid lowland forest and woodland, where it dwells in thickets, often along streams and borders. This is a shy species that usually twitches its wings and jerks its tail nervously whenever it emerges briefly from the undergrowth. It is almost always encountered in rapidly moving, noisy groups of 4 to 12 individuals; they do not often mix with other species, but E. A. Goldman sometimes noted them with *Chlorothraupis carmioli* and several species of antbirds in the vicinity of traveling ants. Their diet is a mixture of animal and vegetable matter; of the stomachs of 2 taken by Goldman at Cana, Darién, one contained fragments of a scarabaeid 12%, caterpillar 3%, 4 seeds of *Panicum* sp. 10%, 13 seeds of Rutaceae (*Xanthoxylum*?) 50%, 130 seeds of *Miconia* sp. 25%, and the other held 1 *Lachnopus* sp. 12%, a carabid 15%, a cerambycid 8%, another beetle 5%, a green caterpillar 10%, 3 or more spiders 15%, 9 carunculate seeds 30%, 5 seeds of *Solanum* sp. 5%. Skutch (Publ. Nutt. Orn. Club, no. 10, 1972, p. 205) found that in Costa Rica it eats insects and a variety of berries, especially those of Melastomaceae, Rubiaceae, and Solanaceae, seeds of the scandent grass *Lasiacis*, and the small, hard seeds of the tree *Alchornea costaricensis*. Four collected on Cerro Pirre, Darién, by Burton (Bull. Brit. Orn. Club, 1975, p. 86) weighed from 32 to 39 g.

Besides various metallic call notes, I once heard a song from this species; in the early morning of February 27, 1961, at the Peluca Hydrographic Station, Panamá, one perched on a balsa tree beside the trail, on the very top twig, and sang *seety, seety, seety, seety, seety*.

The Dusky-faced Tanager is divided into 2 very poorly differentiated races. The nominate form is found from Veraguas east to western Colombia and western Ecuador; in Panamá it occurs mainly on the Caribbean slope. The other race, *costaricensis*, is found in the

Almirante Bay area of western Bocas del Toro and in eastern Costa Rica.

MITROSPINGUS CASSINII COSTARICENSIS Todd

Mitrospingus cassinii costaricensis Todd, 1922, Proc. Biol. Soc. Washington, 35, p. 93. (El Hozar, Costa Rica.)

Characters.—Very similar to nominate *cassinii*, but undertail coverts duller, less reddish, upper surface slightly darker, almost bluish, less gray; throat somewhat darker.

A male collected at Almirante, Bocas del Toro, on February 15, 1958, had the iris very light grayish white; maxilla black; mandible neutral gray; tarsus and toes fuscous.

Measurements.—Males (10 from Bocas del Toro and Costa Rica), wing 86.5-92.3 (87.3), tail 69.0-79.7 (74.2), culmen from base 18.4-21.3 (20.0), tarsus 22.2-25.8 (24.5) mm.

Females (8 from Bocas del Toro and Costa Rica), wing 83.2-86.5 (85.8), tail 70.7-77.3 (73.9), culmen from base 19.9-21.2 (20.5), tarsus 22.8-26.4 (24.8) mm.

Resident. Known in Panamá only from western Bocas del Toro, and found also in eastern Costa Rica. H. von Wedel collected it at 1050 m on the Boquete Trail and at Guabo (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 343). R. Hinds found it on the Río Changuena at 720 m, and I have seen it at the border of swampy woods near Almirante and in the undergrowth of high forest above Western River.

In Costa Rica, Skutch (Publ. Nutt. Orn. Club, no. 10, 1972, pp. 205-208) found that several members of a group assist in raising the young in one nest. In late April, he found a nest containing 2 young that were fed by at least 3 of the 7 individuals that frequented the vicinity. The young were fed insects. The nest was a bulky open cup placed in a tree 3 m above a stream. The nest was made mainly of long, brown, threadlike, dry pistillate inflorescences of *Myriocarpa*, mixed with rootlets and rhizomes of an epiphytic fern. The lining was of black fungal filaments. An egg in the collection of the Western Foundation of Vertebrate Zoology is white, with large reddish brown splotches, almost forming a cap on the large end. It measures 21.15×16.80 mm.

MITROSPINGUS CASSINII CASSINII (Lawrence)

Tachyphonus Cassinii Lawrence, 1861, Ann. Lyc. Nat. Hist. New York, 7, p. 297. (Lion Hill, Panamá Railroad.)

Characters.—Undertail coverts brighter, more reddish than in *costaricensis*; upper surface and throat slightly lighter gray.

A male collected at Tacarcuna Village, Darién, on March 6, 1964, had the iris light gray, maxilla and tip of mandible black; base of mandible neutral gray; tarsus, toes, and claws dusky neutral gray. Females I have taken were similar.

Measurements.—Males (10 from Panamá), wing 80.0-87.0 (84.7), tail 68.4-81.1 (74.5), culmen from base 18.7-20.5 (19.7), tarsus 22.8-25.3 (24.4) mm.

Females (10 from Panamá), wing 78.0-86.0 (83.1), tail 66.8-78.1 (74.3), culmen from base 19.3-22.1 (20.1), tarsus 24.0-25.8 (25.0) mm.

Resident. Fairly common in lowlands on the Caribbean slope from the Río Calovévora, Veraguas, where Benson and Gaffney collected several that are now at the American Museum of Natural History, and east to Puerto Obaldía, on the Colombian border (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 371), and more locally on the Pacific slope, where it has been recorded in the foothills above Santa Fé, Veraguas, on the northern slopes of Cerro Jefe and in the Bayano River Valley of eastern Province of Panamá (Ridgely, 1976, p. 326), and locally in Darién, including Cana (Griscom, Bull. Mus. Comp. Zool., vol. 69, 1929, p. 190), Mt. Sapo (Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, 1922, p. 229), Cerro Pirre (Burton, *op. cit.*), and Río Jaqué and Tacarcuna Village, where I have collected it, and around the confluence of the Río Mono into the Tuira, where Ridgely (*in litt.*) found it fairly common in July 1975. Beyond Panamá, it is found in western Colombia and western Ecuador.

A female I took at the Candelaria Hydrographic Station, Panamá, on March 9, 1961, was laying. Another collected at Puerto Obaldía, San Blas, on March 17, 1963, was developing an egg nearly ready for the shell.

RHODINOCICHLA ROSEA EXIMIA Ridgway: Rosy Thrush-Tanager,
Frutero Rosaceo

FIGURE 36

Rhodinocichla rosea eximia Ridgway, 1902, Bull. U.S. Nat. Mus., 50 pt. 2, p. 770.
(Bugaba, Chiriquí, Panamá.)

Large; male dark gray with long white superciliary, and rosy red undersurface; female dark gray with white superciliary, and tawny undersurface.

Description.—Length 177-191 mm. Adult male, lores rosy red becoming white over eye from which extends a long superciliary stripe of white tinged rosy red; sides of head, entire upper surface, including

wings and tail, sides of breast, sides, flanks, and sides of abdomen blackish gray; rest of undersurface, lesser wing coverts and bend of wing rosy red.

Adult female, like male, but red replaced by rich tawny, darkest on breast.

Immature male, like female with patches of rose-red.

A female collected at El Llano, Panamá, on February 5, 1962, had the iris wood brown; anterior two thirds of culmen line, cutting edge, tip of maxilla, and mandible light neutral gray, the maxillar areas somewhat duller; a line down back of tarsus light brownish white; rest of tarsus, toes, and claws dark grayish brown.

FIGURE 36.—Rosy Thrush-Tanager, Frutero Rosaceo, *Rhodinocichla rosea eximia*.

Measurements.—Males (10 from Panamá), wing 83.5-86.0 (84.6), tail 76.8-85.3 (81.0), culmen from base 21.9-24.8 (22.9), tarsus 24.5-27.4 (26.1) mm.

Females (10 from Panamá), wing 78.0-85.0 (81.5), tail 76.9-86.1 (80.2), culmen from base 21.2-22.7 (21.8), tarsus 25.5-27.7 (26.1) mm.

Resident. Uncommon to fairly common in lowlands on the Pacific slope from Chiriquí east to eastern Province of Panamá at least as far as the mouth of the Río Terrable on the Río Bayano (specimen in the Museo Nacional of Panamá); on the Caribbean side it is known only

from El Uracillo, Coclé, on the Río Indio, in the Canal Zone, and the Río Piedras in eastern Colón. In the Chiriqui highlands, W. W. Brown, Jr., collected it as high as 1050 m at Boquete (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 60), and I collected 1 near there at 1200 m on El Salto, March 16, 1960. This race also occurs in southwestern Costa Rica; others are found in western Mexico and in northern Colombia and northern Venezuela.

The thrush-tanager inhabits dense thickets and undergrowth in woodland and shrubby clearings. It feeds on or near the ground and is often almost impossible to see even when calling from only a few meters away; several times I found males with their brightly-colored breasts turned away from me. When on the ground, the thrush-tanager uses its long, slender bill to pick and toss aside leaves, under which it finds food. The stomach of 1 collected by E. A. Goldman contained 3 *Acalles* sp. fragments 20%, a small carabid 2%, 2 spiders 5%, other coleopteran remains (cerambycid?) 13%, pentatomid remains 5%, ant remains 5%, all animal matter very finely comminuted, 5 shelled seeds of *Ichmanthus* sp. and 12 entire seeds of a small *Panicum* 4%, about 85 seeds of Carduaceae, perhaps *Helianthus* sp. 42%, vegetable rubbish 4%, frog bone trace. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 51.8 g.

This species remains paired throughout the year, and both sexes use a wide variety of vocalizations to communicate with their mate through the dense habitat, in which it may be invisible. The songs are a succession of loud phrases suggestive of the calls of wrens in the genus *Thryothorus*; one has been rendered as *wheeo-cheehoh*, *chweeoo* (Ridgely, 1976, p. 236). The thrush-tanager is a persistent singer; I know of no other tanagers in which members of a pair sing antiphonally. Sometimes it sings in rather unexpected circumstances, as when being held in the hand after removal from a mist net.

In the Canal Zone, Goldman found a pair breeding on May 9, 1911, and Major General G. Ralph Meyer discovered a nest with fresh eggs on July 16, 1941. The nest was a cup built of twigs like that of a North American Cardinal (*Cardinalis cardinalis*), lined with a pad of black horsehairlike vegetable fiber, like that used in the nest of ant-tanagers (*Habia*); this material is the rootlet of a plant that seems to be parasitic on dead branches of trees. The diameter of the nest was 15 by 7.5 cm and the depth was 10 by 3 cm. The nest contained two eggs. Skutch (Auk, 1962, pp. 633-639), who has studied this bird in Costa Rica, found parents accompanied by young juveniles in the middle of February and found another pair building a nest in April. Both

parents participated in construction and, unlike any other tanagers, both incubated the eggs. The two eggs in this nest were white, varying marked with blackish scrawls and spots. They measured 25.4×18.7 and 24.6×19.1 mm. Both, however, disappeared before hatching, and Skutch never found another nest.

The taxonomic position of *Rhodinocichla* was formerly the subject of considerable doubt. The genus has in the past been assigned to several different families, among which the Mimidae was a fairly recent contender. Eisenmann (Auk, 1962, pp. 640-648) reviewed the evidence and concluded that *Rhodinocichla* is a tanager, a view that was supported by the myological studies of Raikow (Bull. Carnegie Mus. Nat. Hist. 7, 1978, p. 30) and by Clark's (Wilson Bull., 1974, pp. 104-109) examination of foot scutes.

HEMITHRAUPIS FLAVICOLLIS ORNATA Nelson: Yellow-backed
Tanager, Frutero Espaldiamarillo

Hemithraupis ornatus Nelson, 1912, Smiths. Misc. Coll., 60 (3), p. 19. (Río Truandó, northwestern Colombia.)

Small; male, upper surface, except for lower back and rump, black; lower back, rump, throat, and undertail coverts orange-yellow; rest of undersurface white; female yellowish green on upper surface, brighter yellow on wings and throat; rest of undersurface whitish.

Description.—Length 113-117 mm. Adult male, upper surface, except for lower back and rump, but including upper tail coverts, black; remainder of upper surface, throat, and undertail coverts orange-yellow; wings black with basal end of inner four primaries white; tail black; rest of undersurface white; underwing coverts white.

Adult female, upper surface yellowish green; wings and tail dusky, with feathers edged yellow; sides of head, throat, and upper breast lemon yellow, fading to whitish on rest of undersurface, except undertail coverts, which are lemon yellow; underwing coverts white.

Immature female, like adult, but whitish areas of undersurface tinged yellow-green.

Measurements.—Males (4 from Darién and Colombia, including the type), wing 64.5-66.5 (65.3), tail 43.6-47.8 (46.0), culmen from base 12.7-13.6 (13.0, average of 3), tarsus 13.7-15.1 (14.6) mm.

Females (2 from Darién), wing 59.2-63.5 (61.4), tail 40.9-45.7 (43.2), culmen from base 11.7-12.7 (12.2), tarsus 15.1-15.2 (15.15) mm.

Resident. Known only from a few localities in the lowlands and lower foothills of eastern Darién, where E. A. Goldman collected a

male at Cana, May 22, 1912; William B. Richardson took a male at Boca de Cupe on the Río Tuira, April 27, 1915; and I found a few at Jaqué in 1946 and at the mouth of the Río Paya in 1959. This race also occurs in adjacent northwestern Colombia, and others range as far as northern Bolivia and southeastern Brazil.

I saw this bird in several different situations around Jaqué; as part of a small group of birds moving quickly through the tops of scrub near the airfield, by itself in a tall tree in heavy forest, and in a pair in low treetops. At the mouth of the Río Paya, I collected 1 from the top of a feeding tree, where it was resting quietly after having taken a berry. When foraging for insects it sometimes moves as actively as a warbler. The stomach of the 1 Goldman collected contained 2 curculionids 20%, a scarabaeid 20%, a bug 15%, a roach 30%, a caterpillar 10%, and a membracid 5%.

Ridgely (*in litt.*) notes that this species usually occurs in pairs, most often with mixed flocks. It gleans foliage like a wood warbler and also eats small berries. At Cana, Ridgely saw a pair with a small canopy flock in very tall forest; the flock included *Vireolanius*, *Poliophtila schistaceigula*, and *Heterospingus*.

CHRYSOTHYLPIS CHRYSOMELAS (Sclater and Salvin): Black-and-yellow Tanager, Frutero Orinegro

FIGURE 37

Small; male bright orange-yellow, with black wings, tail, upper back, and eye-ring; female yellowish green on upper surface, lighter yellow below.

Description.—Length 106-121 mm. Adult male, wings, upper back, tail, and area around eye black; head orange-yellow, rest of body rich yellow, lighter on undersurface; underwing coverts white.

Adult female, upper surface yellowish green; undersurface yellow, more greenish on sides and flanks; underwing coverts white.

Immature male, like female.

The Black-and-yellow Tanager is found in Panamá and Costa Rica. Females of the Costa Rican population are distinct from the 2 races found in eastern and western Panamá in having the underparts largely dull white rather than yellow (Olson, Proc. Wash. Biol. Soc., vol. 94, no. 2, 1981, p. 348). This species inhabits forests and forest borders between 390 and 1050 m on both slopes. Where it occurs it is rather common, but its distribution is somewhat local.

It is usually found in small flocks, almost always in association with other tanagers such as *Tangara gyrola* and *T. icterocephala* (Ridgely,

1976, p. 326). At the head of the Río Guabal, Coclé, in February 1962, it was one of the most common birds at a feeding tree. The stomach contents of 3 collected by E. A. Goldman at Cana, Darién, in June 1912 were as follows: bits of caterpillar skin 35%, remains of an ant 30%,

FIGURE 37.—Black-and-yellow Tanager, Frutero Orinegro, *Chrysothlypis chrysomelas*, male (below), female (above).

1 seed of *Amaranthaceae* sp. 35%; bits of a small carabid 20%, orthopteran remains 34%, 2 legs of a heteropteran 1%, 20 undeveloped seeds not determined 45%; a small *Lachnopus* sp. 20%, bits of an ant 5%, immature seeds not determined 75%. Olson and Blum (Ecology, 1968, pp. 565-566) report 1 that had seeds of *Cecropia peltata* in the intestinal tract.

CHRYSOTHYLPIS CHRYSOMELAS CHRYSOMELAS
(Sclater and Salvin)

Tachyphonus chrysomelas P. L. Sclater and Salvin, 1869, Proc. Zool. Soc. London, p. 440, pl. 32. (Cordillera del Chucú, Veraguas, Panamá.)

Characters.—Female like *ocularis*, separable from *titanota* by absence of white on undersurface; male like *titanota*, separable from *ocularis* by the lack of a black loreal spot.

A male collected at the head of the Río Guabal, Coclé, on February 28, 1962, had the iris brown; bill black; tarsus and toes and claws dull greenish brown; pads honey yellow. An immature male taken that day was the same, but a female had the tarsus and toes more grayish green.

Measurements.—Males (7 from Chiriquí, Coclé, and Province of Panamá), wing 61.0-67.0 (64.8), tail 45.5-49.4 (48.0), culmen from base 12.6-14.1 (13.5), tarsus 15.3-17.1 (16.4) mm.

Females (3 from Coclé and Province of Panamá), wing 52.0-56.8 (54.3), tail 39.6-41.8 (40.5), culmen from base 12.8-14.4 (13.4), tarsus 15.0-16.0 (15.6) mm.

Resident. Locally common in the forested hills of both slopes, from 390 to 1050 m, between Chiriquí and western Province of Panamá. In Veraguas, it has been taken at the type locality, in the Cordillera del Chucú, in Coclé at the head of the Río Guabal, and in the Province of Panamá at Cerro Campana. The identity of specimens taken on the Boquete Trail on the Caribbean slope of Bocas del Toro above Almirante (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, no. 10, 1928, p. 463) is uncertain, as no females were obtained. It is possible that these are referable to the Costa Rican race *titanota* (Olson, Proc. Biol. Soc. Wash., vol. 94, no. 2, 1981, p. 369).

CHRYSOTHYLPIS CHRYSOMELAS OCULARIS Nelson

Chrysothlypis chrysomelas ocularis Nelson, 1912, Smiths. Misc. Coll., 60(3), p. 19. (Cana, at 3,500 feet altitude, eastern Panamá.)

Characters.—Exactly like *chrysomelas* except adult male has part of loreal area black instead of yellow.

Measurements.—Males (7 from eastern Province of Panamá and Darién), wing 65.5-70.0 (67.5), tail 44.6-48.1 (46.8), culmen from base 12.3-14.1 (13.6), tarsus 14.7-17.2 (16.4) mm.

Females (9 from eastern Province of Panamá and Darién), wing 56.0-60.6 (57.8), tail 35.8-42.9 (39.8, average of 8), culmen from base 12.9-14.3 (13.6), tarsus 14.7-16.1 (15.7) mm.

Resident. Known from a few localities, in eastern Province of Panamá from the Cerro Azul/Cerro Jefe area and the El Llano-Carti road (Eisenmann and J. Pujals), and in Darién from Cerro Tacarcuna, Cana, Cerro Sapo, Cerro Pirre, and Cerro Quía. On Tacarcuna, it has been collected between 630 and 720 m, and on Cerro Azul and Cerro Sapo at 900 m. Ridgely has seen it on Cerro Azul up to 1000 m. Bond and de Schauensee (Acad. Nat. Sci. Philadelphia Mon. no. 6, 1944, p. 44) record that males taken in April at Cerro Sapo had enlarged testes, and a female was noted as "laying."

CHLOROSPINGUS OPHTHALMICUS (DuBus): Common Bush-tanager, Frutero Rastrojero Común

Arremon ophthalmicus DuBus, 1847, Bull. Acad. Roy. Sci., Lettr. et Beaux-Arts de Belgique, 14, (pt. 2), p. 106. (Jalapa, Veracruz, Mexico.)

Small; head dusky brown or blackish; upper surface yellowish green; undersurface more yellowish with center of belly white.

Description.—Length 128-140 mm. Adult male, top and sides of head dull brown or blackish (*punctulatus*); rear half of orbital ring and spot behind eye white; upper surface, including wing coverts and tail, yellowish green; remiges dusky with outer webs edged color of upper surface; throat white, flecked dull brown, or yellow flecked blackish (*punctulatus*); band across breast dull yellow tinged green; sides, flanks, and undertail coverts yellowish green; rest of undersurface white; bend of wing light yellow; underwing coverts white.

Female like male, but crown slightly duller, sometimes tinged green.

The Common Bush-tanager inhabits forest, forest borders, and shrubby clearings. Races occur from central Mexico to northwestern Argentina. I have usually found the bush-tanager moving actively, like a warbler, through the lower growth, although it is sometimes seen in the tree crown. Except when nesting, it travels in small groups that are often the nucleus for many other species that join mixed flocks. Buskirk et al. (Auk, 1972, pp. 612-624) have examined in detail the daily activities of several flocks at Cerro Punta; they found bush-tanagers to be most active in the morning and later afternoon. At night they usually roost in loose groups. When bush-tanagers are active and call-

ing intensely they attract more birds of other species to their flocks than when they are quieter. When foraging they take insects, a wide variety of berries, and some nectar. Although they are very vocal, the calls of bush-tanagers are not particularly developed, being limited to sharp, twittering notes given as a song at dawn and throughout the day in interactions with other individuals, and to various softer chirps and chips. Moynihan (Auk, 1962, pp. 310-338) analyzes these vocalizations and their associated displays in great detail.

(Olson, Proc. Biol. Soc. Wash., vol. 94, 1981, pp. 363-373) has discussed the reasons for restricting the race *novicius* to the area around Boquete, east of Volcán de Chiriquí, and the adjacent Caribbean slope of Bocas del Toro. Birds from the western slope of Volcán de Chiriquí through Costa Rica to Nicaragua are referable to *regionalis*. The disjunct form *punctulatus*, in Veraguas, sometimes considered a distinct species, "differs only slightly from other dark-capped subspecies of *C. ophthalmicus*, such as *venezuelanus*, and clearly should be regarded as a subspecies of *C. ophthalmicus*. The fact that no specimens of *C. ophthalmicus* are known from the area between Boquete and the range of *punctulatus* in Veraguas has no doubt contributed to the misunderstanding of the relationships of *punctulatus*" (Olson, *ibid*, p. 367). Ridgely (*in litt.*) notes that there are now specimens from Fortuna, central Chiriquí, in the Gorgas Memorial Laboratory collection, and it would appear that these are closest to *novicius*.

CHLOROSPINGUS OPHTHALMICUS REGIONALIS Bangs

Chlorospingus regionalis Bangs, 1906, Proc. Biol. Soc. Washington, 19, p. 112. (Cariblanco de Sarapiquí, Costa Rica.)

Characters.—Crown grayish; upper surface more yellow-green, less olivaceous; pectoral band yellowish, with orange absent or very sparse; throat whitish, not heavily speckled with brown as in *novicius*.

A male collected at El Volcán, Chiriquí, on February 27, 1965, had the iris warm brown; base of mandible at junction of rami dull fuscous; rest of bill black; tarsus and toes dark neutral gray; claws mouse brown basally, black on tip.

Measurements.—Males (10 from Chiriquí), wing 66.0-72.0 (68.8), tail 55.6-63.4 (58.3), culmen from base 11.9-14.2 (13.4), tarsus 19.4-22.0 (20.9) mm.

Females (10 from Chiriquí and Costa Rica), wing 63.0-73.0 (65.5), tail 53.4-63.7 (56.2), culmen from base 12.6-14.0 (13.2), tarsus 18.8-22.5 (20.8) mm.

Resident. Very common in the highlands of western Chiriquí,

where it has been collected at Cerro Punta, Barriles, and the following sites, sometimes confusingly known simply as "El Volcán," north or west of the peak of Volcán de Chiriquí: Cerro Picacho (7 km north of the peak), Silla de Cerro Pando (17 km west northwest of the peak), and Lagunas (16 km west southwest of the peak). C. B. Worth (Auk, 1939, pp. 308-309) observed it in the Río Garaché region. In elevation, it ranges from 1200 to 2250 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 67). This race extends through Costa Rica to Nicaragua.

Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 167-178) found that in Costa Rica flocks split into pairs during March and form territories that may be 90 by 45 m. He found nests placed everywhere from on the ground to 16 m high in a tree, in either bushy pastures or forests. The nest is built entirely by the female. One that Worth (*op. cit.*) found in Panamá 3 m from the ground in a coffee tree was a domed ball of moss with a narrow entrance at the top and a cavity lined with a few dry strips of banana leaves. The nests that Skutch found varied from bulky open cups to one thinly roofed-over. On June 28, 1937, Worth's nest held two eggs that measured 21×17 and 21×17.5 mm and were "white with a moderate sprinkling of pinkish-red dots, concentrated at the blunt end so that on one egg they became confluent as a large reddish blotch, mottled and irregular in shape." One of these eggs hatched on July 6. At the nests Skutch watched, the incubation period was 14 days. The young hatch with pink skin, sparse, long gray down, and tightly shut eyes. They are fed insects by both parents and at 11 days are well feathered. They leave the nest at 13 days. Skutch found some pairs raising a second brood during June and July.

CHLOROSPINGUS OPHTHALMICUS NOVICIUS Bangs

Chlorospingus novicius Bangs, 1902, Proc. New England Zool. Club, 3, p. 67. (Volcán de Chiriquí, 2500 ft. altitude [restricted by Olson (1981, Proc. Biol. Soc. Wash. 94, pp. 363-373) to eastern slope of Volcán de Chiriquí].)

Characters.—Differs from *regionalis* by having the crown and sides of head darker, decidedly brownish, not gray; upper surface more olivaceous, less yellow-green; pectoral band more intensely orangish, less yellow; light portions of throat more restricted, more heavily speckled, usually suffused with buff or even with the orange of the breast, not whitish as in *novicius*. Differs from *punctulatus* by having crown lighter brown, not very blackish brown, pectoral band not as deep orange and throat not as heavily flecked with blackish.

Measurements.—Males (10 from Boquete, Chiriquí), wing 67.0-

74.0 (70.2), tail 58.2-62.6 (60.3), culmen from base 13.6-14.8 (14.3), tarsus 20.3-22.6 (21.6) mm.

Females (7 from Boquete, Chiriquí), wing 65.5-70.5 (67.2), tail 57.6-61.7 (59.9), culmen from base 14.0-15.2 (14.3), tarsus 21.3-23.0 (22.1) mm.

Resident. Common within its restricted range. It is known certainly only from Boquete and extending from that area to the Caribbean slope of Bocas del Toro and the eastern slope of Volcán de Chiriquí, the restricted type locality (Olson, Proc. Biol. Soc. Wash., vol. 94, 1981, pp. 363-373). All the specimens collected by Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 568) in locations east of the peak of Volcán de Chiriquí are referable to this race. His specimens came from elevations of 1560 to 1800 m. Individuals with enlarged gonads were collected between March 3 and July 14; 1 with slightly enlarged gonads was taken October 16. Ridgely (*in litt.*) has seen small numbers at as low as 1000 m, at Volcán, and at 950 m, at Boquete.

CHLOROSPINGUS OPHTHALMICUS PUNCTULATUS

Sclater and Salvin

Chlorospingus punctulatus P. L. Sclater and Salvin, 1869, Proc. Zool. Soc. London, p. 440. (Cordillera del Chucú, Veraguas, Panamá.)

Characters.—Crown and sides of head very dark blackish brown; upper surface more orange-green, less yellowish; throat orange, flecked with black; orange on breast deeper and more extensive than in *novicius*.

Measurements.—Males (10 from Veraguas), wing 68.0-73.0 (69.4), tail 53.5-57.5 (55.9), culmen from base 13.2-15.2 (14.1), tarsus 19.0-22.6 (20.9) mm.

Females (10 from Veraguas), wing 63.5-68.0 (65.1), tail 52.2-56.2 (53.7), culmen from base 12.9-14.6 (13.8), tarsus 19.3-23.2 (21.0) mm.

Resident. Very common within its limited range in forests in the foothills and highlands of both slopes of Veraguas and Coclé. Arcé collected a series in the Cordillera del Chucú, Veraguas, in the 1860's. In 1925 and 1926, R. R. Benson collected several in Veraguas at Santa Fé and Chitra between 1050 and 1410 m. There is also a specimen in the Smithsonian taken by Heyde and Lux at Cascajal, Coclé, on February 7, 1880. Above Santa Fé, on Cerro Tute, Ridgely (1976, p. 326) found it one of the most common birds above 840 m during January 1974; at this elevation and above, it was the altitudinal replacement for *Chlorospingus flavigularis*, which was present from 750 to 900 m.

The illustration of this species, as it was then considered, on plate 22 of Salvin and Godman, *Biologia Centrali-Americana*, Aves, vol. 1, 1884, is inaccurate. All 6 specimens in London show a prominent white spot that extends forward along the edge of the upper eyelid to about the middle of the eye. There is, in addition, a faint partly broken line to the base of the bill. The broad white superciliary extending to the back of the head as drawn by the artist does not exist; the side of the head as drawn has no resemblance to the specimens. Otherwise, the details are correct.

CHLOROSPINGUS TACARCUNAE Griscom: *Tacarcuna* Bush-tanager,
Frutero Rastrojero Tacarcuneño

Chlorospingus tacarcunae Griscom, 1924, Amer. Mus. Novit., no. 141, p. 11.
(Mount Tacarcuna, east slope, alt. 4600 ft., eastern Panamá.)

Small; upper surface dark olive; undersurface yellow on throat and breast, whitish on abdomen.

Description.—Length 134-138 mm. Adult (sexes alike), upper surface, including wing coverts and tail, dark olive; throat and breast dull yellow, becoming greenish on sides, flanks, and undertail coverts; remainder of undersurface white, tinged pale yellow; bend of wing pale yellow, underwing coverts white.

A male collected at Cerro Malí, Darién, on February 21, 1964, had the iris pale orange; bill black; tarsus brownish neutral gray; toes neutral gray; claws fuscous.

Measurements.—Males (10 from Darién, including the type), wing 64.5-69.4 (67.5), tail 51.3-56.9 (53.5), culmen from base 12.1-14.1 (13.3), tarsus 19.2-21.8 (20.8) mm.

Females (9 from Darién and Province of Panamá), wing 59.8-70.0 (63.6), tail 47.6-52.8 (50.8), culmen from base 12.2-14.3 (13.3), tarsus 18.1-21.8 (20.5) mm.

Resident. Uncommon to fairly common in forest on the few mountains in eastern Panamá from which it is known. First discovered in Darién on Cerro Tacarcuna, this tanager has been found on Tacarcuna's spur, Cerro Malí, and in eastern Province of Panamá on Cerro Azul and Cerro Jefe. On Cerro Tacarcuna, I have collected it between 1320 and 1440 m, and Charles Handley has taken it there at 1230 m; at Cerro Malí it has been collected at 1410 m. In the Province of Panamá, David Hill collected 2 females on El Jefe at 1000 m and I have taken it on Cerro Azul at 840 m.

My observations of this bird reveal nothing distinctive about its behavior; like other bush-tanagers, this one is usually found in small

flocks moving through the trees. At times it seems to be the nucleus species in small mixed flocks. The stomach of one I collected held several small green caterpillars and bits of insect chiton. One taken by Hill weighed 17.8 g. A female taken on February 25, 1964, at Cerro Tacarcuna was carrying nesting material.

Hellmayr (Field Mus. Nat. Hist. Publ., Zool. Ser., vol. 13, pt. 9, 1936, p. 410) considered *tacarcunae* to be a race of *flavigularis*, whereas Zimmer (Amer. Mus. Novit. no. 1367, 1947, p. 2) thought it a race of *ophthalmicus*, which is probably a more accurate reflection of its relationships. Its distinctiveness is such, however, that it is best to carry it as a separate species.

**CHLOROSPINGUS INORNATUS (Nelson): Pirre Bush-tanager,
Frutero Rastrojero Pirreño**

Hylospingus inornatus Nelson, 1912, Smiths. Misc. Coll., 60(3), p. 18. (Mount Pirri (at 5200 feet altitude) eastern Panamá.)

Small; crown dark gray; rest of upper surface dark olive; under-surface lighter greenish yellow.

Description.—Length 142-150 mm. Adult (sexes alike), crown and sides of head dark gray, becoming olive on rest of upper surface; throat dull yellow, becoming darker on breast; sides, flanks, and under-tail coverts greenish yellow; rest of undersurface brighter yellow; underwing coverts white.

One collected at Cerro Pirre on August 7, 1965, had the iris orange-yellow; bill black; tarsus and toes fuscous-black; claws fuscous.

Measurements.—Males (8 from Cerro Pirre, including the type), wing 77.0-84.5 (80.6), tail 57.7-64.5 (61.7), culmen from base 15.4-16.8 (15.9), tarsus 23.9-25.7 (25.2) mm.

Female (1 from Cerro Pirre), wing 78.0, tail 54.7, culmen from base 13.6, tarsus 25.3 mm.

Resident. Common in the few localities from which it is known, the forests of Cerro Pirre and Cerro Sapo in eastern Darién. In 1972, it was collected by the Gorgas Memorial Laboratory expedition to Alturas de Nique. On Cerro Pirre it has been collected between 780 and 1560 m and on Cerro Sapo at 900 m and on the summit, 1279 m. E. A. Goldman, the first to collect this bird, noted that at Cerro Pirre it was common in the tops of tall trees. "These birds feed clinging among the small branches and occasionally hang suspended from the lower side of a twig for a moment, the general manner of working being somewhat like that of small nuthatches." Bond and de Schauensee (Acad. Nat. Sci. Philadelphia, Mon. no. 6, 1944, pp. 44-45) remark that this was

the only bird found on the summit of Cerro Sapo in April 1941. A male collected there April 28 had enlarged testes. Nelson commented that "the skin on the top of the head is much thickened and oily although these birds have no crest or other development of the feathers which would account for this character."

Although probably related to *C. ophthalmicus*, the much larger size and distinctive plumage of *C. inornatus* are quite sufficient to accord it full specific rank.

CHLOROSPINGUS FLAVIGULARIS HYPOPHAEUS Sclater and
Salvin: Yellow-throated Bush-tanager, Frutero Rastrojero
Gargantiamarillo

Chlorospingus hypophaeus P. L. Sclater and Salvin, 1868, Proc. Zool. Soc. London, p. 389. (Veragua, Calovévora, Panamá.)

Small; upper surface yellowish green; throat orangey yellow; breast pinkish buff; sides and flanks grayish olive; rest of undersurface whitish.

Description.—Length 122-133 mm. Adult (sexes alike), entire upper surface, yellowish green; throat yellow-ocher; breast pinkish buff; sides and flanks grayish olive; undertail coverts yellowish green; rest of undersurface whitish; underwing coverts white.

Measurements.—Males (6 from Veraguas), wing 75.0-78.6 (76.4), tail 42.0-54.0 (50.4), culmen from base 14.0-15.0 (14.5), tarsus 20.1-22.0 (21.2) mm.

Female (1 from Veraguas), wing 70.0, tail 46.6, culmen from base 14.5, tarsus 21.2 mm.

Resident. Fairly common in foothills on the Caribbean slope of the Volcán de Chiriquí in Bocas del Toro, where W. W. Brown, Jr., collected 5 in 1901 (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 67) and on both slopes in Veraguas. Arcé collected it in Veraguas at Calovévora, Chitra, and Boquete de Chitra (Salvin, Proc. Zool. Soc. London, 1870, p. 188); Benson took 3 on the Río Calovévora in 1926 between 240 and 450 m, and at Santa Fé in 1925 between 600 and 750 m. More recently, in 1974 Ridgely and F. G. Stiles found it very common above Santa Fé between 750 and 900 m along the road to the Continental Divide; above 900 m it was replaced by *C. o. punctulatus*. In habitat and behavior this species is similar to other bush-tanagers—it inhabits forests and forest borders, where it moves in small groups that may include other species. It forages primarily in the middle and upper levels of trees. The race *hypophaeus*, found exclusively in west-

ern Panamá, is well isolated from the other populations of this species, which range from Colombia to northern Bolivia.

CHLOROSPINGUS PILEATUS Salvin: Sooty-capped Bush-tanager,
Frutero Rastrojero Cabecicenizo

Chlorospingus pileatus Salvin, 1864, Proc. Zool. Soc. London, p. 581. (Irazú, Costa Rica.)

Chlorospingus pileatus diversus Griscom, 1924, Amer. Mus. Novit., no. 141, p. 11. (Cerro Flores, alt. 6000 ft., eastern Chiriquí, Panamá.)

Small; head blackish with long white stripe from eye to nape; rest of upper surface olive; throat and belly white; breast and sides greenish yellow.

Description.—Length 131-143 mm. Adult (sexes alike), crown and sides of head sooty blackish, with prominent white stripe from eye to nape; rest of upper surface olive; throat white, with two indistinct blackish stripes on sides; belly whitish, rest of undersurface greenish yellow.

A female taken February 24, 1965, at Volcán de Chiriquí, Chiriquí, had the iris red; bill black; tarsus, toes, and claws fuscous-black.

Measurements.—Males (10 from Chiriquí), wing 65.0-73.2 (68.3), tail 58.4-65.8 (62.1), culmen from base 12.2-14.0 (13.0), tarsus 20.5-22.4 (21.5) mm.

Females (10 from Chiriquí), wing 60.5-69.8 (65.3), tail 57.6-66.8 (61.1), culmen from base 12.0-14.3 (13.5), tarsus 21.3-22.7 (22.0) mm.

Resident. Fairly common in the highlands of Chiriquí and in Costa Rica. Around the Volcán de Chiriquí it has been collected from 1800 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 568-569) to 2850 m, where I took 1 on March 9, 1965. Ridgely (*in litt.*) has found it at 1600 m (Bambito).

This species inhabits forest, forest borders, and clearings. In the breeding season it is usually encountered singly or in bands of up to 6 individuals; later, these groups will join to form flocks of up to 40 birds. The birds forage from near ground-level to 12 m, but mainly from 3 to 6 m from the ground. They feed on insects and fruit. As the flocks move through the trees, individuals emit a variety of squeaking and twittering notes (Johnson and Brush, Systematic Zoology, vol. 21, no. 3, 1972, p. 249). This species is also often a member of mixed foraging flocks (Ridgely, 1976, p. 328).

The race *diversus* described by Griscom from Cerro Flores in eastern

Chiriquí is invalid. It was supposed to differ in having the underparts yellower and the abdomen whiter than the nominate form, but the orangish breast band does not differ from more brightly colored individuals from Costa Rica and there are no differences in white versus gray in the abdomen.

Family COEREBIDAE: Honeycreepers, Mieleros

[The Coerebidae is a totally artificial collection of nine-primaried oscines with bill shapes that are divergent from those of warblers, finches, or tanagers; hence they have proved difficult to place. For the most part, the various genera are likewise very divergent from each other and although it is now widely recognized that the Coerebidae is a polyphyletic assemblage (e.g., Meyer de Schauensee, *Birds of South America*, 1966, p. 454), until each of its constituent genera can be confidently assigned to a place in some other family it is convenient to carry the old familial designation simply for ease of locating a particular taxon.

A number of "coerebids" are clearly derived from tanagers, including *Dacnis*, *Chlorophanes*, and *Cyanerpes* (see Storer, *Living Bird*, 1969, pp. 130-132). Storer (*Check-list Birds World*, vol. 13, 1970, p. 359) has even taken the step of including *Iridophanes* in the genus *Tangara*. Although it has been suggested that certain genera such as *Coereba* and *Conirostrum* may be related to the Parulidae, these studies suffer from insufficient comparisons with some of the more warblerlike members of the Thraupidae such as *Hemispingus* and *Hemithraupis*. Neither *Coereba* nor *Conirostrum* bear close resemblance to any parulid, whereas the former at least has some plumage similarities with *Hemithraupis flavicollis*. It has been suggested that *Diglossa* may be related to the emberizine finches of the genera *Acanthidops* and *Haplospiza* (e.g., Meyer de Schauensee, *Birds of South America*, 1966, p. 456). Although it seems not to have been suggested before, the Andean species *Oreomanes frazeri* strikes me as being an obvious derivative of the Emberizinae. It has a very straight, pointed bill like an icterid and very likely feeds by gaping, but its plumage is so similar to that of species in the high Andean emberizine genus *Poospiza* that a relationship between the two seems inescapable. S.L.O.]

Ten species of "honeycreepers" are found in Panamá. Some form the nuclei of mixed species flocks that often congregate in flowering or fruiting trees; others are less social or decidedly solitary. None are

particularly distinguished songsters; they are often completely silent and at best their vocalizations are harsh or high, thin notes exchanged between mated pairs or given when another bird approaches too closely. Nests are always placed in trees and are cup shaped in all except *Coereba*, which builds a globular nest.

KEY TO SPECIES OF COEREVIDAE: HONEYCREEPERS

1. Upper surface dark gray or brown, with no blue tinge..... 2
 Upper surface not dark gray..... 4
2. Bill sharp, slightly decurved..... 3
 Bill up-tilted and hooked at tip.
 Slaty Flower-piercer, *Diglossa baritula*. p. 505
3. Undersurface gray or buff.
 White-eared Conebill, *Conirostrum leucogenys leucogenys*. p. 508
 Throat gray, rest of undersurface yellow.
 Bananaquit, *Coereba flaveola*. p. 500
4. Most of body rich bright blue; bill slender, long..... 5
 Body not rich bright blue; bill shorter, conical, or not slender..... 7
5. Throat black..... 6
 Throat blue.
 male Red-legged Honeycreeper, *Cyanerpes cyaneus carneipes*. p. 513
6. Black of throat extending to chest, body blue, not purplish.
 male Shining Honeycreeper, *Cyanerpes lucidus isthmicus*. p. 509
 Black limited to throat, body tinged purplish.
 male Purple Honeycreeper, *Cyanerpes caeruleus chocoanus*. p. 511
7. Most of body light blue or black..... 8
 Body green or gray, tinged blue..... 10
8. Crown blue..... 9
 Crown black.
 male Green Honeycreeper, *Chlorophanes spiza arguta*. p. 516
9. Undersurface blue..... 10
 Undersurface black; thighs red.
 male Scarlet-thighed Dacnis, *Dacnis venusta*. p. 522
10. Throat black.
 male Blue Dacnis, *Dacnis cayana*. p. 518
 Throat blue.
 male Viridian Dacnis, *Dacnis viguieri*. p. 521
11. Upper surface green..... 12
 Upper surface gray, tinged light blue, especially on rump.
 female Scarlet-thighed Dacnis, *Dacnis venusta*. p. 522
12. Crown blue or grayish blue..... 13
 Crown green..... 14
13. Crown bright blue.
 female Blue Dacnis, *Dacnis cayana*. p. 518
 Crown grayish blue.
 female Shining Honeycreeper, *Cyanerpes lucidus isthmicus*. p. 509

14. Undersurface streaked blue, green, and yellow.
female Purple Honeycreeper, *Cyanerpes caeruleus chocoanus*. p. 511
Undersurface unstreaked or very faintly streaked..... 15
15. Bright green, underwing coverts gray.
female Green Honeycreeper, *Chlorophanes spiza arguta*. p. 516
Dull green..... 16
16. Underwing coverts yellow.
female Red-legged Honeycreeper, *Cyanerpes cyaneus carneipes*. p. 513
Underwing coverts dingy white.
female Viridian Dacnis, *Dacnis viguieri*. p. 521

COEREBA FLAVEOLA (Linnaeus): Bananaquit, Mielero Platanero

FIGURE 38

Certhia flaveola Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 119. (Jamaica.)

Very small; bill decurved; superciliary extending to nape white; rest of upper surface black or dark gray; throat light gray; rest of under-surface yellow.

Description.—Length 88-101 mm. Adult (sexes alike), superciliary extending to nape white; crown, lores, and auriculars black or dark gray; back dark gray; upper tail coverts yellow; wings dark gray to blackish, with white at base of outer web of outer primaries; tail dark gray to blackish, outer feathers tipped white on underside; throat light gray; undertail coverts whitish; rest of undersurface yellow; edge of wing yellow; underwing coverts white.

Immature, gray and black of upper surface replaced by dingy olive; undersurface dull greenish yellow.

The Bananaquit is a common and adaptable bird found through most of the more humid lowlands and foothills of Panamá. Its dependence on flower nectar as a source of food limits its distribution in the drier regions, such as the Pacific slope lowlands from the eastern side of the Azuero Peninsula to the Pacific side of the Canal Zone and Panamá City area, where it is absent or found only in very small numbers, and may be seasonal (Ridgely, 1976, p. 287). Its total range is very large, from southeastern Mexico to northern Bolivia, Paraguay, and north-eastern Argentina, and the West Indies except for Cuba. Forty-one races are currently recognized (Lowery and Monroe, Check-list Birds World, vol. 14, 1968, pp. 87-93), of which 3 are found in Panamá: *mexicana*, in Chiriquí, Bocas del Toro, and islands off the Pacific coast of Veraguas; *cerinoclunis* on the Pearl Islands in the Gulf of Panamá, and *colombiana*, from mainland Veraguas and Isla Cébaco east through

the rest of Panamá and into Colombia and Venezuela. It inhabits gardens, shrubby clearings, light woodland, and forest borders, wherever there are flowers.

The Bananaquit reaches the nectar of flowers by clinging to plants and probing into the center of flowers it can reach, or by piercing the corolla of deeper flowers. When flowers are scarce, as Leck (Living Bird, 1971, p. 99) found during the wet season of 1968 on Barro Colorado Island in the Canal Zone, Bananaquits may drive away hummingbirds that are potential competitors. They also suck the juice from berries and take small insects and spiders. The stomach of 1 collected by E. A. Goldman at Portobelo, Colón, on May 26, 1911, contained a caterpillar and the head of another 19%, head of a curculionid 1%, hymenoptera 5%, arachnid remains 10%, other coleoptera 5%, fragments of a partly digested starchy seed 60%. A Bananaquit caught at Barro Colorado Island during the winter of 1968-69 weighed 8.9 g (Leck, Bird-Banding, 1975, p. 203). Moynihan (Smiths. Misc. Coll., vol. 143, no. 7, 1962, p. 63) found that on Barro Colorado Bananaquits sometimes join mixed flocks, especially those containing Green Honeycreepers (*Chlorophanes spiza*).

The Bananaquit is a persistent singer, vocal all through the day and all year long. In Panamá, the song is an unmusical, high-pitched trill

FIGURE 38.—Bananaquit, Mielero Platanero, *Coereba flaveola*.

that, to my ear, sounds coarser and louder than the Bananaquits of Puerto Rico or Hispaniola. This bird is quite fearless, approaching and even entering houses where it is given sugar; once, at Almirante, Bocas del Toro, one sought loose feathers near my skinning table.

COEREBA FLAVEOLA MEXICANA (Sclater)

Certhiola mexicana P. L. Sclater, 1857, Proc. Zool. Soc. London, 24 (1856), p. 286.
(Córdoba, Veracruz, Mexico.)

Characters.—Rump more greenish yellow, less extensive than in *columbiana*; back dark gray, less blackish than in other Panamá races.

A male taken on Isla Brincanco in the Islas Contreras off the Pacific coast of Veraguas on March 23, 1962, had the iris dark brown; bill black; tarsus and toes neutral gray; claws black.

Measurements.—Males (10 from Chiriquí, Bocas del Toro, and Veraguas), wing 49.8-56.8 (54.6), tail 31.2-39.4 (33.9), culmen from base 12.4-15.1 (13.5), tarsus 14.5-17.3 (16.4) mm.

Females (10 from Chiriquí, Bocas del Toro, and Veraguas), wing 49.7-53.8 (51.4), tail 27.8-33.2 (29.7), culmen from base 12.5-14.1 (13.4), tarsus 14.1-17.1 (15.8) mm.

Resident. Common in gardens, clearings, light woodlands, and forest edges where there are flowers in the lowlands and foothills of Chiriquí, Bocas del Toro, and islands off the Pacific coast of western Panamá, as far east as Isla Coiba, the adjacent Isla Ranchería, and the Isla Contreras. I have found it as high as 1560 m on the Silla de Cerro Pando near El Volcán, Chiriquí, on March 3, 1954. Leck and Hilty (Condor, 1968, p. 105) netted 1 at 1200 m below El Volcán, Chiriquí, on April 25, 1968; the clearing of this area, which formerly was subtropical forest, may have permitted the Bananaquit's upward expansion. The range of this race is from southeastern Mexico (Veracruz and Oaxaca) south through central America to western Panamá.

The Bananaquit seems to nest nearly throughout the year. During my visits to Panamá between December and March I have collected adults in breeding condition or seen juveniles in every month. Skutch (Pacific Coast Avif. no. 31, 1954, pp. 404-420) has found a decrease in nesting activity in Costa Rica at the end of the dry season and beginning of the wet season, when flowers are scarcest. The nest itself is distinct from that of any other honeycreeper and, indeed, from all other Central American birds. It is a thick-walled, globular structure with a small entrance on one side, built of coarse vegetable fibers, grass blades,

vines, strips of banana leaves, moss and other plant material, and is situated from 1.7 m off the ground to high in a tree. Both sexes work on the construction of the nest, which takes 4 or 5 days to complete. Bananaquits also build nests used only for sleeping; these are built and occupied by a single individual, although sometimes a female will take over her mate's dormitory to use as a breeding nest.

In Panamá the usual clutch is two eggs. They are dull white spotted with brown; eggs of the Jamaican race, *flaveola*, average 17.2×12.8 mm. Incubation is performed solely by the female and requires 12 or 13 days. The nestlings are fed insects by both parents, and usually leave the nest at 17 to 19 days of age, although some that left at 15 days when Skutch disturbed their nest could fly fairly well. One female he watched began her second clutch 14 days after the fledging of the first. A pair that he watched on Barro Colorado Island, Canal Zone, (of the race *columbiana*) laid three sets of eggs between January and June of 1935 and raised at least the first two broods.

COEREBA FLAVEOLA CERINOCLUNIS Bangs

Coereba cerinoclunis Bangs, 1901, Proc. New England Zool. Club, 2, p. 52. (San Miguel [= El Rey] Island, Gulf of Panamá.)

Characters.—Rump dark yellow; back and wings very blackish, hardly contrasting with crown.

Measurements.—Males (10 from the Pearl Islands), wing 52.2-60.2 (57.5), tail 32.4-38.8 (35.6), culmen from base 12.8-14.8 (13.9), tarsus 14.9-17.4 (16.5) mm.

Females (10 from the Pearl Islands), wing 52.0-55.9 (53.6), tail 28.5-37.0 (31.7), culmen from base 12.5-13.7 (13.0, average of 9), tarsus 14.3-17.2 (16.0) mm.

Resident. Common in the Pearl Islands, where I have seen it on San José, Pedro Gonzalez, Contadora, Chaperá, Saboga, Rey (San Miguel), Santelmo, Cañas, Bayoneta, and the Isleta Málaga. I have found it in coastal mangroves, woodland, and forest. On Contadora it was the commonest small bird on the island. On January 24, 1960, I noted that on Isla del Rey the males were displaying, and the next day I collected some that were in breeding condition. On February 21, 1944, I found a partly constructed nest on San José. W. W. Brown, Jr., (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1905, p. 57) collected young in nestling plumage on Rey and Saboga islands from February 28 to March 16, 1904. Many of the adults he took in Febru-

ary and March were molting, while most of those collected in April had completed their molt.

Eisenmann (*in litt.*) noted this species on short visits to El Rey and Saboga islands on July 18 and 19, 1964. On Saboga several were singing a very high, thin *dzit*, *sítee-sítee-sítee-sítee*; the *i* in *sítee* was short, as in "sit."

COEREBA FLAVEOLA COLUMBIANA (Cabanis)

Certhiola columbiana Cabanis, 1865, Journ. f. Ornith., 13, p. 412. ("Bogotá," Colombia.)

Characters.—Rump bright yellow, with yellow areas more extensive than *mexicana*; back and wings dark, but slightly less so than in *C. f. cerinoclunis*.

A male taken at the Candelaria Hydrographic Station, in the Province of Panamá, March 7, 1961, had the iris wood brown; base of gonys and adjacent lower edge of mandibular rami dull wood brown; rest of bill black; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from Veraguas, Los Santos, Herrera, and the Canal Zone), wing 51.0-56.8 (53.8), tail 28.1-35.7 (31.5), culmen from base 12.1-14.0 (13.5), tarsus 14.9-18.4 (16.3) mm.

Females (10 from Veraguas, Herrera, the Canal Zone, and San Blas), wing 46.8-55.5 (50.4), tail 26.2-31.9 (29.0), culmen from base 11.8-13.7 (13.0), tarsus 14.4-16.6 (15.6) mm.

Resident. Common in lowlands and foothills from mainland Veraguas eastward into Colombia and Venezuela. Found in gardens, clearings, light woodland, and forest edges. Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 22) found it common about cultivated coconut groves and houses on the shores of Montijo Bay in Veraguas. Ridgely (1976, p. 287) calls it "absent or in very small numbers (possibly seasonal) in dry Pacific lowlands from eastern side of Azuero Peninsula to Pacific side of Canal Zone and Panamá city area." Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 49) lists nests found at Barro Colorado Island in the Canal Zone from November to April, and in August, suggesting that the Bananaquit breeds all through the year, or nearly so. Skutch (Pac. Coast Avif. no. 31, 1954, pp. 404-420) found eight nests on Barro Colorado Island between late December and early June. On January 26, 1957, I shot a juvenile barely grown at Mandinga, San Blas, and on March 5, 1959, I collected an immature at the mouth of the Río Paya, Darién.

DIGLOSSA BARITULA PLUMBEA Cabanis: Slaty Flower-piercer,
Mielero Picaflor

FIGURE 39

Diglossa plumbea Cabanis, 1860, Journ. f. Ornith., 8, p. 411. (Costa Rica.)

Diglossa plumbea veraguensis Griscom, 1927, Amer. Mus. Novit., no. 280, p. 16.
(Chitra (5000 ft.), Veraguas, Pacific slope of western Panamá.)

Small; lower mandible upturned and upper mandible hooked at tip; male with upper surface slaty blue gray and undersurface slate-gray; female olive-green on upper surface, lighter below.

Description.—Length 102-110 mm. Adult male, crown, sides of head, and nape bluish black; rest of upper surface bluish slate-gray; wings and tail black, with wing coverts tipped and outer web of remiges and rectrices edged bluish slate-gray; undersurface slate-gray, slightly lighter on abdomen; underwing coverts gray.

Adult female, side of head and entire upper surface olive-gray; wings and tail blackish, with wing coverts tipped and outer web of remiges and rectrices edged olive-gray; throat, breast, sides, and flanks deep grayish olive, faintly streaked with dark olive-buff; abdomen and undertail coverts dark olive-buff; underwing coverts whitish.

Immature, like female, but upper surface slightly grayer, undersurface paler, marked with pinkish buff.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 54.2-58.2 (56.2), tail 41.3-47.9 (43.2), culmen from base 9.2-11.0 (10.4), tarsus 15.6-17.9 (16.9) mm.

Females (10 from Chiriquí and Costa Rica), wing 50.5-54.9 (52.8), tail 38.1-42.5 (40.2), culmen from base 9.4-11.2 (10.4), tarsus 16.2-18.2 (17.5) mm.

Resident. Common and widespread in the highlands of western Chiriquí in shrubby areas and forest edges. Known also from Chitra, Veraguas. Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 555-556) collected it on the Volcán de Chiriquí between 1590 and 3150 m, and W. W. Brown, Jr. (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 63) took 3 specimens near Boquete between 1350 and 2100 m in March and April of 1901.

Diglossa baritula favors highlands where the flowers from which it takes nectar are abundant. It occurs from central Mexico through Central America to Peru, Bolivia, and northwestern Argentina. The populations of western Panamá and Costa Rica are distinctive in that the male's undersurface is gray rather than cinnamon; immatures, however, have some of the pinkish buff tones of the adult males of

other races. There seems no justification for the retention of a separate species, *D. plumbea*, for the isolated gray-breasted populations.

The female type specimen of *Diglossa baritula veraguensis* is not nearly so distinct as Griscom (Amer. Mus. Novit. no. 280, p. 16) made it out to be and could possibly be a missexed juvenile male, being very similar in appearance to an immature male from Irazú, Costa Rica, in the American Museum collections (102322). As far as the male plumage is concerned, a specimen from the Talamanca Cordillera (AMNH no. 811902) has the pileum as well demarcated as in *veraguensis*. The series of 5 specimens of *veraguensis* is quite inadequate for determining geographic differentiation in a form as variable as this and it is not recognized here. This population is known only from the vicinity of Chitra (1500 m), Veraguas, where Rex R. Benson collected 2 adult males, 2 immature males, and an adult female during January and February of 1926. The birds were breeding at the time of Benson's visit.

The most distinctive attribute of the genus *Diglossa* is the structure of the bill; the mandible is upturned and the premaxilla is hooked at the tip, which projects beyond the mandible. The flower-piercer inserts its sharp mandible into the corolla of tubular flowers while the

FIGURE 39.—Slaty Flower-piercer, Mielero Picaflor, *Diglossa baritula plumbea*, male.

hook of the premaxilla grasps the flower securely. The tongue is elongate, slender, and split for its entire length. The birds forage singly or in pairs, moving rapidly through their small territories and examining the same bushes repeatedly for fresh flowers. While flower-piercers always reach flowers from a perch, their insect food is usually taken in the air on short fly-catching sorties. On October 1, 1965, below Cerro Punta, Eisenmann (*in litt.*) saw 1 feeding at the scarlet flowers of an *Erythrina* tree; it was chased away by a Violet Sabrewing (*Campylopterus hemileucurus*).

Eisenmann reports a male singing at Cerro Punta, Chiriquí, on February 28, 1960, from a blackberry (*Rubus*) vine 2 m from the ground. The song was a fast, thin, squeaky, high twitter lasting about 2 seconds, and then repeated after a pause: *zweézee, zweézee, tzeedeéa, dzeedzée*. Other vocalizations include a "plaintive, high-pitched *chee chee chee chee chee chee*" (Skutch, Pacific Coast Avif. no. 31, 1954, p. 426), and a *tsip* note. Flower-piercers sing throughout their long breeding season.

Skutch (*op. cit.*) has studied the breeding biology of this race in Costa Rica, where the nesting season is tied to the abundance of nectar resources; he found flower-piercers nesting all through the year except in April, May, and June. A male that I took at Cerro Punta on February 28, 1955, was in near breeding condition, so perhaps the season here is different. I have no further information from Panamá. Skutch found that the nest is built entirely by the female. It is placed off the ground in tussocks of tall pasture grass or in a tree, as high as 3 m from the ground. The nest is a bulky, open cup made of moss, vegetable fibers, decaying leaves, and bits of papery bark; the lining is of finer fibers.

The clutch consists of two eggs that are light blue, finely speckled with brown. Four eggs varied from 16.7 to 17.5 mm in length and all were 12.7 in diameter. At one nest the incubation period was 14 days. The young, born blind and with a thin covering of down, are fed by both parents, who regurgitated to the nestlings what Skutch believed was mainly insect matter. At 11 days the young are fully feathered and at 13 days can fly just enough to leave the nest if it is disturbed; the usual departure time is probably at 16 days.

In western Chiriquí, Eisenmann has noticed occasional albinistic individuals with small white patches on the head; once (with N. G. Smith) he saw 1 that seemed entirely white except for a tinge of buff and black on the wings and tail.

Of 2 collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) at Cerro Punta, a male weighed 9.3 and a female weighed 9.8 g.

CONIROSTRUM LEUCOGENYS LEUCOGENYS (Lafresnaye):
White-eared Conebill, Mielero Piquiagudo

Dacnis leucogenys Lafresnaye, 1852, Rev. Mag. Zool. (2), 4, p. 470. ("Columbia" = Bogotá.)

Ateleodacnis leucogenys panamensis Griscom, 1927, Amer. Mus. Novit., no. 282, p. 9. (Cape Garachiné, eastern Panamá.)

Very small; male with black crown, white auriculars, rest of body blue-gray; female with upper surface blue-gray, undersurface dingy buff.

Description.—Length 80-83 mm. Adult male, lores and crown shining black; rest of upper surface dark bluish gray, sometimes tinged with blackish, with a few white feathers sometimes exposed on upper tail coverts; wing coverts black, tipped dark bluish gray; remiges black, with white at base of outer web of middle primaries and all outer webs edged with blue-gray; rectrices black, edged blue-gray; underside of orbital area and auriculars white; throat and upper breast much paler gray, becoming lighter on rest of undersurface and white on center of abdomen; undertail coverts rufous chestnut; underwing coverts dark gray and white.

Adult female, entire upper surface similar to male, but duller (no black crown) and often tinged with olive; orbital ring white; undersurface and ear coverts tinged with buffy yellow.

Immature female, similar to adult, but back much more olive; undersurface much yellower; sides grayish.

A male collected at El Real, Darién, on January 24, 1964, had the iris dark brown; cutting edge of maxilla and mandible except tip, neutral gray; rest of maxilla and tip of mandible dull black; tarsus and toes dusky neutral gray; claws black.

Measurements.—Males (6 from Darién), wing 44.2-51.0 (47.5), tail 30.8-33.3 (31.8), culmen from base 9.5-11.7 (10.7), tarsus 13.0-14.3 (13.9) mm.

Females (6 from Darién), wing 44.5-48.8 (46.0), tail 28.4-35.3 (31.7), culmen from base 9.3-10.7 (10.1), tarsus 12.7-14.8 (13.8) mm.

Resident. Fairly common in the lowlands in eastern Province of Panamá from the Bayano River Valley at Majé eastward, and in Darién. It is also found in northern Colombia and northeastern Venezuela. The race *panamensis* named by Griscom from Darién, with a range extending into northwestern Colombia, is not separable in the more extensive series now available (Wetmore, Wilson Bull., 1968, p. 326). Another race is found in extreme western Venezuela.

The conebill inhabits forests and woodland borders where it usually feeds high in the tree tops. Both Griscom (Amer. Mus. Novit. no. 282, 1927, p. 9) and I found them in the tops of giant cuipo (*Cavanillesia*) trees. Eisenmann (*in litt.*) has observed it in the Bayano River Valley (Altos de Majé), eastern Province of Panamá, and at Santa Fé, Darién; the birds were usually in pairs in medium to high elevations of trees, but not always on cuipo trees. Ridgely (*in litt.*) has seen this species only once, a pair in a patch of remnant forest dominated by cuipos, along the Tuira River below Boca de Cupé, Darién. The birds were feeding on cuipo flowers and new leaves. The White-eared Conebill appears to be confined to this type of deciduous forest, as it seems to be absent from the more humid forest (without cuipos) upriver from Boca de Cupé. The two times I have seen this species—at the mouth of the Río Tuquesa, Darién, on April 3, 1959, and at El Real, Darién, on January 24, 1964—it has been in flocks of 5 or 6 that searched the flowers heads in tree crowns. They are also seen in mixed flocks with orioles and tanagers (Ridgely, 1976, p. 288). So far as I know, nothing has been published on the breeding biology of this species.

CYANERPES LUCIDUS ISTHMICUS Bangs: Shining Honeycreeper,
Mielero Resplandeciente

Cyanerpes lucidus isthmicus Bangs, Auk, 1917, p. 306. (Paso Real, Costa Rica.)

Very small; long, decurved bill; male with black lores, throat, chest, wings, and tail black, rest of body (including sides of head) blue; legs yellow; female mostly bright yellowish green, side of face and breast streaked bright blue, legs green.

Description.—Length 95-101 mm. Adult male, lores, throat, chest, wings, tail, and thighs black; rest of body bright dark blue, lighter on head.

Adult female, crown and auriculars dull grayish blue; rest of upper surface bright green, lighter on rump and upper tail coverts; throat, center of belly, and undertail coverts buff-yellow; thin stripe on side of throat blue, flecked with white; breast finely striped blue and buff-yellow; sides and flanks bright green; underwing coverts buff-yellow.

A male collected at the Peluca Hydrographic Station, Panamá, on February 19, 1961, had the iris dark brown; bill black; tarsus and toes bright yellow; claws black. A female taken at Armila, San Blas, on February 28, 1963, had the tarsus and toes bright yellowish green. On

another female, taken February 10, 1958, at Almirante, Bocas del Toro, the tarsi and upper surface of the toes were light green, with a narrow yellow line down the back of the tarsus; the undersurface of the toes was yellow.

Measurements.—Males (10 from Panamá), wing 50.0-55.6 (53.2), tail 25.5-29.9 (27.6), culmen from base 16.2-20.4 (18.3), tarsus 12.7-14.5 (13.7) mm.

Females (10 from Panamá and Costa Rica), wing 51.5-56.0 (53.5), tail 24.2-31.4 (27.8), culmen from base 16.0-18.8 (17.9), tarsus 12.7-15.4 (14.4) mm.

Resident. Common in the foothills of both slopes and not infrequently in the humid lowlands, especially of the Caribbean slope and also in eastern Province of Panamá. Ridgely (*in litt.*) saw a pair near Contractor's Hill, on the Pacific slope of the Canal Zone, on July 8, 1975. On the Volcán de Chiriquí, Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 556) collected it between 1560 and 1590 m, and on the Boquete Trail, Bocas del Toro. Kennard (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 462) took a male at 900 m on March 17, 1926. Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 25) found it uncommon in rain forest between 300 and 900 m on the western side of the Azuero Peninsula. I have found this honeycreeper at Almirante, Bocas del Toro; at Tigre (475 m), at the head of the Río Guabal in Coclé; in the Province of Panamá at the Peluca Hydrographic Station, Cerro Azul (600 m), and Cerro Chucantí (360 m) in the Serranía de Majé; and at Armila, San Blas. In Darién it has been collected at Cana, Tacarcuna, and Mt. Sapo (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mon. no. 6, 1944, p. 41). Beyond Panamá, this race is found in extreme north-western Colombia and in Costa Rica. The range of the nominate race extends north to southern Mexico.

The Shining Honeycreeper usually feeds high in forest trees, where it takes nectar from flowers, seeds, and berries, and picks insects off flowers, vines, and branches. Skutch (Publ. Nutt. Orn. Club, no. 10, 1972, pp. 164-172), who has observed this species in Costa Rica, noted that it seems especially fond of arils, the fleshy or oily outer coats of the seeds of many trees. This species is often a member of mixed species flocks. Moynihan (Smiths. Misc. Coll., vol. 143, no. 7, 1962, pp. 56-57) noted that on Barro Colorado Island, Canal Zone, where he found them common at times, Shining Honeycreepers more often joined flocks composed mainly of other honeycreepers rather than those dominated by tanagers; the only species that provoked unusually strong re-

actions was the congeneric Red-legged Honeycreeper (*C. cyaneus*). When not in mixed flocks, Shining Honeycreepers occur alone, in pairs, or in small family groups, but not in large groups of conspecifics. Beehler (Wilson Bull., 1980, pp. 513-519) observed flocks comprising these 2 species and *Dacnis cayana* foraging in a flowering tree, *Luehea seemanii* (Tiliaceae), on the Pipeline Road, Canal Zone, January 12-15, 1978: there was very little inter-individual aggression during the 4 days that all 3 species concentrated in a small portion of the tree. Besides a few aggressive metallic clicking or ticking notes the only vocalization Skutch ever heard was a repetition of a single, slight note uttered once per second for 15 minutes by a male perched on a dead twig high in a tree. Eisenmann (*in litt.*) has heard a high, thin *tzit*, a thin, drier *tsip*, and a slightly rattling *tsrrrp*.

At Almirante, I saw a Shining Honeycreeper carrying nesting material into a mass of epiphytes in a tree over the Western River on January 28, 1958, but I could not locate the nest. In Costa Rica, Skutch has found parents feeding young as late as October, suggesting a long nesting season. A nest that Skutch found on June 13, 1970, was situated 7 m from the ground in the terminal twigs of a tall timber bamboo. The nest was a shallow cup attached by its rim to thin horizontal twigs; it was made of epiphytic root fibers so thinly woven that the eggs and young later could be seen through the bottom. The two eggs, which could not be reached for examination, were laid on June 17 and 18. Both the nest construction and incubation of the eggs were performed entirely by the female, although the male assisted in feeding the young, which hatched from the eggs on June 30 or July 1, after an incubation period of 12 or 13 days. When the young were 8 days old, Skutch observed that they were being fed primarily insects, supplemented by seeds of *Clusia*, a large genus of mostly epiphytic trees and shrubs. At 13 days, *Clusia* seeds were the leading element in their diet, followed by insects and dark berries. On this day 1 nestling made a few exploratory flights and left the nest entirely by the end of the afternoon; the second nestling departed the following day.

CYANERPES CAERULEUS CHOCOANUS Hellmayr: Purple
Honeycreeper, Mielero Purpúreo

Cyanerpes caerulea chocoana Hellmayr, 1920, Archiv. f. Naturg., ser. A, 85(10), p. 14 (footnote). (São Joaquim del Chocó, W. Colombia.)

Very small; bill long, decurved; male with black lores, eye stripe, throat, wings, tail, and thighs, rest of body violaceous blue; female with

upper surface green, throat deep buff, with thin blue stripe on side, rest of undersurface streaked green and yellowish.

Description.—Length 98-102 mm. Adult male, lores to patch just behind eye, throat, wings, tail, and thighs black; forecrown and side of throat light violaceous blue; rest of body darker.

Female, entire upper surface, including wing coverts, bright shining green; remiges and rectrices black, with outer webs edged bright green; lores and orbital ring ochraceous-tawny; throat deep buff; narrow line on side of throat turquoise; breast, sides, and flanks finely streaked green, turquoise, and pale yellow; center of abdomen, undertail coverts, and bend of wing pale yellow; underwing coverts whitish.

A male collected April 8, 1947, on the Río Jaqué, Darién, had the tarsus and toes primuline yellow, claws black.

Measurements.—Males (10 from Darién and Colombia), wing 51.5-57.6 (54.0), tail 27.0-32.4 (28.9, average of 9), culmen from base 16.7-20.4 (19.0), tarsus 12.7-14.5 (13.7) mm.

Females (10 from Darién and Colombia), wing 50.5-53.5 (52.1), tail 24.3-26.7 (26.1), culmen from base 16.1-19.1 (17.3), tarsus 12.9-16.8 (14.0) mm.

Resident. Known only from the lowlands and lower foothills of eastern Darién. In April 1947, Watson M. Perrygo and I collected 9 at localities on the upper Río Jaqué—at Las Peñitas, Chicao, and at the mouth of the Río Imamadó. On February 23, 1971, Pedro Galindo took a male at 798 m on Cerro Quía and on March 15 of that year he collected a female there at 720 m. When I saw Purple Honeycreepers, they were always in groups feeding about epiphytes in the tops of the tallest trees in heavy forest. This race is also found in western Colombia and western Ecuador; the range of the species extends to northern Bolivia and Amazonian Brazil. In extreme northwestern Chocó, Colombia, on the Río Juradó, it is sympatric with the Shining Honeycreeper (Haffer, Bonner Zool. Mon. 7, 1975, p. 157).

French (Birds of Trinidad, 1973, p. 397) reports that in Trinidad it feeds on insects and spiders, gleaned from leaves and twigs, and on nectar and fruit juices. Nests in Trinidad are known from April and June; one was a small cup of moss lined with dark rootlets set in the hollow of a small stump 2 m above the ground. Two eggs from Brazil were white, spotted with dark brown; measurements averaged 17.5×13.0 mm. In Trinidad, the male helps to feed the young. At the Philadelphia Zoo, where this species bred in 1970 and 1971, the female did all the incubation; the nest and eggs matched earlier descriptions (Bond *in litt.* to Eisenmann).

**CYANERPES CYANEUS CARNEIPES (Sclater): Red-legged
Honeycreeper, Mielero Azul**

Caereba carneipes P. L. Sclater, 1859, Proc. Zool. Soc. London, 27, p. 376. (Playa Vicente, Oaxaca, Mexico.)

Small; bill long, slightly decurved; male with lores, upper back, wings, and tail black, crown bright light blue, rest of body bluish violet; female with entire upper surface dull green, undersurface olive-green, indistinctly streaked with yellowish white.

Description.—Length 109-119 mm. Adult male, lores and orbital region, sides of breast, upper back in "V" shaped wedge, tail, thighs, undertail coverts and exposed surface of wings, black; center of crown shining turquoise blue; rest of body bluish violet; edge of inner web of remiges and underwing coverts bright yellow.

Adult male in "eclipse" plumage, June to September, like female, but with wings and tail black.

Adult female, narrow superciliary and broken orbital ring whitish; lores and small area behind eye blackish; upper surface olive green; wings blackish, with coverts, secondaries, and primaries edged green, tail green; throat whitish, tinged yellow; rest of undersurface olive-green indistinctly streaked with pale yellow; edge of inner web of remiges and underwing coverts bright yellow.

Immature, upper surface dingy light olive-green; undersurface grayish buff.

A male collected at La Jagua, Panamá, on March 23, 1961, had the iris very dark brown; bill black; tarsus and toes orange-red; claws black; inside of mouth black except for reddish basal half of tongue. A female taken on Isla Cébaco, Veraguas, on January 14, 1965, had the iris dark reddish brown; bill dull black; tarsus and toes dull vinous red; claws black. A juvenile collected at La Jagua on March 21, 1961, had the iris dark brown; bill fuscous-black; tarsus and toes dark wood brown, claws black.

Measurements.—Males (10 from Panamá), wing 60.7-65.4 (63.0), tail 35.2-42.0 (38.7), culmen from base 17.0-19.4 (18.4), tarsus 13.3-15.3 (14.1) mm.

Females (10 from Panamá), wing 59.8-62.5 (61.2), tail 32.0-39.4 (36.3), culmen from base 18.1-21.0 (19.8), tarsus 13.7-15.6 (14.7) mm.

Resident. Very common, but in some areas local, in lowlands of both slopes, and slightly less common in the foothills. It ranges to some extent along clearings up into the mountains. Ridgely (*in litt.*) has not found it in western Bocas del Toro, along the Bayano River in

eastern Province of Panamá, or in the Tuira Valley of Darién. Mönniche (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 556) collected it on the Volcán de Chiriquí at 1590 m, and Brown (Bangs, *Proc. New England Zool. Club*, vol. 3, 1902, p. 63) collected it at Boquete, Chiriquí, between 900 and 1500 m. On the western side of the Azuero Peninsula, Aldrich and Bole (*Scient. Publ. Cleveland Mus. Nat. Hist.*, vol. 7, 1937, p. 25) found it common in rain forest between 300 and 900 m. This is the only honeycreeper besides the Bananaquit that is found on Isla Coiba and the Pearl Islands, where it is very common.

The Red-legged Honeycreeper is common in residential areas, where it frequently comes to feeding trays for fruit. It is, however, no less abundant in the wild, where it inhabits clearings, shrubby areas, second-growth woodland, and forest borders. Like other species of *Cyanerpes*, this honeycreeper probes blossoms for their nectar and the insects and spiders that may be at their center. It also sucks juices from fruit and eats small berries and pulpy seeds. At Cerro Chame, Province of Panamá, I saw at least 50 gathered in a berry tree on March 26, 1955. Eisenmann (*in litt.*) has observed this species feeding on the small, greenish fruit of *Miconia argentea*. Ridgely on Isla Coiba saw them come to the ground to feed on fallen fruit of *Clusia*. At times, however, insects may make up the bulk of their diet; E. A. Goldman collected 2 honeycreepers in the Canal Zone in 1911 and 1912 that each had full stomachs: 1 contained remains of three ichneumon flies 60% and bits of two ants 40%; the other held the elytron of a curculionid near *Centrimis* 6%, jaws and bits of skin of a caterpillar 35%, spider remains 49%, 9 seeds of *Miconia* sp. 10%. The weights of 5 collected by Strauch (*Bull. Brit. Orn. Club*, 1977, p. 64) ranged from 13.0 to 14.7 g.

The Red-legged Honeycreeper is often seen in flocks, either of its own species or with other honeycreepers and tanagers. At Barro Colorado Island, Canal Zone, Moynihan (*Smiths. Misc. Coll.*, vol. 143, no. 7, 1962, pp. 58-59) found that they tended to ignore most of their associates in mixed flocks and are more often joined by other species than they themselves join mixed groups. Migrant warblers seem particularly attracted to flocks containing Red-legged Honeycreepers. Male honeycreepers are more gregarious with both intra- and interspecifics than are females. When they are not examining flowers or foliage for food, I have often seen honeycreepers of this species perched for several minutes at a time on exposed branches at the tops of trees where they seem to be enjoying the sun or the breeze.

Red-legged Honeycreepers are noisier than their congeners; when

in groups they regularly give a thin, nasal *chaa*. The male also has a poorly developed dawn song, a series of weak, nasal *tsips* and a more rarely delivered rapid, varied song audible only for a few yards (Skutch, Condor, 1962, p. 107). When singing, the bill is usually pointed straight up (Smith, Aviculture, vol. 6, ser. 3, no. 1, 1936, pp. 1-2). Eisenmann writes that the only vocalizations he has heard have been variations of thin, reedy, or hissing notes, *zzee* or *tsit*, such as *tsst*, *tsst*, *dži-dži-dži-dzee*, and a more nasal *dzey*. Once at Barro Colorado Island he saw an adult male give a loud, clear, metallic monosyllabic note while perched outside a cage containing males and females; 1 of the caged males also uttered the metallic note.

Unlike any other resident Panamanian passerine bird that I know of, the adult male Red-legged Honeycreeper molts into an "eclipse" plumage after its breeding season. This plumage resembles the female's except for retaining the black remiges and rectrices. Skutch (*op. cit.*, p. 110) found that in Costa Rica this molt begins in June and by October males have reacquired their blue plumage; variations in timing from year to year seem to be correlated with the amount of rainfall in the first half of the year—when the dry season lasts longer the molt is delayed.

The breeding season in Panamá starts some time before March, since on March 14, 1949, at Chico, Panamá, I found a female feeding a juvenile recently from the nest. However, other females I have collected at that time were only in near-breeding condition; two such examples are a female taken at La Campana, Panamá, on March 4, 1951, and 1 from Chilar, Colón, on March 11, 1952. Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 50) records a juvenile being fed on Barro Colorado Island April 6, 1937, and E. A. Goldman's notes refer to a fledged young bird at Gatún, Canal Zone, on May 16, 1911.

Skutch (Pac. Coast Avif. no. 31, 1954, pp. 387-403) has found the nest of this species in Costa Rica. It is placed from 3 to 15 m off the ground in trees or bushes. The female, who builds the nest alone, begins by wrapping cobweb around the base of the diverging twigs that will support the nest. A cup made of fine rootlets from epiphytes and grass stems is placed on this support. One nest measured 6 cm in diameter and 3 cm in height; the internal diameter was 5 cm and the depth was 2.5 cm. During construction the male follows closely behind his mate, but does not otherwise assist.

The clutch is two eggs. They are white, with little gloss, and are speckled with bright brown, most heavily in a wreath around the large end. Two measured 19.1×13.5 mm. The incubation period is 12 or

13 days and the young are hatched blind, with sparse gray down, and red mouth linings. They are fed by both parents, although primarily by the female, on a diet of fruit and insects. At 11 days the nestlings are nearly fully feathered and at 14 days they leave the nest. In Costa Rica, the nesting season seems to end in June; there is no evidence of a second brood.

CHLOROPHANES SPIZA ARGUTA Bangs and Barbour: Green
Honeycreeper, Mielero Verdon

Chlorophanes spiza arguta Bangs and Barbour, 1922, Bull. Mus. Comp. Zool., 65, p. 225. (Divalá, western Panamá.)

Rather small; bill fairly long, slightly decurved; male with crown and sides of head black, rest of body glossy bluish green; female, glossy duller green, without black cap.

Description.—Length 118-131 mm. Adult male, crown, sides of head, and chin black; rest of body glossy bluish green; remiges black, edged bluish green; central pair of rectrices bluish green, others black, edged bluish green; underwing coverts blackish.

Female, body and wing coverts glossy yellowish green, slightly lighter and duller on undersurface; remiges dusky blackish, with outer web edged green; central rectrices green, others dusky blackish edged green.

Immature, like female, but duller.

A male collected February 21, 1961, at the head of the Río Guabal, Coclé, had the iris light reddish brown; lower part of side of maxilla to near top and mandible bright honey yellow; rest of bill black; tarsus and toes dull greenish gray; claws dark neutral gray; pads yellowish; a line down back of tarsus more green. A female taken at the same locality on March 1, 1961, had the iris bright reddish brown; maxilla black; base of gonys, an obscure wash on rami, and tip of mandible dusky neutral gray, rest dull honey yellow; tarsus and toes dark neutral gray; claws dull black; pads honey yellow.

Measurements.—Males (10 from Panamá), wing 64.2-71.3 (68.8), tail 45.5-48.9 (47.3), culmen from base 15.5-17.8 (16.3), tarsus 17.3-18.5 (17.8) mm.

Females (10 from Panamá), wing 62.5-67.5 (65.2), tail 38.3-47.9 (44.8), culmen from base 15.9-18.3 (17.0), tarsus 16.3-18.8 (17.7) mm.

Resident. Fairly common in more humid lowlands and foothills on both slopes, although less numerous and local on the Pacific slope

west of the Canal Zone (Ridgely, 1976, p. 289) and in Darién (Ridgely *in litt.*). It is absent from the semi-arid lowlands of Coclé, southern Azuero Peninsula, and western Province of Panamá. This race is found from Honduras south to northwestern Colombia; the species ranges from southern Mexico to Bolivia and eastern Brazil. Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 25) found it common in humid forest on the western side of the Azuero Peninsula between 300 and 900 m. I have encountered it as high as 1230 m, at Santa Clara, Chiriquí, on March 18, 1954.

This race is doubtfully distinct from *guatemalensis* Salvin, 1861, of Mexico, Guatemala, and Honduras. The supposedly larger bill of the northern bird is probably at best an average difference, but the material of *guatemalensis* at hand is too scanty to determine more than the fact that some overlap does indeed exist.

The Green Honeycreeper inhabits forest, second-growth woodland, and borders, where it usually stays rather high in tall trees. It sometimes joins mixed flocks, more often dominated by tanagers than by other honeycreepers (Moynihan, Smiths. Misc. Coll., vol. 143, no. 7, 1962, p. 53), and rarely are more than 2 Green Honeycreepers part of a single flock. At times they aggressively defend a feeding area: Beehler (Wilson Bull., 1980, p. 516) observed a pair on Barro Colorado Island, Canal Zone, during January 12-15, 1978, that for 4 days defended a section of a flowering *Luehea seemanii* (Tiliaceae) from a flock of *Dacnis cayana*, *Cyanerpes cyaneus*, and *C. lucidus* that was foraging in another part of the tree. When defending a feeding area or attacking another bird, Green Honeycreepers may be noisy, but their vocalizations are not varied and nothing like a song has been recorded; Eisenmann notes a "*pst, pst*; also a short nasal *uhr*, given by the male" (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 50).

Stomachs examined by E. A. Goldman from birds collected at Cana, Darién, indicate that their diet is rather evenly balanced between animal and vegetable matter: 1 contained bits of two species of *Aphodius* 50%, 2 or more short-tongued bees 25%, fragments of small seeds of *Miconia* sp. 25%; the other contained legs of a dipteran 2%, fragments of a hymenopteran (Ichneumonid) 23%, 4 seeds of Ehretiaceae similar to *Bourreria* 15%, 10 other undetermined seeds and fragments of drupes 60%. The stomach of a female in the AMNH collection taken by E. S. Morton on Cerro Azul, eastern Province of Panamá, on February 12, 1971, contained fruit and seeds of *Lasiacis*, a grass that produces fleshy-covered, berrylike seeds. Green Honeycreepers probably

also take nectar from flowers and juice from fruits they pierce. Three collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed from 17.7 to 19.6 g.

The only information I have on the nesting habits of this species in Panamá is Eisenmann's (*op. cit.*, p. 50) note of a female gathering nesting material on July 7, 1950, on Barro Colorado Island, and observations of fledglings being fed on June 11, 1973, and July 18, 1972, at Barro Colorado (Willis and Eisenmann, *Smiths. Cont. Zool.*, 291, 1979, p. 26).—Skutch (Condor, 1962, pp. 92-98), in Costa Rica, has seen nests being built as early as April 19 and young being fed as late as early November. The four nests Skutch found were placed among foliage in trees from 3 to 12 m from the ground; the female does all the building, although she is closely followed by her mate. The nest is a shallow, open cup with an outer layer of leaves, sometimes bound by spider webs, that makes the nest look like a cluster of dead leaves; inner layers are of smaller leaves, rachides, tendrils, and other vegetable fibers. One nest measured 8 cm in diameter by 5 cm in height; the interior was 5 cm in diameter and 2 cm deep.

The two eggs that form a clutch are white, with a wreath of brown spots on the large end. The incubation period is 13 days. At hatching the young have red mouth linings. Skutch was not able to follow the activities at any nest until the time of fledging, but he saw that the young are fed by both parents, although possibly more by the female.

DACNIS CAYANA (Linnaeus): Blue Dacnis, Mielero Turquesa

Motacilla cayana Linnaeus, 1766, *Syst. Nat.*, ed. 12, 1, p. 336. (Cayenne.)

Small; male bright blue with black lores, throat, upper back, wings, and tail; female bright green with head greenish blue. Bill rather short; legs brown.

Description.—Length 105-121 mm. Adult male, lores, orbital ring, and area just behind eye, and upper back, black; throat dull blackish; rest of body light turquoise-blue (*D. c. callaina*) or bright ultramarine-blue (*D. c. ultramarina*), slightly lighter on undersurface; wings and tail black, with feathers edged blue; wing coverts dark gray.

Adult female, head greenish blue; throat light greenish blue to bluish gray; rest of body bright yellowish grass green, slightly darker on upper back; wings black, with lesser coverts darker greenish blue, rest of coverts and remiges edged green; tail blackish with central pair edged green; underwing coverts light gray.

The Blue Dacnis inhabits second growth and forest borders chiefly

in the fairly humid lowlands of both slopes. It ranges into hill country on Cerro Campana and Cerro Azul in the Province of Panamá and on Cerro Quía, Darién, but there seem to be no Panamá records above 1000 m or from the eastern Azuero Peninsula (Eisenmann *in litt.*). The birds of Chiriquí and Veraguas are of the race *callaina*, also found on the Pacific side of Costa Rica; those found in Panamá on the Caribbean slope and on the Pacific slope from Coclé eastward are of the race *ultramarina*, which occurs from eastern Nicaragua and extreme southeastern Honduras (Ridgely *in litt.*) and eastern Costa Rica to northwestern Colombia. Other races are found south to Bolivia, northeastern Argentina, and southern Brazil.

The Blue Dacnis forages for insects amid the foliage very much like a warbler. It eats berries and the pulpy arils that encase certain tree seeds and also probes inside flowers, either for nectar or the insects to be found there. It is often found in mixed honeycreeper flocks (Moynihan, Smiths. Misc. Coll., vol. 143, no. 7, 1962, p. 60). Once at La Campana, Province of Panamá, I saw 1 in the upper branches of a tall leafless tree, where it stood over some excrescence 12 or 14 cm long, apparently the housing of some insect; the bird was pecking strongly at this as a nuthatch might, rising to full height and delivering heavy and repeated blows.

This dacnis is quite unvocal. Skutch, who has had them come to his feeding tray in Costa Rica, has heard only an occasional "slight, weak monosyllable" and a few lisping and high notes (Condor, 1962, p. 99). Eisenmann mentions a *tseet* note.

Eisenmann (*in litt.*) saw in the Canal Zone a male perched quietly for 10 minutes on a bare twig at the top of a tall tree, and, on another occasion (March 7, 1974) a male so perched on a leafless tree moving its head from side to side with the bill open—a display he never observed before or since.

DACNIS CAYANA CALLAINA Bangs

Dacnis cayana callaina Bangs, 1905, Proc. Biol. Soc. Washington, 18, p. 154. (Divalá, Chiriquí, Panamá.)

Characters.—Males, bright cerulean or turquoise; female, throat tinged blue.

A male collected at Puerto Armuelles, Chiriquí, on March 9, 1966, had the iris rather dark red; base of mandible dull brown; rest of bill black; tarsus brown; toes dusky brown, claws dull black. A female collected there the same day had the tip of bill black; base of maxilla

fuscous; base of mandible dull grayish brown; paler brown on lower surface of rami; tarsus light brown; toes dark brown; claws fuscous.

Measurements.—Males (10 from Chiriquí), wing 58.5-64.1 (61.8), tail 39.5-53.9 (41.4), culmen from base 12.9-14.0 (13.4), tarsus 13.2-16.1 (15.0) mm.

Females (5 from Chiriquí and Costa Rica), wing 59.7-63.0 (61.8), tail 39.5-43.9 (41.4), culmen from base 12.9-14.0 (13.4), tarsus 13.2-16.7 (15.5) mm.

Resident. Fairly common in lowlands and foothills of Chiriquí and Veraguas. I have collected it at Puerto Armuelles in Chiriquí and at Soná in Veraguas. The American Museum has specimens from Chiriquí taken at Bogava [=Bugaba] and Boqueron. A specimen in that museum labeled from Coiba Island, off Veraguas, approaches *ultramarina* (*fide* Eisenmann). It inhabits forest borders and second-growth woodland.

Skutch (Condor, 1962, pp. 98-104) has observed the breeding behavior of this race in Costa Rica. Two nests that he found were constructed in mid-May. The work was done entirely by the female, although the male often escorted her. The nests were placed amid leaves in thin branches of trees 6 to 8 m from the ground. The nest Skutch examined was a deep cup suspended from two twigs. From top to bottom it measured 8 cm and its outside diameter was 6 by 5 cm. The interior was 2 by 3 cm in diameter and less than 2.5 cm in depth. The suspending structure of the nest was made of well-twisted bast fibers and rachides of a *Mimosa*; the interior was of fine bast fibers and soft seed down.

Two eggs formed the clutch in the one nest that was not deserted. They were white or whitish with dark markings. Only one of the eggs hatched and, curiously, this young bird was attended by a female and 2 males; Skutch believed the second male was an unmated helper. All 3 birds brought food to the young one; all the items Skutch could identify were berries and arils. At 12 days the nestling fluttered down from the nest. The breeding season in Costa Rica is evidently long, since Skutch has seen young being fed by their parents in early November.

DACNIS CAYANA ULTRAMARINA Lawrence

Dacnis ultramarina Lawrence, 1864, Proc. Acad. Nat. Sci. Philadelphia, p. 106. (Lion Hill, Panamá Railroad, Panamá.)

Characters.—Male bright ultramarine-blue; female, throat gray.

A male collected at Juan Mina, Canal Zone, on January 16, 1961, had

the maxilla reddish brown; opercula and basal half of mandible light wood brown; rest of bill dull black; tarsus and toes Verona brown; claws mouse brown. A female taken at the head of the Río Guabal, Coclé, on March 2, 1962, had the iris reddish brown; maxilla and tip of mandible fuscous-black; base of mandible dull brown; gape dull red; tarsus and toes warm brown; claws black.

Measurements.—Males (10 from Panamá), wing 61.6-66.0 (63.5), tail 37.6-43.3 (41.4), culmen from base 12.5-14.7 (13.7), tarsus 14.4-16.8 (15.8) mm.

Females (10 from Panamá), wing 58.0-62.7 (60.7), tail 38.6-42.3 (40.8), culmen from base 13.1-14.4 (13.9), tarsus 15.2-16.1 (15.6) mm.

Resident. Common on the entire Caribbean slope and on the Pacific slope eastward from Coclé, where I have collected it at the head of the Río Guabal. Less numerous in Darién and the drier Pacific lowlands west of the Canal Zone. It occurs in foothills, up to 900 m (Ridgely, 1976, p. 290). It inhabits forest borders and second-growth woodland, where it forages at all heights. Two males that I collected at the mouth of the Río Paya, Darién, on April 2, 1959, had the testes fully developed. The only other information I have on the breeding of this race is Eisenmann's notation of 2 juveniles being fed on July 28, 1947, on Barro Colorado Island, Canal Zone (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 49). Five collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 64) weighed from 13.1 to 14.5 g; a male he collected in January was in breeding condition.

Eisenmann reports that although often seen with wandering bands of honeycreepers and tanagers, it is very frequently observed in pairs.

On July 9, 1968, Ridgely (*in litt.*) found a nest in the Navy Pipeline area. It was about 13 m up in a tree and contained 3 young. The nest was a neat cup made of plant fibers and supported from below. Only the female was seen to feed the nestlings. At Barro Colorado Island young have been seen being fed in June 11, 1973, and October 8, 1972 (Willis and Eisenmann, Smiths. Contr. Zool. 291, 1979, p. 26).

DACNIS VIGUIERI Salvin and Godman: Viridian Dacnis,
Mielero Esmeraldino

Dacnis viguieri Salvin and Godman (ex Oustalet MS), 1883, Biol. Centr.-Amer., Aves, 1, p. 246, pl. 15A, fig. 3. (Isthmus of Panamá, on the shores of the Gulf of Darién.)

Small; male mostly bright turquoise-green with black triangle on upper back, black primaries and rectrices, and green on wing coverts and

secondaries; female with upper surface light greenish olive and under-surface greenish to olive-buff.

Description.—Length 95-105 mm. Adult male, lores black; triangular patch on upper back black; rest of upper surface shining turquoise-green; undersurface slightly lighter; outer wing coverts and primaries black; inner coverts green; inner primaries, and secondaries increasingly edged green outer web; inner web or remiges edged white; tail black.

Adult female, lores blackish; upper surface yellowish olive tinged with blue on upper tail coverts; remiges and rectrices dusky edged with greenish; wing coverts and edging on secondaries slightly brighter green than back; undersurface more or less dull light olive, paler, more yellowish on throat, deeper, more greenish olive on sides and flanks, and buffier on center of abdomen and undertail coverts.

Measurements.—Males (6 from Darién and Colombia), wing 57.5-59.5 (58.6), tail 33.1-38.9 (36.6), culmen from base 11.9-14.7 (13.7), tarsus 13.7-15.2 (14.4, average of 5) mm.

Females (10 from Darién and Colombia), wing 55.5-60.5 (57.3), tail 31.5-39.2 (37.0, average of 9), culmen from base 12.2-14.2 (13.6), tarsus 14.1-15.7 (14.9) mm.

Resident. Known only from lowland forest in southeastern coastal Darién and adjacent northwestern Colombia, both on the Pacific slope and the Gulf of Urubá, Chocó. The type was brought to Oustalet at the Paris Museum in 1877 by Dr. C. Viguier (Salvin and Godman, *Biol. Centr.-Amer., Aves*, vol. 1, p. 246) with "coast Gulf of Darién" as the locality. In April 1946, Watson Perrygo and I collected a male and female in the forest at El Brazo, near Jaqué. These are the only other specimens I know of from Panamá. There is a sight report of a male seen near El Real, Darién, on January 13, 1978, by Howard P. Brokaw and Nicholas Brokaw. Nothing is recorded as to the life history of this species.

DACNIS VENUSTA Lawrence: **Scarlet-thighed Dacnis**,
Mielero Patirrojo

FIGURE 40

Small; male black with crown, nape, lower back and rump, and sides of head blue; thighs scarlet; female olive on upper surface, tinged turquoise-green, especially on rump, undersurface buffy.

Description.—Length 112-116 mm. Adult male, forehead, lores, orbital region, postocular mark, center of throat, and rest of undersurface blackish to greenish black; longer upper tail coverts, wings, and tail

black; rest of crown, nape, sides of head and neck, and upper surface rich turquoise-blue; thighs scarlet.

Adult female, upper surface dull, dark greenish olive, tinged with turquoise-green, especially on lower back and rump (where bluer), scapulars and sides of head turquoise-green; wings and tail dusky, with feathers narrowly edged turquoise-green; throat and breast light buffy grayish, becoming buffy yellowish on belly and buff on vent and undertail coverts; thighs tinged with red; underwing coverts gray.

Juvenile, like female, but duller and grayer above with little or no blue tones.

FIGURE 40.—Scarlet-thighed Dacnis, Mielero Patirrojo, *Dacnis venusta*, male.

The Scarlet-thighed Dacnis is found in the humid foothills on both slopes of Panamá and in the humid lowlands, especially on the Caribbean slope and on the Pacific slope of eastern Panamá, although breeding in the western lowlands is not certain (Ridgely, 1976, p. 290). Two races occur in Panamá. The species ranges from Costa Rica to northwestern Ecuador. It inhabits forests and forest borders, where it feeds mainly on berries (Skutch, Condor, 1962, pp. 104-105). At El Volcán, Chiriquí, I saw several feeding on the pendant flower stems of the guarumo tree (*Pourouma aspera*) on March 15, 1965. One that I collected from the group had eaten figs. Of 5 taken by E. A. Goldman at Cana, Darién, in June 1912, none contained more than 30 percent

animal matter. On Barro Colorado Island, Canal Zone, Moynihan (Smiths. Misc. Coll., vol. 143, no. 7, 1962, p. 6) found that they are not very strongly attracted to mixed species flocks.

Once, at Santa Clara, Chiriquí, on February 18, 1955, I found a number of males gathered in several trees bearing drupes in a small tract of forest at 1110 m. A year earlier I had found them at exactly this same spot. On this day they were moving rather quickly through the higher branches, leaving for a time and then returning. They seemed excited over something, and a little later I found where some small forest falcon had been plucking and eating a small bird beneath these same trees; perhaps this was the cause of the excitement. I heard continually a low *wheu wheu* call with a curious metallic tone, completely new to me, that I attributed to this species. The only call Skutch (*op. cit.*, p. 105) ever heard was "a low, nasal cry" from a female defending her young.

DACNIS VENUSTA VENUSTA Lawrence

Dacnis venusta Lawrence, 1862, Ann. Lyc. Nat. Hist. New York, 7, p. 464. (Panama Railroad.)

Characters.—Entire undersurface of male tinged blackish green.

A male taken at El Volcán, Chiriquí, on March 15, 1965, had the iris bright red; bill and inside of mouth black; tarsus dull brown; toes and claws fuscous-brown. A female collected there on March 18, 1965, had the iris dark brown; maxilla and tip of mandible dull light neutral gray; gape dull yellowish white; tarsus and toes neutral gray; claws dull grayish brown.

Measurements.—Males (10 from Chiriquí and Coclé), wing 66.5-70.1 (67.7), tail 39.6-43.8 (41.8), culmen from base 11.9-14.4 (13.6), tarsus 14.1-15.2 (14.8) mm.

Females (10 from Chiriquí and Costa Rica), wing 62.1-67.0 (64.9), tail 38.2-42.3 (40.4), culmen from base 12.7-14.3 (13.6), tarsus 14.4-15.6 (15.2) mm.

Resident. Fairly common in the foothills of both slopes from western Panamá to the Canal Zone. On the Caribbean slope it also occurs locally in the lowlands. On the Volcán de Chiriquí, Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, pp. 556-557) collected it between 1560 and 1920 m, and W. W. Brown, Jr., took 20 specimens near Boquete, Chiriquí, between 1200 and 1500 m. I have collected it in this region also, and at the head of the Río Guabal in Coclé. On Barro Colorado Island, Canal Zone, Eisenmann said it was "rarely

recorded" (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 50); it evidently breeds there occasionally (Eisenmann and Willis, Smiths. Cont. Zool. no. 291, 1979, p. 26). Ridgely (1976, p. 290) said "most easily seen well out on the Pipeline Road, where apparently occurs at all seasons." Ridgely (*in litt.*) feels the bird may have increased in recent years, since it can now be found regularly at several localities on the Caribbean slope of the Canal Zone.

Mönniche (Blake *op. cit.*) noted that 3 males taken April 23, May 9, and July 1 had enlarged gonads, although still in subadult dress, but I have no information on the nesting habits of this species in Panamá. Skutch (Condor, 1962, pp. 105-106) has found one nest of this race in Costa Rica. It was in the crown of a tree 17 m from the ground. The shallow cup of aerial rootlets, tendrils, and fern rachides was covered on the outside by green, living pieces of fern, and was suspended from two twigs by cobweb. The internal diameter of the nest was 10 by 11 cm and the depth was 2 cm. Skutch found the nest on May 9, when it already contained young; they were fed by both parents, although primarily by the female, and the next day at least 1 of the young birds left the nest.

On Barro Colorado Island, G. Hunt and E. O. Willis, on July 18, 1962, saw 2 males with a female, she feeding a grown fledgling (Willis and Eisenmann, *op. cit.*).

DACNIS VENUSTA FULIGINATA Bangs

Dacnis venusta fuliginata Bangs, 1908, Proc. Biol. Soc. Washington, 21, p. 160. (Jiménez, western Colombia, altitude 1,600 feet.)

Characters.—Greenish tinge on undersurface of male restricted to belly; rest of undersurface deep sooty black.

Measurements.—Males (10 from Panamá, Colombia, and Ecuador), wing 58.2-67.0 (63.4), tail 37.7-45.4 (41.4), culmen from base 10.9-13.4 (12.3), tarsus 13.8-14.8 (14.4) mm.

Females (10 from Panamá, Colombia, and Ecuador), wing 57.0-64.8 (61.7), tail 34.5-43.3 (39.7), culmen from base 11.1-14.3 (12.9), tarsus 13.3-15.8 (14.5) mm.

Resident. Fairly common in lowlands and foothills of eastern San Blas and Darién, and beyond Panamá as far as northwestern Ecuador. In Darién it has been collected at Cana, in 1912 by E. A. Goldman, from 900 to 1050 m, at Tacarcuna Village by Pedro Galindo in 1963, at Mt. Sapo by the Fifth George Vanderbilt Expedition in 1941 (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mon. no. 6, 1944, p.

41), and at Jaqué by myself. A series collected in easternmost coastal San Blas at Permé and Obaldía by H. von Wedel between 1929 and 1931 is "obviously intermediate, but on the whole nearer *fuliginata*" than nominate *venusta* (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 367). These two races are in any case very poorly differentiated. The female I collected at Jaqué on March 19, 1946, was incubating, but I have no other information on the nesting habits of this race.

Family FRINGILLIDAE: Finches, Gorriiones y Pinzones

Forty-five members of the family Fringillidae have been found in Panamá. Following Raikow (Bull. Carnegie Mus. Nat. Hist. no. 7, 1978, p. 41), the Cardinalinae, Emberizinae, and Carduelinae are treated as subgroups of a single family, Fringillidae. The subfamilies are represented in Panamá as follows: 12 Cardinalinae, 31 Emberizinae, 2 Carduelinae. The species found in Panamá include 7 regular or occasional migrants from North America. The Grasshopper Sparrow (*Ammodramus savannarum*) is known from both resident populations and a few records of a migrant North American race.

Most members of this family, excepting the grosbeaks, are found on or near the ground in forest and second-growth thickets or in weedy fields. Finches feed primarily on seeds, although most species give insects to their young, and the grosbeaks and saltators take considerable amounts of fruit. Many Panamanian finches are accomplished vocalists. The nest of nearly all species is an open cup, placed on the ground or within a few meters of it in grasses, a shrub, or a tree; a few species build domed nests with an entrance on the side.

KEY TO SPECIES OF FRINGILLIDAE: SPARROWS AND FINCHES

1. Undersurface with yellow or yellowish green. 2
Undersurface without any yellow or yellowish green. 16
2. Throat black. 3
Throat yellow, yellowish green, or white. 8
3. Small, less than 110 mm. 4
Larger, more than 110 mm.
male Yellow-bellied Siskin, *Carduelis xanthogastra xanthogastra*. p. 618
4. Crown yellowish or reddish brown. 5
Crown with extensive black. 6
5. Crown yellowish.
Black-faced Grosbeak, *Caryothraustes canadensis*. p. 541
Crown reddish brown.

Sooty-faced Finch, *Lysurus castaneiceps*. p. 597

6. Thighs yellow..... 7
Thighs as rest of undersurface.
Large-footed Finch, *Pezopetes capitalis*. p. 585
7. Undersurface gray except for thighs.
Yellow-thighed Finch, *Pseliophorus tibialis*. p. 586
Undersurface mostly yellowish green.
Yellow-green Finch, *Pseliophorus luteoviridis*. p. 588
8. Abdomen not yellow..... 9
Abdomen yellow..... 12
9. Throat white.
female Saffron Finch, *Sicalis flaveola flaveola*. p. 583
Throat yellow or yellowish green..... 10
10. Central crown stripe white, back brown.
Yellow-throated Brush-finch, *Atlapetes albinucha*. p. 588
Crown blackish or green, back green.
Yellow-faced Grassquit, *Tiaris olivacea*. p. 559
11. Primaries with white at base..... 12
Primaries without white at base..... 14
12. Small, less than 110 mm..... 13
Large, more than 180 mm.
Yellow Grosbeak, *Pheucticus chrysopheplus tibialis*. p. 546
13. Base of primaries yellow.
female Yellow-bellied Siskin, *Carduelis xanthogastra xanthogastra*. p. 618
Base of primaries white.
Dark-backed Goldfinch, *Carduelis psaltria crocea*. p. 619
14. Upper surface yellow or streaked with brown..... 15
Upper surface green.
female Painted Bunting, *Passerina ciris*. p. 554
15. Crown orange.
male Saffron Finch, *Sicalis flaveola flaveola*. p. 583
Crown streaked with brown.
Grassland Yellow-finch, *Sicalis luteola eisenmanni*. p. 584
16. Back green..... 17
Back not green..... 24
17. Tail dusky, brown, or green..... 18
Tail feathers edged reddish.
male Painted Bunting, *Passerina ciris*. p. 554
18. Black on sides of breast or in band across upper breast..... 19
Breast white, streaked, or gray..... 21
19. Throat white..... 20
Throat buffy.
Buff-throated Saltator, *Saltator maximus*. p. 532
20. Crown brown.
Chestnut-capped Brush-finch, *Atlapetes brunneinucha*. p. 594
Crown streaked black and gray.
Orange-billed Sparrow, *Arremon aurantirostris*. p. 599
21. Breast gray or white..... 22
Breast streaked green and white.
Streaked Saltator, *Saltator albicollis*. p. 536

22. Breast gray..... 23
 Breast white.
 Striped-headed Brush-finch, *Atlapetes torquatus*. p. 591
23. Crown black.
 Black-headed Saltator, *Saltator atriceps lacertosus*. p. 530
 Crown streaked gray and black.
 Black-striped Sparrow, *Arremonops conirostris*. p. 603
24. Upper surface streaked brown or black..... 25
 Upper surface unstreaked..... 30
25. Underwing coverts white or dusky..... 26
 Underwing coverts orange or rosy.
 female or basic plumage male Rose-breasted Grosbeak,
 Pheucticus ludovicianus. p. 547
26. Bend of wing yellow..... 27
 Bend of wing dusky or white..... 28
27. Small, less than 120 mm.
 Grasshopper Sparrow, *Ammodramus savannarum*. p. 606
 Large, more than 160 mm.
 Wedge-tailed Grass-finch, *Emberizoides herbicola hypochondriacus*. p. 616
28. Throat white or streaked..... 29
 Throat gray.
 Volcano Junco, *Junco vulcani*. p. 609
29. Reddish brown nuchal collar.
 Rufous-collared Sparrow, *Zonotrichia capensis costaricensis*. p. 611
 No distinct nuchal collar.
 Lincoln's Sparrow, *Zonotrichia lincolni lincolni*. p. 615
30. Plumage primarily brown or dusky..... 44
 Plumage primarily blue, black, or gray..... 31
31. Plumage primarily black or gray..... 35
 Plumage primarily blue..... 32
32. Large, more than 140 mm..... 33
 Small, less than 125 mm..... 34
33. Wing coverts edged with brown.
 male Blue Grosbeak, *Passerina caerulea caerulea*. p. 552
 Wing coverts black, edged with dark blue.
 male Blue-black Grosbeak, *Passerina cyanoides*. p. 548
34. Uniform gray-blue.
 male Blue Seedeater, *Amaurospiza concolor concolor*. p. 579
 Bright blue, darkest on head.
 male Indigo Bunting, *Passerina cyanella*. p. 553
35. Small, less than 140 mm..... 37
 Large, more than 170 mm..... 36
36. Breast rosy.
 alternate plumage male Rose-breasted Grosbeak,
 Pheucticus ludovicianus. p. 547
 Throat white, surrounded by black border.
 Slate-colored Grosbeak, *Pitylus grossus saturatus*. p. 544
37. Plumage primarily gray..... 42

- Plumage primarily black, with or without white..... 38
38. Plumage entirely black..... 39
- Plumage black and white..... 40
39. Small, less than 110 mm.
 male Blue-black Grassquit, *Geospiza jacarina splendens*. p. 557
- Large, more than 135 mm.
 male Great-billed Seed-finch, *Sporophila maximiliani loftini*. p. 578
40. White on wing confined to base of primaries..... 41
- Primaries and wing coverts tipped white.
 male White-collared Seedeater, *Sporophila torqueola moreletti*. p. 564
41. Culmen from base less than 12 mm.
 male Variable Seedeater, *Sporophila americana*. p. 566
- Culmen from base more than 12 mm.
 male Lesser Seed-finch, *Sporophila angolensis*. p. 575
42. No white in plumage..... 43
- White on wings and undersurface.
 male Slate-colored Seedeater, *Sporophila schistacea schistacea*. p. 563
43. Small, less than 130 mm.
 male Slaty Finch, *Haplospiza rustica barrilesensis*. p. 581
- Large, more than 140 mm.
 Peg-billed Finch, *Acanthidops bairdi*. p. 582
44. Undersurface buffy, yellowish brown, or olive-brown..... 49
- Undersurface rich reddish brown..... 45
45. Upper surface brown..... 46
- Upper surface gray.
 male Ruddy-breasted Seedeater, *Sporophila minuta centralis*. p. 573
46. Underwing coverts buffy or dark..... 47
- Underwing coverts white.
 female Lesser Seed-finch, *Sporophila angolensis*. p. 575
47. Large, more than 135 mm..... 48
- Smaller, less than 125 mm.
 female Blue Seedeater, *Amaurospiza concolor concolor*. p. 579
48. Bend of wing and underwing coverts warm buff.
 female Great-billed Seed-finch, *Sporophila maximiliani loftini*. p. 578
- Bend of wing and underwing coverts dark grayish brown.
 female Blue-black Grosbeak, *Passerina cyanoides*. p. 548
49. Throat and breast blackish, contrasting with rest of undersurface,
 or streaked..... 50
- Throat and breast not streaked or strongly differentiated from
 rest of undersurface..... 52
50. Throat streaked..... 51
- Throat blackish.
 male Yellow-bellied Seedeater, *Sporophila nigricollis nigricollis*. p. 571
51. Small, less than 110 mm.
 female Blue-black Grassquit, *Geospiza jacarina splendens*. p. 557
- Larger, more than 114 mm.
 female Slaty Finch, *Haplospiza rustica barrilesensis*. p. 581
52. Upper surface olive-brown or dull brown..... 54
- Upper surface reddish brown..... 53

53. Small, less than 125 mm.
female Indigo Bunting, *Passerina cyanea*. p. 553
Large, more than 150 mm.
female Blue Grosbeak, *Passerina caerulea caerulea*. p. 552
54. Wing coverts edged whitish. 55
Wing coverts edged olive-brown. 56
55. Loes and stripe over eye buff, contrasting with darker crown.
female Ruddy-breasted Seedeater, *Sporophila minuta centralis*. p. 573
Loes and crown undifferentiated olive-brown.
female White-collared Seedeater, *Sporophila torqueola moreletii*. p. 564
56. Upper mandible strongly decurved; height markedly less than of lower mandible.
female Slate-colored Seedeater, *Sporophila schistacea schistacea*. p. 563
Height of upper and lower mandible approximately equal; upper mandible gently decurved. 57
57. Base of gonys 7.0 mm or less.
female Yellow-bellied Seedeater, *Sporophila nigricollis nigricollis*. p. 571
Base of gonys 7.5 mm or more.
female Variable Seedeater, *Sporophila americana*. p. 566

SALTATOR ATRICEPS LACERTOSUS Bangs: Black-headed Saltator,
Saltador Cabecinegro

FIGURE 41

Saltator lacertosus Bangs, 1900, Proc. New England Zool. Club, 2, p. 31. (Loma del León, Panamá.)

Large; bill thick, hooked at tip; crown black; sides of head gray; upper surface greenish yellow; throat white, black at edges; under-surface gray.

Description.—Length 218-240 mm. Adult (sexes alike), loes gray; crown gray; superciliary white, fading to gray behind eye; sides of head and of nape gray; rest of upper surface, including wings and tail, greenish yellow; sides of chin and throat black; center of chin, throat, and upper breast white; a few black spots at sides of upper breast; rest of undersurface to lower flanks, gray; lower flanks drab; undertail coverts tawny brown; underwing coverts white.

A female taken at the Peluca Hydrographic Station, Province of Panamá, on February 21, 1961, had the iris wood brown; bill black; tarsus and toes fuscous; claws dark neutral gray.

Measurements.—Males (10 from Panamá), wing 112.0-119.6 (115.7), tail 103.3-119.1 (111.0), culmen from base 25.5-27.8 (26.8), tarsus 27.1-29.6 (28.1) mm.

Females (10 from Panamá), wing 103.0-115.8 (111.2), tail 99.5-120.4 (109.0), culmen from base 24.5-27.9 (26.5), tarsus 24.5-29.0 (27.3) mm.

Resident. Fairly common in the lowlands on the Caribbean slope from Bocas del Toro east to Mandinga, San Blas, where I collected several in 1957; on the Pacific slope it is local and scattered: Brown took a female at Boquete, Chiriquí (1200 m), in 1901 (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 68); I found several at El Valle, Coclé, in 1951 between 600 and 750 m; and Ridgely (1976, p. 328) reports it from Cerro Campana and once from the Río Bayano in the Province of Panamá. Ridgely (*in litt.*) reports a pair seen February 28 to March 5, 1981, at the Cana airstrip in southeastern Darién. The birds were seen by Ridgely, Victor Emanuel, and several others. This is the first record from Darién. In the Canal Zone, Ridgely knows of only 1 sighting away from the Caribbean coast, a single bird he saw at the Madden Lake Scout Camp on July 10, 1975. It is also found in western Costa Rica; other races range north to central Mexico.

FIGURE 41.—Black-headed Saltator, Saltador Cabecinegro, *Saltator atriceps lacertosus*.

This noisy bird inhabits shrubby thickets in clearings and at the edge of forest; it is not found in the forest interior. It often moves in small groups and its harsh scolding notes are heard almost constantly. I was surprised to find that this species has a high, thin song—*tseety, tseety-tseety-tseety-tseety*—that sooner suggests an antbird or a warbler than a bird of this size. They usually sing early in the morning from perches in plain view between 3 and 10 m from the ground. Ridgely also mentions a “cackling and squawking” song. Their diet is varied, including seeds and insects. At Mandinga, San Blas, I watched several feed on the blossoms of a climbing pea, which they pluck and cut up, slowly manipulating them in the bill, apparently with the aid of the tongue, and

then swallow in small pieces. The blossoms are an inch across and the birds take a minute or two to consume one. In addition to the vegetable pulp, they must also eat the many thrips found in the blossoms.

Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 276) provides the only details I have on the breeding of this bird in Panamá. Based on Lindsey L. Jewel's data from the Canal Zone, he mentions a "nest (April 30) three feet up in a shrub grown over with vines, a rather small open cup. Eggs two, bluish green wreathed with black at the larger end, $1.13 \times .76$ and $1.12 \times .79$ ins. Another nest in the same sort of situation (March 24, 1912), made of weed stalks and tendrils, contained two fresh eggs, $1.07 \times .76$ and $1.06 \times .75$ ins."

**SALTATOR MAXIMUS (Müller): Buff-throated Saltator,
Saltador Gargantiateado**

FIGURE 42

Tanagra maxima P. L. S. Müller, 1776, Natursyst., suppl., p. 159. (Cayenne.)

Large, upper surface yellowish green, with varying amounts of gray on crown and nape; center of throat cinnamon-buff, surrounded with varying amounts of black; rest of undersurface gray.

Description.—Length 187-203 mm. Adult (sexes alike), lores and superciliary white; crown, nape, and side of head gray, crown with varying amounts of yellowish green; rest of upper surface, including wings and tail, yellowish green; center of forehead white, sides black; upper throat cinnamon-buff; rest of undersurface gray, tinged cinnamon-buff, usually white or light cinnamon-buff in center; underwing coverts cinnamon-buff.

Juvenile, crown and back yellowish green; white superciliary very obscure; cinnamon-buff lacking on throat, replaced by whitish; rest of throat and breast blackish, becoming yellowish gray, spotted blackish on belly.

The Buff-throated Saltator is common in the lowlands of both slopes of Panamá in shrubby clearings and woodlands. It is also found less commonly in foothills and in the Chiriquí highlands up to 1800 m. Three very distinct races are found in Panamá, *S. m. magnoides* of the Almirante Bay region of Bocas del Toro, *intermedius* of Chiriquí, Veraguas (including Islas Gobernadora and Cébaco), Los Santos, and Herrera, and *iungens* of San Blas and Darién. Both *magnoides* and *intermedius* are characterized by a complete black collar across the breast delimiting the buffy throat patch. This is absent in *iungens*, in which the black is restricted to the sides of the buffy patch. In the large

series at the Smithsonian there are 2 birds from Santa María, Herrera, in which the black collar characteristic of *intermedius* appears somewhat narrow. There is a zone of intergradation between *intermedius* and *iungens* from Coclé east to eastern Province of Panamá. One bird from Coclé appears fairly typical of *intermedius*, but 4 others have the collar broken. We have no birds from the area between Coclé and the Canal Zone. Canal Zone birds are almost all intermediate, although a few specimens are all but inseparable from *iungens*; our only specimen from Colón is in this last category. Birds from the Province of Panamá east of the Canal Zone are more like *iungens*, but still intermediate. Birds from Mandinga, San Blas, still show a few scattered black collar feathers but are best referred to *iungens*. A bird from Isla Bastimentos, Bocas del Toro, is utterly different from adjacent *magnoides* and in lacking the collar across the breast resembles *iungens*, but is larger, darker below, and brighter above. It probably represents an undescribed race. The species occurs from southeastern Mexico to northern Bolivia and southern Brazil.

FIGURE 42.—Buff-throated Saltator, Saltador Gargantianteado, *Saltator maximus*.

This saltator is rather shy, although I have found that it decoys readily to whistles. It is usually found in pairs and ranges from undergrowth to the tops of trees. It feeds on a variety of fruits, flower corollas, and insects including wasps and ants. A female collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 46.9 g. This species has

a variety of rich musical phrases reminiscent of a robin (*Turdus* sp.). Skutch (Pac. Coast Avif. no. 31, 1954, pp. 64-65) has heard pairs duetting.

SALTATOR MAXIMUS MAGNOIDES Lafresnaye

Saltator magnoides Lafresnaye, 1844, Rev. Zool. [Paris], p. 41. (Guatemala.)

Characters.—Differs from *intermedius* mainly by dark gray of undersurface; from *iungens* by greater extent of black on side of throat and across breast.

Measurements.—Males (10 from Bocas del Toro, Costa Rica, and Nicaragua), wing 99.0-104.0 (101.8), tail 91.0-102.4 (96.6), culmen from base 21.0-23.1 (21.9), tarsus 24.4-26.7 (25.4) mm.

Females (10 from Bocas del Toro, Costa Rica, and Nicaragua), wing 92.6-108.0 (98.8), tail 86.2-97.7 (91.2), culmen from base 20.4-22.8 (21.7), tarsus 21.3-25.9 (24.5) mm.

Resident. Known in Panamá only from the Almirante Bay region of Bocas del Toro, where I have found it at Almirante and Changuinola. It has also been collected at Guabo and Cricamola (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 338). Beyond Almirante Bay, it ranges north along the Caribbean slope to Chiapas in southern Mexico. Near Almirante, I shot 1 from a little group at the edge of a banana plantation on Western River.

SALTATOR MAXIMUS INTERMEDIUS Lawrence

Saltator intermedius Lawrence, 1864, Proc. Acad. Nat. Sci. Philadelphia, p. 106. (New Grenada, Isthmus of Panamá.)

Characters.—Differs from *magnoides* by having undersurface tinged with pale buff; from *iungens* by greater amount of black in breast band.

A male collected at Las Palmitas, Los Santos, on January 21, 1962, had the iris wood brown; base of gonys and lower half of rami neutral gray; rest of bill black; tarsus, toes, and claws fuscous. Another male taken at Puerto Armuelles, Chiriquí, had the maxilla, elongate spot on side of mandible, tip, and narrow line on anterior gonys fuscous-black; rest of mandible neutral gray; tarsus and toes grayish brown; claws dark mouse brown.

Measurements.—Males (10 from Chiriquí), wing 94.5-103.0 (99.4), tail 85.7-97.2 (91.8), culmen from base 19.8-21.9 (21.0), tarsus 24.4-25.6 (25.1) mm.

Females (10 from Chiriquí), wing 89.0-100.4 (94.0), tail 82.8-94.0

(88.3), culmen from base 19.7-22.0 (21.0), tarsus 22.1-25.1 (23.9) mm.

Resident. Common in the lowlands of the Pacific slope from Chiriquí east to Coclé, where it begins to intergrade with *iungens*. It is also found in southwestern Costa Rica. It has been collected up to 1800 m in the highlands of western Chiriquí (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 569). Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, pp. 22-23) found it common in the western Azuero Peninsula of Veraguas about cultivated coconut groves, houses, brushy savannas, and forest margins.

All the nests known from Panamá were found in the Canal Zone; ones containing eggs have been found from April 1 to July 19. One from Gatún was "a bulky compact cup set on a light base of sticks, made of strips of banana leaves and plant bark and lined with brown rootlets and vine tendrils." The two eggs were blue with a few spots of black in a wreath near the larger end (Stone, Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 276). Skutch (Pac. Coast Avif. no. 31, 1954, p. 69) found that the clutch is always two. The average measurements of 47 eggs were 27.5×19.2 mm. The eggs are incubated only by the female and require 13 to 14 days to hatch. Both parents feed the young, which usually remain in the nest 13 to 15 days. Skutch found some young birds that were still being fed by their parents when 54 days old.

SALTATOR MAXIMUS IUNGENS Griscom

Saltator maximus iungens Griscom, 1929, Bull. Mus. Comp. Zool., 69, p. 184. (Cana, Darién, Panamá.)

Characters.—Differs from other Panamá races by having black on undersurface limited to sides of throat.

Measurements.—Males (10 from Darién), wing 93.0-102.5 (97.9), tail 88.0-100.8 (91.8), culmen from base 19.3-21.9 (20.9), tarsus 24.3-25.1 (24.7) mm.

Females (8 from Darién and Colombia), wing 91.5-98.5 (95.3), tail 79.9-96.1 (87.8), culmen from base 20.5-23.4 (21.6), tarsus 23.1-25.3 (24.3) mm.

Resident. Common in Darién and San Blas, intergrading with *intermedius* in eastern Province of Panamá. I have collected it in Darién at Jaqué, Pucro, El Real, on Cerro Pirre at 450 m, and on the Río Jaqué at Las Peñitas. It is also found in western (Pacific slope) and northwestern (Caribbean slope) Colombia.

SALTATOR ALBICOLLIS Vieillot: Streaked Saltator,
Saltador Pechirayado

FIGURE 43

Saltator albicollis Vieillot, 1817, Nouv. Dict. Hist. Nat., nouv. ed., 14, p. 107. (Martinique.)

Large; upper surface yellowish green with tail gray; undersurface white, streaked olive, especially on breast.

Description.—Length 174-188 mm. Adult (sexes alike), lores and ring around eye white, sometimes tinged green; upper surface, including wings yellowish green, in some races duller, more brownish on crown and gray on upper tail coverts; tail gray; undersurface white, in some races tinged pale yellow, and streaked to varying degrees with olive, especially on breast, sides, and flanks; undertail coverts very light buff; bend of wing light yellow; underwing coverts whitish.

FIGURE 43.—Streaked Saltator, Saltador Pechirayado, *Saltator albicollis*.

The Streaked Saltator is common in the lowlands and lower foothills of the Pacific slope and on many offshore islands; on the Caribbean side it is only known from the Canal Zone area and Mandinga, San Blas. Six races have been described from Panama—3 on the mainland and 3 on islands. Five other races range from Colombia to Trinidad and Peru, and additional forms are found in the Lesser Antilles.

This species inhabits shrubby clearings and woodland edges where it moves in pairs in the undergrowth. It is rather shy, but decoys readily. The stomach of 1 collected by E. A. Goldman at Cana, Darién,

held 3 or more enormous red ants 93%, coleoptera remains 1%, 12 seeds and other fragments of *Solanum* sp. 5%, one indeterminate seed 1%. I have seen it eat the flowers of morning glories and legumes. Seven collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 35.3 to 43.9 g; an immature taken in April weighed 28.6 g.

The Streaked Saltator's song is a series of loud, sweet whistles; one version is *chee-oo, chee-oo, chee-oo, cheeeee-oo* (Eisenmann, Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 57). It is usually delivered from a perch, but Skutch (Pac. Coast Avif. no. 31, 1954, pp. 82-83) has witnessed the bird singing in flight, when, usually at dusk, it may rise from 10 to 100 m over the ground. In normal flight it utters notes sounding like *qua qua qua*, and also has a sharp *tseek*.

SALTATOR ALBICOLLIS FURAX Bangs and Penard

Saltator striatipictus furax Bangs and Penard, 1919, Bull. Mus. Comp. Zool., 63, p. 32. (near Boruca, western Costa Rica.)

Characters.—Undersurface most strongly tinged with yellow, with the streaking heavier and more definitely green.

Measurements.—Males (10 from Chiriquí), wing 83.0-93.8 (89.5), tail 73.7-91.4 (84.2), culmen from base 18.3-20.5 (19.5), tarsus 20.7-24.7 (22.8) mm.

Females (6 from Chiriquí and Costa Rica), wing 83.0-89.0 (85.9), tail 76.7-85.9 (80.7), culmen from base 19.2-20.6 (20.0), tarsus 21.1-24.2 (22.8) mm.

Resident. Common in western Chiriquí, where it has been collected at David, Concepción, Sereno, Cerro Punta, Boquete, Volcán de Chiriquí, and as far east as San Felix. At Cerro Punta, I found a small group at 1740 m on March 5, 1954. This race is also found in adjacent northwestern Costa Rica.

The nests and eggs of Costa Rican birds agree with those described below for the race *isthmicus* in central Panamá (Skutch, Pac. Coast Avif. no. 31, 1954, pp. 83-87). Incubation is performed entirely by the female and probably requires 13 or 14 days. The young are fed by both parents and leave the nest at 13 days; the parents continue to feed them until the young are fully grown.

SALTATOR ALBICOLLIS ISTHMICUS Sclater

Saltator isthmicus P. L. Sclater, 1861, Proc. Zool. Soc. London, p. 130. (Isthmus of Panamá.)

Characters.—Strongly tinged greenish below, with the streaks more olive than dark gray; flanks and undertail coverts distinctly buffy; the entire undersurface less strongly white.

A male collected at El Copé, Coclé, on February 23, 1962, had the iris mouse brown; bill black; tarsus and toes light olive-brown; claws dark neutral gray. A female taken at Nueva Gorgona, Province of Panamá, on March 17, 1951, had the iris drab; tip of maxilla and edge of gape honey yellow, becoming ivory on base of maxillary tomium; tip of mandible dull ivory-white; rest of bill dull black; tarsus and toes dull grayish olive; margin of upper eyelid antimony yellow; margin of lower eyelid dull greenish.

Measurements.—Males (10 from Panamá); wing 86.2-94.5 (91.8), tail 79.7-88.7 (84.0), culmen from base 18.4-20.0 (19.0), tarsus 22.6-24.2 (23.4) mm.

Females (10 from Panamá), wing 84.4-89.0 (87.0), tail 79.5-84.5 (81.1), culmen from base 17.7-21.0 (19.3), tarsus 22.9-24.4 (23.3) mm.

Resident. Very common on the Pacific slope from Veraguas, where it has been collected as far west as Soná, San Francisco, and Santa Fé, east to the Río Chepo in eastern Province of Panamá (Griscom, Bull. Mus. Comp. Zool., vol. 78, 1935, p. 380), and on the Caribbean slope in the Canal Zone area and at Mandinga, western San Blas, where I found it in 1957. Aldrich and Bole (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 13) found it common on the western Azuero Peninsula of Veraguas. Two specimens from Isla Cébaco, off the Azuero Peninsula, are not separable from mainland birds.

This race has been found breeding from April 7 (Hallinan, Auk, 1924, p. 321) to August (Arbib and Loetscher, Auk, 1935, p. 327). Five nests found in the Canal Zone by Hallinan and Major General G. Ralph Meyer were placed from 1.3 to 4 m from the ground in a bush or tree. The nest is a cup made of weed stems, vine tendrils, rootlets, twigs, dry grass, and leaves, lined with finer material. The outside diameter is about 10 cm. All of the nests held two eggs; the eggs of one clutch measured 25.3×17.1 and 26.1×17.2 mm. The eggs are light blue with fine blackish scrawls near the larger end.

SALTATOR ALBICOLLIS SCOTINUS Wetmore

Saltator albicollis scotinus Wetmore, 1957, Smiths. Misc. Coll., 134 (9), p. 98. (Isla Coiba, off Veraguas, Panamá.)

Characters.—Darkest of the subspecies of *S. albicollis*; similar to *S. a. isthmicus*, but darker, grayer green above; sides of head and streaks on lower surface definitely darker; sides of breast darker; edge of wing brighter yellow; undertail coverts slightly deeper buff.

Measurements.—Males (6 from Isla Coiba, including the type), wing 84.6-90.5 (87.8), tail 76.4-78.7 (77.6), culmen from base 17.3-18.8 (18.3), tarsus 23.4-24.0 (23.6) mm.

Females (7 from Isla Coiba), wing 84.3-88.8 (86.8), tail 74.5-79.8 (77.3), culmen from base 17.7-19.0 (18.4), tarsus 22.0-24.2 (23.9) mm.

Resident. Found on Coiba, Ranchería, and Brincanco islands off the Pacific Coast of Veraguas. Two specimens from Isla Brincanco in the Islas Contreras group, not mentioned in the original description, prove definitely referable to *scotinus*. On Coiba in January 1956, they were sometimes in pairs, but at this season they were not singing. While not abundant, they were widely distributed, so the total number of individuals found on the island is considerable. The wings and tail of this race average noticeably shorter than in any other Panamá form.

In April 1976, Ridgely (*in litt.*) found this race quite common in forest undergrowth and borders. Many were singing. The song is of the same quality and rhythm as in mainland birds, but often lacks the characteristic slurred final note. On April 11, Ridgely saw one pair accompanied by recently fledged young.

SALTATOR ALBICOLLIS MELICUS Wetmore

Saltator albicollis melicus Wetmore, 1952, Smiths. Misc. Coll., 121 (2), p. 29.
(Taboga Island, Panamá.)

Characters.—Similar to *S. a. isthmicus*, but with larger, heavier bill; sides of head grayer; streak on either side of throat averaging darker; flanks averaging darker; undersurface most heavily streaked of Panamá races; dorsal surface of tail and upper tail coverts averaging slightly darker gray.

Measurements.—Males (7 from Taboga Island, including the type), wing 88.2-92.5 (90.8), tail 79.3-85.0 (82.4), culmen from base 18.8-20.9 (19.8), tarsus 22.3-24.1 (23.2) mm.

Females (4 from Taboga Island), wing 85.7-90.0 (87.5), tail 79.4-83.6 (81.0), culmen from base 19.4-20.0 (19.6), tarsus 22.8-24.8 (23.7) mm.

Resident. Found on Taboga Island in the Bay of Panamá. This species was fairly common, but shy during my visit to Taboga in March 1952. The birds ranged in the thickets bordering the fields, or in the scrub on the lower slopes, where we found them most active early in the morning. In such areas, males sang from elevated perches near the tops of trees, under open cover, while others ranged through the leaf-

covered branches, often uttering low notes as they searched for food. The clear song, rather cardinal-like in its tone, was the principal pleasing bird note of the island, usually heard in contrast to the rasping call of the elaenia (*Elaenia flavogaster*). Their flight was rapidly tilting and covered only short distances at a time. At the end of March, the birds were about to nest. One taken March 16 was an immature barely grown, with yellow-tipped bill, so that the breeding season may be irregular. In December 1955, I spent a half day on Taboguilla Island, off Taboga, but did not find this species, although it was common on Taboga at the time.

SALTATOR ALBICOLLIS SPERATUS Bangs and Penard

Saltator striatipictus speratus Bangs and Penard, 1919, Bull. Mus. Comp. Zool., 63, p. 33. (Saboga Island, Pearl Islands, Gulf of Panamá.)

Characters.—Similar in general appearance to *S. a. striatipictus*, but with more pronounced yellowish green wash on undersurface; slightly less heavily streaked.

Measurements.—Males (10 from the Pearl Islands), wing 85.2-94.0 (89.5), tail 78.2-84.6 (80.9), culmen from base 18.1-20.0 (18.5), tarsus 21.9-24.3 (23.1) mm.

Females (10 from the Pearl Islands), wing 85.3-91.6 (88.5), tail 75.7-83.2 (80.1), culmen from base 22.1-24.2 (22.7), tarsus 22.1-24.2 (22.7) mm.

Resident. Common in woods and brushy areas on the Pearl Islands in the Bay of Panamá off the Pacific Coast, where it has been collected on San Miguel (Rey), Saboga, Viveros, Santelmo, San José, and Pedro Gonzales islands. On February 26, 1944, I saw a nearly full grown young bird being fed by its parents on San José.

This race most closely resembles *S. a. striatipictus* of eastern Darién and Colombia; it is another indication of the affinity of the avifauna of the Pearl Islands with northwestern South America.

SALTATOR ALBICOLLIS STRIATIPLECTUS Lafresnaye

Saltator striatipictus (sic) Lafresnaye, 1847, Rev. Zool. [Paris], 10, p. 73. (Cali, Valle de Cauca, Colombia.)

Characters.—Undersurface clearly and predominantly white, with little wash of yellowish green; streaking slightly grayer.

Measurements.—Males (10 from Darién and Colombia), wing 87.5-100.3 (93.2), tail 78.3-90.1 (82.9), culmen from base 18.2-20.5 (19.1), tarsus 21.5-24.7 (23.6) mm.

Females (10 from Darién and Colombia), wing 84.0-94.0 (89.4), tail 78.7-84.9 (81.2), culmen from base 18.4-20.0 (19.2), tarsus 22.9-24.9 (23.5) mm.

Resident. Known in Panamá only from Cana in eastern Darién, where E. A. Goldman collected several in 1912 and R. R. Benson took 4 in 1928. In February and March 1981, Ridgely (*in litt.*) found no birds of this species in the Cana area. He speculates that there is now too little clearing in the region for it to have survived; apparently, there were many more people in the region earlier in the century. Benson's birds were collected between approximately 600 and 810 m.

This race is also found in Colombia, where it has a complex distribution through interdigitation and intergradation with the race *perstriatus* Parkes.

**CARYOTHAUSTES CANADENSIS (Linnaeus): Black-faced
Grosbeak, Piquigrueso Verdiamarillo**

Loxia canadensis Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 304. (Cayenne.)

Large; bill thick, hooked at tip; side of face to just behind eye, and throat, black; upper surface mostly dark yellow; undersurface lighter yellow; in *scapularis* abdomen and rump are gray.

Description.—Length 152-163 mm. Adult (sexes alike), lores, side of face to just behind eye, and throat black; upper surface dark yellow in *scapularis* with rump and upper tail coverts gray; wing coverts, outer webs of remiges, and rectrices same color as back; inner webs of remiges dusky; undersurface yellow; in *scapularis* abdomen and under-tail coverts gray; underwing coverts yellow.

This grosbeak inhabits humid forest and forest edges in lowlands, where it wanders about in loose, sometimes quite large, noisy flocks that may include other species as well. The birds feed high in trees, rarely coming lower than 6.5 m from the ground, and take a wide variety of fruit and insects. They eat berries by working them between the mandibles until the skin is detached and dropped, only the pulp and seeds being swallowed. Insects are picked from the foliage while perched or flying up to reach a higher leaf or are caught in flycatching sallies. Their calls include a very distinctive, dull buzzy note uttered while foraging and a series of chips given by groups in flight and by mated pairs. Skutch (Publ. Nutt. Orn. Club, no. 10, 1972, p. 210) has also heard a more melodious song given at the beginning of the nesting season; one variation is *weet cher cher weet cher; cher che weet, cher che weet*, alternated with the harsher chips.

Two very well-marked races are found in Panamá, *scapularis*, which is common in the lowlands and lower foothills of Bocas del Toro and in hill country on both slopes of Veraguas, and *simulans*, known only from a pair collected at Cana, Darién in 1912. It seems remarkable that with one race so noisy and gregarious, the other should be known from only 2 specimens in an isolated locality. To the south of Cana, no race of *C. canadensis* is found nearer than Vaupés, southeastern Colombia. The race *scapularis* ranges north to eastern Honduras to southeastern Mexico. There are some recent sight reports of this species from the Cerro Jefe area of the Province of Panamá (Ridgely, *in litt.*), but no subspecies identification was possible.

CARYOTHRAUSTES CANADENSIS SCAPULARIS (Ridgway)

Pitylus poliogaster scapularis Ridgway, 1886, Proc. U.S. Nat. Mus., 10, p. 486. (Hacienda "Los Sabalos," Río San Juan, Nicaragua.)

Characters.—Crown dark yellow; becoming slightly more greenish on back, wings, and tail; rump and upper tail coverts gray; breast rich yellow; abdomen and undertail coverts gray.

A male collected at the head of the Río Guabal, Coclé, on February 27, 1962, had the iris brown; side of maxilla below nostril and mandibular rami neutral gray; rest of bill black; tarsus, toes, and claws neutral gray. A female taken at Almirante, Bocas del Toro, on February 15, 1958, was similar.

Measurements.—Males (10 from Panamá and Costa Rica), wing 83.0-89.9 (85.7), tail 63.3-74.1 (67.9), culmen from base 17.1-18.9 (18.4), tarsus 18.2-20.3 (19.6) mm.

Females (10 from Panamá and Costa Rica), wing 80.4-87.0 (84.4), tail 61.3-69.7 (65.2), culmen from base 17.0-19.1 (18.1), tarsus 18.9-20.4 (19.7) mm.

Resident. Fairly common in the lowlands and lower foothills of Bocas del Toro and in hill country on both slopes of Veraguas. In Bocas del Toro, it has been collected as high as 690 m on the Boquete Trail (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 461). On February 27, 1962, I took a male that was with a small flock of forest birds at the head of the Río Guabal, Coclé. Eisenmann, Pujals, and Skutch (Ridgely, *in litt.*) found this species "common" north of Santa Fé, Veraguas, on March 28, 1974. In the 19th century, Arcé collected a male at Santiago, Veraguas, and McLeannan took 1 in the present Canal Zone, the most eastern record for this form. Salvin and Godman (Biolog. Cent.-Amer., vol. 1, 1884, p. 33) say of

this bird "its further extension southward reaches to the line of the Panama railway," which indicates that the bird was secured somewhere near Lion Hill Station. The record by Arcé from Santiago also is significant in being an interesting lowland record where the bird is no longer found. Arcé's labeling, however, is not always reliable. North of Panamá, this race occurs on the Caribbean slope to eastern Honduras.

Although Hellmayr (Cat. Birds Amer., pt. 11, 1938, p. 48) considered this race to be of doubtful validity, and an occasional *C. c. poliogaster* may have the scapulars yellowish instead of grayish, the smaller size of *scapularis* (Ridgway, Birds North and Mid. Amer., pt. 1, 1901, pp. 655-656) is quite consistent, and most specimens can be separated by color in any case.

In Costa Rica, Skutch (Publ. Nutt. Orn. Club, no. 10, 1972, pp. 211-218) found a pair building a nest in early April. Concealed amid epiphytes on a small tree 3 m from the ground, the nest was a shallow bowl made of rhizomes of an epiphytic fern with inner layers of dicotyledonous leaves and long, coiled strands of *Tillandsia*. The interior measured 7.5 cm in diameter by 2.75 cm deep. Eggs were laid on April 20, 22, and 23. They were dull white, mottled and spotted, especially on the thicker end, with bright shades of brown; their measurements averaged 17.0×26.3 mm. Apparently only the female incubates the eggs, which take 13 days to hatch. Both parents feed the young, and at the nest Skutch watched they were assisted by a helper of unknown sex. At 11 or 12 days, when well feathered except on their still naked heads, the young grosbeaks left the nest, flying as far as 13 m on their first flight, and disappearing with their 3 attendants into the forest.

CARYOTHRUAESTES CANADENSIS SIMULANS Nelson

Caryothraustes canadensis simulans Nelson, 1912, Smiths. Misc. Coll., 60(3), p. 16. (Cana, 3,000 ft., Darién, Panamá.)

Characters.—Slightly smaller than *scapularis*; underparts entirely yellow; rump same color as back, not gray.

Measurements.—Male (1 from Darién, the type), wing 84.9, tail 68.1, culmen from base 17.7, tarsus 19.8 mm.

Female (1 from Darién), wing 85.0, tail 66.1, culmen from base 17.4, tarsus 18.2 mm.

Resident. Known only from a male and female collected at Cana (900 m), Darién, by E. A. Goldman on June 10 and 11, 1912. The stomach of the male contained finely ground remains of three or more species of beetles including one curculionid 65%, vegetable pulp inde-

terminate 35%; the female's stomach held the remains of 2 beetles, one at least a carabid, the other probably another species, all finely ground 20%, 29 seeds of Solanaceae sp., a large amount of fragments 80%.

PITYLUS GROSSUS SATURATUS Todd: Slate-colored Grosbeak,
Piquigrueso Apizarrado

FIGURE 44

Pitylus grossus saturatus Todd, 1922, Proc. Biol. Soc. Washington, 35, p. 91.
(Guácimo, Costa Rica.)

Large; bill thick, serrated, and hooked; entirely bluish gray, with center of throat white; male has sides of head, sides of throat, and breast black.

Description.—Length 178-191 mm. Adult male, lores, sides of head, sides of throat, and breast black; center of throat white; entire upper surface, including wing coverts, bluish gray; remiges black, with outer webs edged bluish gray; rectrices black; undersurface slightly lighter gray; underwing coverts white.

Adult female, like male, but lacking black pattern on head and breast; undersurface duller gray.

A male collected at the Peluca Hydrographic Station, February 20, 1961, had the iris dark brown; bill dark orange-red; tarsus and toes blackish fuscous. A female taken at the head of the Río Guabal, Coclé, on February 26, 1962, had the iris brown; line on tip of culmen and base of culmen fuscous; rest of bill dark red; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from Panamá), wing 91.0-99.0 (94.3), tail 74.8-87.9 (81.8), culmen from base 19.3-21.6 (20.6), tarsus 20.9-22.4 (21.9) mm.

Females (10 from Panamá), wing 92.5-99.0 (94.8), tail 74.1-84.9 (82.6), culmen from base 18.5-22.6 (20.7), tarsus 18.2-23.6 (21.6) mm.

Resident. Fairly common in the lowlands and foothills of the entire Caribbean slope; on the Pacific slope, found in the foothills from Veraguas eastward and in the lowlands from the Canal Zone eastward. Beyond Panamá this race ranges north on the Caribbean slope to Nicaragua and south to western Ecuador; other races are found south to northern Argentina.

This grosbeak inhabits forests and forest borders, where it is more often heard than seen. It is one of the better songsters of the forest; the song is a variety of high, whistled phrases; *witchee-weéoo*, *cheéoo*

and *hoó-ee*, *weéoo-wihoo-wéyoo* are two renditions (Eisenmann, *Smiths. Misc. Coll.*, vol. 117, no. 5, 1952, p. 57). Once when I heard it at Mandinga, San Blas, the intonation and length were so strongly suggestive of *Cyclaris* that I had no idea of the true identity of the bird until it was in my hand. The call of this species is a metallic chip. These birds forage in the middle and upper level of the trees; sometimes they join groups of birds, but otherwise are found singly or in pairs. Chapman (*My Tropical Air Castle*, 1929, p. 55) saw them feeding on berries of mangabe (*Didymopanax morototoni*) on Barro Colorado Island in the Canal Zone. A female I collected on February 24, 1952, at El Uracillo, Coclé, was about to lay, and a pair I took at Cerro Azul, Panamá, on April 19, 1949, were near breeding. Ridgely (*in litt.*) saw a pair feeding a recently fledged young bird near Pucro, Darién, on March 6, 1981. A female taken by Strauch (*Bull. Brit. Orn. Club*, 1977, p. 65) in May was breeding, but I have no other information on nesting behavior. Two collected by Strauch weighed 43.5 and 50.4 g.

FIGURE 44.—Slate-colored Grosbeak, Piquigrueso Apizarrado, *Pitylus grossus saturatus*, male.

PHEUCTICUS CHRYSOPEPLUS TIBIALIS Lawrence: Yellow
Grosbeak, Piquigrueso Amarillo

Pheucticus chrysopheplus tibialis Lawrence (ex Baird MS), 1867, Ann. Lyc. Nat. Hist. New York, 8, p. 478. (Cervantes, Costa Rica.)

Large; bill very thick; wings, upper back, and tail black; wings with white patch at base of primaries; rest of body yellow.

Description.—Length 182-196 mm. Adult (sexes alike), lores and side of head from lower mandible to below eye blackish; rest of head and undersurface rich yellow, with the feathers of throat and breast brownish except on tips; upper back, black, with feathers sometimes edged yellow; wings and tail black, with white patch at base of primaries; lower back through upper tail coverts rich yellow; thighs black; underwing coverts yellow.

Measurements.—Males (10 from Panamá and Costa Rica), wing 99.0-114.0 (109.2), tail 70.9-80.8 (76.8), culmen from base 21.9-24.9 (23.3), tarsus 20.3-24.1 (22.8) mm.

Females (10 from Panamá and Costa Rica), wing 105.0-112.8 (108.0), tail 73.4-82.0 (76.9), culmen from base 23.7-25.2 (24.1), tarsus 22.7-25.0 (24.2) mm.

Resident. Uncommon in the highlands of Chiriquí, Bocas del Toro, and Veraguas. W. W. Brown, Jr., collected 3 males at Boquete and the Caribbean slope of Volcán de Chiriquí between 1500 and 1680 m (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p. 68), Mönniche found it on the Volcán de Chiriquí between 1560 and 2040 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 569), and Frank Hartman collected a female at 2100 m on Cerro Copete, near Boquete. Ridgely (*in litt.*) found this species more numerous at Fortuna, Chiriquí, during February-March 1976 than anywhere else in his experience; here it ranged down to 900 m, and was usually seen singly, less often in pairs. In Bocas del Toro, Kennard found it on the Boquete Trail at 420 m (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 460). Arcé collected it in Veraguas at Chitra, Calovévora, and Calobre (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1, pt. 34, 1884, p. 336). Skutch and Pujals (Ridgely *in litt.*) saw one above Santa Fé, Veraguas, on March 28, 1974. This race also occurs in Costa Rica. Other races, which have been treated as as many as three species, are found from northwestern Mexico to southern Peru.

Hellmayr (Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 11, 1938, pp. 79-80) considered *tibialis* "nothing but a strongly marked race of *P. chrysopheplus*, as is indicated by certain individual variants," whereas Blake (*op. cit.*, p. 570) felt that *tibialis* has evolved "beyond

the limits properly encompassed by *chrysopheplus*." Paynter (Check-list Birds World, vol. 13, 1970, p. 217) on the other hand, includes the South American *chrysogaster* as well as *tibialis* in the single species *chrysopheplus*, and this treatment is followed here.

This species inhabits forest borders and clearings, and is seldom seen inside forest. It forages at all heights in trees, singly or in groups as large as 4, feeding mainly on berries. I have seen this grosbeak only once, at Cerro Punta, Chiriquí, at the border of a steep slope planted in corn; the single individual sat quietly on a dead branch, looking like an oriole except for the huge beak, but it flew away before I was within range. Ridgely (1976, p. 330) describes the song as rich, leisurely, varied musical phrases interspersed with the phrase *tweek tseéwee*. It also has a metallic call note very similar to that of *P. ludovicianus*. I have no information on the nesting of this species.

PHEUCTICUS LUDOVICIANUS (Linnaeus): Rose-breasted Grosbeak,
Piquigrueso Pechirrosado

Loxia ludoviciana Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 306. (Louisiana.)

Medium size; bill thick; adult male in alternate plumage, throat and upper surface black, with white on rump and on wings and tail; upper breast rosy red; rest of undersurface white; female, upper surface brown, with white stripes on head and white spots on wings; male in first basic plumage like female with rosy wash on throat and breast; male in basic plumage, like first basic plumage, but wings and tail black and white.

Description.—Length 171-182 mm. Adult male in alternate plumage, throat, head, and upper back black, feathers initially edged drab brown; lower back, rump, and upper tail coverts white; wings mostly black, with central middle coverts white, tertials and some greater coverts tipped white, and primaries white on basal third to half; tail black with large white patches on distal half of inner webs of three outermost pairs of rectrices; upper breast and center of lower breast rosy red; rest of undersurface white; thighs black; underwing coverts light rosy red.

Adult male in basic plumage, wings and tail as in alternate; white superciliary stripe; head and upper back feathers black, heavily edged light brown; throat, upper breast, sides and flanks washed light brown and finely spotted with black; center of upper breast washed light rosy red; rest of undersurface white.

Male in first basic plumage, superciliary white; central crown stripe buff; sides of head and rest of crown dark brown; rest of upper surface

light brown, streaked with darker brown; wings dark brown with white less extensive than in other plumages; tail dull brown, with white less extensive than in other plumages; throat, breast, sides, and flanks light brown, with some fine darker streaking; throat and center of breast faintly washed rosy red; rest of undersurface white; underwing coverts light rosy red.

Adult female, lores, superciliary, stripe under eye, and central crown stripe white; sides of head and rest of crown dark brown; rest of upper surface streaked brown; wings dark brown; undersurface white, washed buff on throat, breast, sides, flanks, and undertail coverts, and streaked dark brown; underwing coverts orange-yellow.

Measurements.—Males (10 from the breeding range, taken in May), wing 99.8-105.9 (102.6), tail 67.8-77.9 (75.4), culmen from base 17.7-20.5 (18.9), tarsus 21.3-22.6 (21.9) mm.

Females (10 from the breeding range, taken in May), wing 98.1-105.0 (101.5), tail 66.0-77.0 (72.9), culmen from base 18.3-20.2 (19.5), tarsus 20.8-22.9 (22.0) mm.

Migrant and winter visitor from the north. Fairly common throughout as a transient and less common during the northern winter, when it ranges as far south as Peru. In Panamá, it has been found as high as 1800 m near Cerro Punta, Chiriquí (Leck and Hilty, Bird-Banding, 1968, p. 318), and has also been collected on San Miguel in the Pearl Islands (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1905, p. 159). One banded at Almirante, Bocas del Toro, on November 10, 1962, was retaken there October 12, 1963 (Loftin, Rogers, and Hicks, Bird-Banding, 1966, p. 43).

The Rose-breasted Grosbeak is found in Panamá from late September until late April. It frequents forest clearings and second-growth woodland; I have often seen it feeding on fruit. A male taken in January weighed 47.2 g (Strauch, Bull. Brit. Orn. Club, 1977, p. 65). It is usually in small groups, especially when migrating. Ridgely (*in litt.*) has seen such groups as early as March, but more often later in that month and in early April. Males molt into alternate plumage during February and March. I have not heard them sing in Panamá, but they give their metallic *pink* call regularly.

PASSERINA CYANOIDES (Lafresnaye): Blue-black Grosbeak,
Piquigrueso Negriazul

Medium size; bill very thick; male very dark blue; female dark reddish brown.

Description.—Length 142-170 mm. Adult male, lores and area

around lower eyelid black; forecrown and fine superciliary grayish blue, fading to dark blue of rest of upper surface; wing coverts, remiges, and rectrices black, edged dark blue; undersurface dark blue, becoming more blackish on abdomen and undertail coverts; underwing coverts black.

Adult female, entire upper surface, including wing coverts, reddish brown; remiges and rectrices blackish brown, edged reddish brown; undersurface between tawny brown, darkest on breast, sides and flanks; underwing coverts tawny.

Immature male, like female.

The Blue-black Grosbeak is a common inhabitant of undergrowth in dense forest and second growth in the more humid lowlands of both slopes. Near El Volcán, Chiriquí, it has been found as high as 1230 m (Worth, Auk, 1939, p. 309). Two races are found in Panamá, *toddi* of Chiriquí and Veraguas, the Almirante Bay region of Bocas del Toro, north to Nicaragua, and nominate *cyanoides* from Coclé east through Panamá to western Ecuador and northwestern Venezuela. Other races range north to southeastern Mexico and south to Bolivia, Brazil, and the Guianas.

I have found this grosbeak common but difficult to see in forest. In the dim light, it usually appears black, even when occasionally it rises from the thick undergrowth to sing from a perch high above in a tree. The song is distinctive, "a series of loud, clear, deliberate whistles *do-do, deh, dee, do*, often followed by a soft, irregular twitter" (Eisenmann, Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 57). The female seems to sing almost as well as the male. This species sings through much of the year. Both sexes also give a sharp, scolding *kee-ee-y*. Skutch (Pac. Coast Avif., no. 31, 1954, pp. 51-52) found that these birds are partial to the seeds of maize. I took 1 whose stomach held ground-up drupes. The stomachs examined by E. A. Goldman contained in addition to a variety of seeds, remains of ants, snout-beetles, arachnids, and caterpillars. Two collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 31.1 and 31.4 g.

PASSERINA CYANOIDES TODDI Paynter

Passerina cyanoides toddi Paynter, 1970, Check-list of Birds of the World, v. 13, p. 239; new name for *Cyanocompsa cyanoides caeruleescens* Todd, 1923, Auk, 40, p. 61. [Preoccupied in *Passerina* by *Tanagra caeruleescens* Wied, 1830]. (Esparta, Costa Rica.)

Characters.—Male, darker all over than nominate *cyanoides*; less light blue on superciliary area; female, undersurface tinged more russet.

A male collected at Puerto Armuelles, Chiriquí, on February 10, 1966, had the iris dark brown; mandibular rami for lower two-thirds neutral gray; rest of bill black; tarsus and toes fuscous-brown; claws black.

Measurements.—Males (10 from Panamá and Costa Rica), wing 79.3-86.2 (82.1), tail 61.8-73.8 (69.3), culmen from base 19.0-22.7 (21.4), tarsus 19.3-21.2 (20.7) mm.

Females (10 from Panamá and Costa Rica), wing 73.6-84.5 (77.7), tail 61.8-69.3 (64.9), culmen from base 19.0-22.8 (21.1), tarsus 19.3-21.3 (20.2) mm.

Resident. Common in the lowlands of Chiriquí and in Veraguas at least as far as Soná and Isla Cébaco, and also in the Almirante Bay region of western Bocas del Toro. Arcé collected specimens at Santa Fé, Calovévora, and Chitra (Salvin and Godman, *Biol. Centr.-Amer., Aves*, vol. 1, pt. 43, 1885, p. 346); the Calovévora specimen (British Museum no. 85.12.14.257) agrees with birds from Chiriquí. R. R. Benson collected 2 females between 600 and 750 m on Cerro Montosa, Los Santos, in 1925 (American Museum of Natural History nos. 233287 and 233288). In Chiriquí, it has been collected as high as 1230 m near El Volcán, by Worth (Auk, 1939, pp. 309-310). In Bocas del Toro, it has been collected at Changuinola, Western River, and Almirante (Peters, *Bull. Mus. Comp. Zool.*, vol. 71, 1931, p. 337). It ranges north to Nicaragua.

In Panamá there is marked incipient subspeciation within *toddi*. Birds from the Pacific slope (Soná and Isla Cébaco in Veraguas, Puerto Armuelles, El Volcán, Bugaba, and El Banco in Chiriquí) have the bill markedly larger and longer than in birds from the Atlantic slope at Almirante. There is virtually no overlap in bill measurements (13 males from the Pacific slope range from 20.0 to 22.2 mm in culmen length, average 20.9; 7 males from Almirante range from 17.8 to 20.1 mm., average 19.0). Thus, virtually all individuals from Panamá can be identified as coming from one slope or the other solely on bill size. The differences break down in Costa Rica, however, so that recognition of more than one subspecies within the populations now listed as *toddi* is impractical.

Worth (*op. cit.*) found this species nesting near El Volcán on June 29, 1937, when the female was incubating two eggs. "The nest was in a small sapling at the edge of a forest trail. . . . about seven feet from the ground and appeared rather flat from the outside, but in reality it was deeply cupped within. It was loosely built of coarse sticks and stalks, with a slightly less coarse lining of roots and grasses. . . . The

eggs each measured 25×19 mm. They were white, sprinkled rather sparsely with round dots about 1 mm. in diameter; the dots were of two colors, russet and light tan, the russet ones being by far the more numerous. On July 2, the eggs were newly hatched. The young had a sparse covering of down, dirty gray-brown in color."

Skutch (Pac. Coast Avif. no. 31, 1954, pp. 55-61) has found this species nesting in Costa Rica from March to August. All but one of the twelve nests he found contained two eggs; the exception had only one egg. Both sexes build the nest, but incubation is performed only by the female and requires 13 or 14 days. The young are fed ground-up seeds and a few insects by both parents; at 10 days they are well feathered. Skutch observed one pair that raised at least 2 broods in one season.

PASSERINA CYANOIDES CYANOIDES (Lafresnaye)

Coccyborus cyanoides Lafresnaye, 1847, Rev. Zool. [Paris], 10, p. 74. (Panamá.)

Characters.—Male, lighter all over; female less russet on under-surface.

A male collected at Cañita, Panamá, on February 7, 1962, had the iris mouse brown; lower sides of mandible at base neutral gray; maxilla, upper half of sides of mandible, tip, and broad gonys black; tarsus, toes, and claws fuscous-black. A female taken there the next day had the iris mouse brown; maxilla, extreme tip and angle of mandible fuscous-black; rest of mandible light fuscous; tarsus, toes, and claws fuscous. An immature male taken February 24, 1961, at the Peluca Hydrographic Station, Panamá, had the entire mandible dark neutral gray.

Measurements.—Males (10 from Panamá), wing 78.8-81.0 (80.1), tail 63.6-70.9 (68.1), culmen from base 19.4-21.8 (20.5), tarsus 19.0-21.0 (19.8, average of 9) mm.

Females (10 from Panamá), wing 73.0-80.0 (77.2), tail 59.6-71.6 (64.1), culmen from base 19.0-21.0 (20.3), tarsus 18.7-20.3 (19.5) mm.

Resident. Common in the lowlands of both slopes from at least El Uracillo, in eastern Coclé, eastward through northern Colombia to northwestern Venezuela and to central western Ecuador. In the Canal Zone, it has been found breeding in July (Eisenmann, *Smiths. Misc. Coll.*, vol. 117, no. 5, 1952, p. 57) and August (Arbib and Loetscher, *Auk*, 1935, p. 327). Eggs from the Canal Zone agree with those of the other Panamá races (Stone, *Proc. Acad. Nat. Sci. Philadelphia*, vol. 70, 1918, p. 275).

**PASSERINA CAERULEA CAERULEA (Linnaeus): Blue Grosbeak,
Piquigrueso Azulado**

Loxia caerulea Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 175. (South Carolina.)

Medium size; male dark violet-blue with two reddish brown bars on wing; female, upper surface warm brown, sometimes tinged blue on rump and upper tail coverts; undersurface duller, lighter brown or grayish buff.

Description.—Length 150-156 mm. Adult male, lores, lower rim of eye, and base of mandible black; entire upper and lower surfaces violet-blue, with feathers of upper back black, edged violet-blue; lesser wing coverts violet-blue; middle ones reddish brown; greater coverts black, tipped reddish brown and with outer webs edged violet-blue; remiges and rectrices black with outer webs edged violet-blue; rectrices narrowly tipped white; underwing coverts black.

Adult female, crown and upper back warm, slightly reddish brown or drabber, more grayish brown; lower back through upper tail coverts duller, sometimes washed with blue; lesser wing coverts as upper back; middle and greater coverts dark brown, tipped reddish brown, forming two bars; rectrices and remiges dark brown; rectrices narrowly tipped white; undersurface varies from pinkish buff to tawny olive, usually darkest on breast; underwing coverts pinkish to cinnamon-buff.

Measurements.—Males (10 from the breeding range, taken in May), wing 82.2-90.4 (86.9), tail 62.3-67.6 (65.3), culmen from base 16.6-18.7 (17.6), tarsus 18.9-20.6 (19.8) mm.

Females (10 from the breeding range, taken in May), wing 78.0-84.0 (81.5), tail 59.2-67.5 (64.7), culmen from base 16.8-18.2 (17.5), tarsus 17.9-20.1 (19.0) mm.

Winter visitor from the north. Rare and local, but probably regular, known primarily from Almirante, Bocas del Toro, and Playa Coronado, western Province of Panamá. There are 4 sight records from the Canal Zone: 1 at Gamboa on March 15, 1979 (Ridgely *in litt.*), 1 at Gatún Locks on March 18, 1973 (D. Engleman and J. Schwartz), another there on January 22, 1981 (V. Emanuel, R. A. Rowlett, et al.), and an immature male at Frijoles on March 16, 1974 (Eisenmann) (Ridgely, 1976, p. 331). Other birds seen by Ridgely include a group of 6 south of El Rincón, on January 23, 1976 (all were in female or immature plumage) and an adult male near Alanje, Chiriquí, on March 6, 1976.

Panamá seems to be the normal southern limit of this race's winter range, which extends north to Mexico; other migrant and resident races are found south to Costa Rica. There are 2 specimens records of this bird from South America: a female taken at El Edén on the Napo

River in Napo Province, Ecuador, taken December 1, 1964, now in the American Museum (Ridgely, American Birds, 1980, p. 248) and a male in changing plumage from Eroca (=Hiroca) in the Sierra Perijá, Colombia, taken by Carriker on April 4, 1942, and now in the Smithsonian (Brown and Hilty, Bull. Brit. Orn. Club, vol. 103, 1983, p. 17).

I have not seen the Blue Grosbeak in Panamá. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 372) says that in Costa Rica wintering birds of this race are generally seen in small groups and prefer cleared areas with thick shrubbery, where they stay low down and occasionally come to the ground. In Panamá, it has been recorded from early October to late March.

**PASSERINA CYANELLA (Sparrman): Indigo Bunting,
Semillero Azulado**

Tanagra cyanea Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 315. (South Carolina) [preoccupied in *Passerina* by *Loxia cyanea* Linnaeus, 1758.]*
Emberiza cyanella Sparrman, 1787, Mus. Carl., fasc. 2, pls. 42, 43. ("America Septentrionali.")

Small; adult male in alternate plumage bright blue, darkest on head and undersurface; female warm reddish brown on upper surface; undersurface buff with some darker streaking; male in basic plumage like female but often with some patches of blue.

Description.—Length 115-123 mm. Adult male in alternate plumage, lores and border of maxilla black; crown, sides of head to below eye, throat, and sometimes breast blue-violet, fading to lighter blue on rest

*The apparently reasonable merger of *Cyanocompsa* Cabanis 1861 with *Passerina* Vieillot 1816 (Paynter, Check-list Bds. Wld., vol. 13, 1970) made the name for the Indigo Bunting a junior homonym of that for the South American Ultramarine Grosbeak. Both are Linnaean names and the only ones that have recently been used for the taxa in question. The rules of nomenclature clearly call for suppression of the junior homonym if one accepts the above generic merger: "A species-group name that is a junior secondary homonym must be rejected by any zoologist who believes that the two species-group taxa in question are congeneric." (Article 59b, Intern. Code Zool. Nomen., 1964, 2nd ed., p. 57). Despite this, Paynter (*op. cit.*) and Eisenmann et al. (Bull. Zool. Nomen., vol. 27, 1971, pp. 259-261) proposed to suppress the earlier name *Loxia cyanea* Linnaeus 1758 in favor of *Fringilla brissonii* Lichtenstein 1823, in order to preserve *Passerina cyanea* for the more "familiar" Indigo Bunting and to prevent "confusion." Such actions merely have the effect of making the rules of nomenclature meaningless. If zoologists confronted with similar problems cannot simply resort to the published standards to reach a decision, but must instead decide which of two homonyms is the more "familiar," then nomenclatural chaos is assured. Therefore, in accordance with the clearly stated rules of nomenclature, I have adopted the combination *Passerina cyanella* (Sparrman) as the only available name for the Indigo Bunting. S.L.O.

of upper and undersurfaces; lesser wing coverts blue; other wing coverts, remiges, and rectrices black, edged blue.

Adult female, entire upper surface warm reddish brown; wing coverts and remiges dark brown, edged reddish brown; rectrices dark brown, sometimes edged bluish; undersurface buffy, washed and streaked with light brown across breast and on sides and flanks; underwing coverts white.

Male in basic plumage, like female, but sometimes irregularly marked with blue.

Measurements.—Males (10 from the breeding range, taken in May), wing 64.0-67.8 (65.7), tail 48.5-54.4 (50.2), culmen from base 10.5-12.5 (11.4), tarsus 16.1-17.6 (16.6) mm.

Females (10 from the breeding range, taken in May), wing 61.2-65.8 (63.9), tail 44.3-49.2 (47.5), culmen from base 11.0-12.2 (11.6), tarsus 15.4-18.5 (16.9) mm.

Migrant and winter visitor from the north. Uncommon or locally common in Bocas del Toro and Chiriquí, progressively less so eastward; it is scarce in the Canal Zone and rare in eastern Panamá. Most of the population winters from central Mexico to Costa Rica, with only a few going as far as Colombia and Venezuela. In the Chiriquí highlands, it has been recorded up to 1800 m (Ridgely, 1970, p. 331), and it has also been collected on Saboga in the Pearl Islands (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1905, p. 159). Eisenmann (*in litt.*) reports a partly blue individual netted and released on January 26, 1973, from the Galindo camp on the Río Bayano, eastern Province of Panamá. This species is found in Panamá from early October to mid-May (Loftin and Olson, Carib. Journ. Sci., vol. 4, no. 3, 1963, p. 195).

While in Panamá, the Indigo Bunting frequents open scrub, bushy pastures, and thickets, where it sometimes moves about in small flocks. Males acquire their alternate plumage by February or March. Leck (Bird-Banding, 1975, p. 202) weighed several Indigo Buntings that were mist-netted at Cerro Punta, Chiriquí; 15 caught in March 1968 had an average weight of 13.8 g and 8 caught the following month had an average weight of 15.4 g. Burton's weights of 26 and 28 g (Bull. Brit. Orn. Club, 1975, p. 86) must be due to a lapsus.

**PASSERINA CIRIS (Linnaeus): Painted Bunting,
Semillero Pintado**

Small; male, crown, nape, sides of throat and of breast bluish violet; upper back and most wing coverts bright yellow-green; lower back and

rest of undersurface red; female, upper surface bright olive-green; undersurface yellowish buff.

Description.—Length 120-132 mm. Adult male, ring around iris red; crown, nape, sides of throat and of breast bluish violet; upper back bright yellow-green; rest of upper surface and undersurface red, slightly deeper on breast; lesser and middle wing coverts dark red; greater wing coverts and outer webs of tertials bright green; remiges and rectrices dusky dark brown, with outer webs edged dark red; underwing coverts grayish pink.

Adult female and immature male, entire upper surface, including wing coverts, bright olive-green, slightly brighter on rump; remiges and rectrices dusky, with outer webs edged olive-green; undersurface yellowish buff, tinged olive across center of breast and on sides and flanks; underwing coverts whitish.

The Painted Bunting is an uncommon to rare winter visitant, recorded only west of the Canal Zone. Most of the population winters north of Panamá in Central America and Mexico and in Florida and the Greater Antilles. As several of the few Panamá records are sight reports, it is not possible to determine the relative frequency of occurrence of each race in Panamá. The species has been found as far east as Playa Coronado, Province of Panamá, where on two occasions Eisenmann had excellent observations in shrubbery or overgrown fields: November 25, 1962, an adult male and another bird in green plumage, and on March 25, 1967, an adult male. One was netted at Aguadulce, Coclé, on February 12, 1971, by Richard Cooke (Eisenmann, *in litt.*). Most records are from Almirante, Bocas del Toro, where the birds were netted by personnel of the Gorgas Memorial Laboratory, and from the area of Volcán de Chiriquí, where Arcé and Hicks collected specimens in the 19th century (Salvin and Godman, *Biol. Centr.-Amer., Aves*, vol. 1, pt. 48, 1886, p. 365).

This species has been found in Panamá from October 23 to April 22 (Eisenmann, *in litt.*). It frequents undergrowth in shrubby areas and woodland borders, where it may be found in small groups (Ridgely, 1976, p. 331).

In his review of the Painted Bunting, Storer (*Occ. Pap. Mus. Zool. U. Mich.*, no. 532, 1951, pp. 1-11) identified three populations, a small, bright eastern one, *ciris*, a larger, pale, western one, *pallidior*, and a central population that is intermediate in size. The last does not differ sufficiently to be treated as a separate subspecies, although Storer claimed to be able to recognize it on both the breeding and wintering grounds.

PASSERINA CIRIS CIRIS (Linnaeus)

Emberiza ciris Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 179. (South Carolina.)

Characters.—Slightly smaller than *pallidior*; male with undersurface brighter red; female more greenish above and yellower below.

Measurements.—Males (10 from the breeding range, taken in May), wing 65.5-72.4 (70.6), tail 51.1-58.4 (54.8), culmen from base 10.2-12.2 (11.0), tarsus 17.3-19.0 (18.4) mm.

Females (10 from the breeding range, taken in May-July), wing 63.0-67.0 (64.8), tail 49.1-53.2 (50.9), culmen from base 10.3-11.7 (10.9), tarsus 17.1-19.1 (18.1) mm.

Winter visitor from the north. Specimens from Panamá that are definitely of this race are: a deeply colored adult male taken by Arcé on the southern slope of the Volcán de Chiriquí (British Museum no. 85.12.14.662), another very bright adult male taken by W. M. Perrygo at Parita, Herrera, February 3, 1948 (USNM no. 400889), a very brightly colored immature male taken by Olson at Almirante, Bocas del Toro, on April 9, 1963 (AMNH no. 785749), and another immature male taken at Almirante on October 27, 1964 (USNM no. 533401).

PASSERINA CIRIS PALLIDIOR Mearns

Passerina ciris pallidior Mearns, 1911, Proc. Biol. Soc. Washington, 24, p. 217. (Fort Clark, Kinney County, Texas.)

Characters.—Larger than nominate *ciris*; males with undersurface paler red; females more grayish green above and more buffy, less yellow, below.

Measurements.—Males (10 from the breeding range, taken in March and April), wing 69.0-74.4 (71.9), tail 50.9-57.5 (54.2), culmen from base 11.0-12.7 (11.7), tarsus 17.4-19.1 (18.2) mm.

Females (10 from the breeding range, taken in March-June), wing 65.2-69.5 (67.3), tail 50.4-55.0 (53.0), culmen from base 11.0-11.8 (11.6), tarsus 16.9-19.1 (18.0) mm.

Winter visitor from the north. An adult male collected by F. Hicks at David, Chiriquí, in March 1865 (USNM no. 40336) has a relatively large wing and rather pale underparts and was identified as *pallidior* by Allan R. Phillips. A female (USNM no. 471826) collected at Alanje, Chiriquí, on March 5, 1960, is quite pale below and is likewise referable to this race.

**GEOSPIZA JACARINA SPLENDENS (Vieillot): Blue-black
Grassquit, Arrocero Piquiagudo**

FIGURE 45

Fringilla splendens Vieillot, 1817, Nouv. Dict. Hist. Nat., nouv. ed., 12, p. 173.
(Cayenne.)

Very small; male entirely dark, glossy blue-black; female, upper surface dull grayish brown, undersurface dingy white, streaked brown on breast, sides, and flanks.

Description.—Length 93-108 mm. Adult male, entire body and wing coverts dark, glossy blue-black, sometimes edged brownish; remiges and rectrices black, edged blue-black; a few concealed feathers on sides of upper breast, at bend of wing, are white.

Adult female, upper surface, including lesser wing coverts, dull grayish brown, rest of wing feathers dark dusky brown; tail dusky; undersurface whitish, with throat, breast, sides, and flanks washed pinkish buff and streaked dusky; underwing coverts white, washed with pinkish buff.

Immature male, like female, increasingly covered with blue-black.

A male collected at El Potrero, Coclé, on March 7, 1962, had the iris dark brown; maxilla and tip of mandible black; base of mandible neutral gray; tarsus and toes fuscous-black; claws black. A female taken there the same day had the iris dark brown; maxilla dull brown; a wash of same on sides of mandibular rami; rest of mandibular dull brownish white; tarsus, toes, and claws dark dull brown.

Measurements.—Males (10 from Panamá), wing 45.5-49.5 (47.4), tail 37.7-44.9 (41.5), culmen from base 9.6-10.9 (10.3), tarsus 13.1-15.1 (14.3) mm.

Females (10 from Panamá), wing 44.0-48.5 (45.9), tail 37.5-41.8 (39.6), culmen from base 9.2-11.0 (10.3), tarsus 13.2-15.2 (14.2) mm.

Resident. Abundant throughout the lowlands of both slopes, although more numerous on the Pacific side, and less common in the foothills. In the Chiriquí highlands, it has been recorded at least to 1590 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 571) and I have also found it on the Pearl Archipelago and Coiba Island off the Pacific Coast. This race ranges from Mexico to northern South America; other races are found south in the Guianas and Brazil to northern Argentina and on the Pacific Coast from Ecuador to northern Chile.

Although this species has long been placed in the monotypic genus *Volatinia*, Steadman (Trans. San Diego Soc. Nat. Hist., vol. 19, no.

19, 1982, pp. 279-286) has shown that it is congeneric with and probably ancestral to, the Galápagos finches of the genus *Geospiza*, which name has priority over *Volatinia*. He also includes the Cocos Finch (*Pinaroloxias inornata*) in *Geospiza* as an independently derived insular form of *G. j. splendens*.

FIGURE 45.—Blue-black Grassquit, Arrocero Piquiagudo, *Geospiza jacarina splendens*, female (left), males (right).

This grassquit is one of the most abundant birds of open bushy or grassy areas. I have usually seen it in groups (often with various seed-eaters), from small to very large, although during the nesting season

the birds become somewhat more territorial. Their food is mainly grass seeds; 1 collected by E. A. Goldman had the stomach 98% filled with shelled seeds of *Paspalum* sp. and *Panicum* sp., and 2% ant and beetle remains. The male has a very distinctive territorial display in which, with the aid of his wings, he jumps vertically 12 to 18 inches and drops to the same perch. Sometimes the jump is accompanied by a buzzy call that has been rendered variously as *t-s-e-u*, *bzeé-eeep*, and *dzee-ew*. I have also heard a rattle of wings. Frequently the male rotates the direction he faces in each succeeding hop and may hop once every 15 seconds for a half hour or more. In addition to using hopping displays as territorial markers, a series of shorter hops may serve to intimidate an enemy. Alderton (Condor, 1963, p. 156) observed a male drive a lizard from 2 juveniles just out of the nest in this manner.

This species has a long breeding season: Dr. Pedro Galindo found a nest at Almirante, Bocas del Toro, on May 5, 1962; the season peaks in September and continues into October (Alderton, *op. cit.*, p. 162). Courtship involves the same kinds of hops as are used in territorial display. The nest is built by both sexes. It is a small shallow cup made of tendrils, rootlets, and grass stems placed in a bush or grass from a few centimeters to 3 meters above the ground; most are within 3 m of the ground. For nine nests measured by Alderton the outside diameter ranged from 4.5 to 8 cm, the inside diameter from 4.5 to 5 cm, the outside depth from 4 to 5.5 cm, and the inside depth from 2.5 to 4 cm. Barnard (Condor, 1956, p. 229) observed grassquits taking apart a nest of theirs that had been destroyed and rebuilding it elsewhere. The usual clutch is 3, although nests containing 2 are not uncommon. The eggs are bluish white with brownish or purplish spots slightly concentrated at the larger end. Three eggs in a clutch collected by Major General G. Ralph Meyer at Balboa, Canal Zone, on June 14, 1941, measured 16.8×12.1, 16.1×12.4, and 17.0×12.4 mm. Incubation is performed by both parents, although primarily by the female, and takes from 10 to 12 days. Both parents feed the young, which remain in the nest for 9 days and depart when not yet well feathered. Sometimes a pair will build two or three nests in a season, but these are usually birds whose earlier nests were not successful.

TIARIS OLIVACEA (Linnaeus): Yellow-faced Grassquit,
Arrocero Yerbero

Emberiza olivacea Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 309. (Hispaniola.)

Very small; male, superciliary and chin yellow; forehead, and in *T. o. ravid*a entire head, black; rest of upper surface green; throat and

breast, and in *ravida* belly, black; rest of undersurface grayish green; female, upper surface yellowish green; undersurface dingy white tinged green.

Description.—Length 88-101 mm. Adult male, superciliary and chin dark yellow; forehead, sides of face to eye, throat, and breast black; in *ravida* black extends to nape, over entire side of head, and to belly; rest of upper surface, including wing coverts and tail, olive-green in *T. o. pusilla*, darker in *ravida*; remiges dusky, edged green of upper surface; remainder of undersurface grayish, tinged green of upper surface; bend of wing pale yellow.

Adult female, entire upper surface, including wing coverts and tail olive-green; remiges dusky, edged olive-green; undersurface dingy olive, whiter in center of belly; faint superciliary and patch on chin of buff-yellow.

The Yellow-faced Grassquit is very common in pastures, clearings, and other grassy areas in the foothills and highlands of both slopes to around 1800 m, but is scarce and local in the lowlands. The only island off Panamá on which it has been collected is Coiba, where a well-marked race, *ravida*, is common. The mainland race, *pusilla*, ranges from Mexico through Central America to Colombia and western Venezuela; other forms are found on islands in the Greater Antilles.

This species feeds almost exclusively on the seeds of various grasses. One collected by E. A. Goldman at Lion Hill, Canal Zone, held 10 seeds of *Paspalum* sp. and about 40 seeds of *Panicum* sp. Skutch (Pac. Coast Avif., no. 31, 1954, p. 38) has seen them forage in the crowns of low trees, almost in the manner of warblers, when grass seeds are scarce. When feeding on grass seeds, they often perch on the stem of the plant on which they are feeding, or on an adjacent stem, and sometimes use their feet to hold the tip of the blade more conveniently. Two males collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 9.3 and 10.3 g. Grassquits usually feed in flocks, often with other species including Blue-black Grassquits (*Geospiza jacarina*), Variable Seedeaters (*Sporophila americana*), and White-collared Seed-eaters (*S. torquola*). When they fly up from the ground, however, I have noticed that they maintain close flock association in the bushes in which they take refuge, quite different from the straggling of seedeaters and Blue-black Grassquits when flushed. At the end of the dry season, when grassquits are forming pairs, they spend less time in flocks (Fairchild et al., Ibis, 1977, p. 87).

The song of this species is a long, weak trill delivered from a low

perch. Singing is closely tied to the advent of the wet season—during the driest months of the year it is silent, but begins singing as soon as the rains commence; singing is most vigorous during the months in which it nests, but continues until the rains end many months later.

TIARIS OLIVACEA PUSILLA Swainson

Tiaris pusillus Swainson, 1827, Philos. Mag., new ser., 1, p. 438. (Tableland, Temascaltepec, and Real de Monte, Mexico.)

Tiaris olivacea dissita Thayer and Bangs, 1906, Bull. Mus. Comp. Zool., 46, p. 223. (savanna of Panamá, Panamá.)

Characters.—Male, black restricted to forehead, sides of face to eye, and throat and breast; green of upper surface lighter, more yellowish; female more yellowish green throughout.

A male collected at Las Palmitas, Los Santos, on January 26, 1962, had the iris dark brown; bill fuscous-black; tarsus and toes brownish neutral gray; claws dusky neutral gray. A female taken there the next day had the iris dark brown; maxilla fuscous; sides and tip of mandible dull greenish gray; lower surface dull brownish white; tarsus, toes, and claws dark neutral gray.

Measurements.—Males (10 from Panamá), wing 47.5-52.2 (50.4), tail 36.2-44.8 (40.6), culmen from base 9.3-10.5 (9.8), tarsus 14.8-16.5 (15.6) mm.

Females (10 from Panamá), wing 47.0-51.0 (49.0), tail 37.6-41.7 (39.4), culmen from base 9.0-10.8 (9.7, average of 9), tarsus 14.3-15.9 (15.4) mm.

Resident. Very common in the foothills and highlands of both slopes; scarcer and more local in the lowlands, more numerous on the Pacific slope. In the Chiriquí highlands, I have found it as high as 1740 m at Cerro Punta, and Mönniche collected it between 1560 and 1650 m on the Volcán de Chiriquí.

The Yellow-faced Grassquit begins nesting later than most other Panamanian birds because it waits until the rainy season produces a new supply of grass seeds, its major food. Skutch (Pac. Coast. Avif. no. 31, 1954, pp. 38-49), who has studied the nesting of this species in Costa Rica, found no nests before April; in some years birds continued to nest into January. Courtship includes a display in which the male stands close to a female, sings, and vibrates his wings while facing her. Both sexes assist in nest construction and the male defends a territory of approximately 7 to 10 m around the nest.

The nest is placed in a tussock of grass or a low bush and is an ovoid

or globular structure of thickly interwoven grasses, lined at the bottom with finer fibers with an entrance on the side. One nest was 14 cm high and 7.5 cm in transverse diameter. Two to four eggs form the clutch, with two being the most common. The eggs are dull white, speckled with shades of brown and chocolate, thickly on the large end and sparingly over the rest of the surface. The measurements of 10 eggs averaged 16.8×12.8 mm. Incubation is performed only by the female, and requires 12 to 16 days.

Both parents feed the nestlings regurgitated bits of grass seeds. At hatching, the young have nearly black skin and no down; the mouth lining is red. At 3 days, their eyes begin to open and at 8 days the plumage is fairly developed. By 10 days, they are well feathered. When the young leave the nest at 12 to 13 days, they are completely feathered, in a plumage like the female's. At the end of the nesting season, adults and young form joint flocks.

TIARIS OLIVACEA RAVIDA Wetmore

Tiaris olivacea ravida Wetmore, 1957, Smiths. Misc. Coll., 134 (9), p. 100. (Isla Coiba, Panamá.)

Characters.—Male, black extends to nape, entire side of head, and to belly; green of upper surface darker; female grayer green throughout.

Measurements.—Males (7 from Isla Coiba, including the type), wing 50.2-53.9 (52.6), tail 38.7-40.9 (39.8), culmen from base 10.2-11.3 (10.6, average of 6), tarsus 15.9-18.0 (17.1) mm.

Females (5 from Isla Coiba), wing 50.7-52.0 (51.6), tail 37.0-38.1 (37.6), culmen from base 10.4-11.2 (10.7), tarsus 16.2-17.7 (17.0) mm.

Resident. Found only on Coiba Island, where during my visit in 1956 it was common along the borders of the pastures and at the edge of the forest, congregating especially where tall grasses bore ripening seeds. At headquarters, dozens came to feed about the mill that hulled the rice, and in the remote work camps, where rice was pounded by hand, the grassquits gleaned the fallen grain about the kitchens. They were completely tame, and often came hopping about the feet of men sitting on the benches at guard headquarters. Fully grown young were common, and on January 14 adults were mating; on the mainland I have never seen any sign of breeding at this time of year.

The dark color of these birds was noticeable even in life. The subspecific name is from the Latin *ravidus*, grayish.

SPOROPHILA SCHISTACEA SCHISTACEA (Lawrence): Slate-colored Seedeater, Arrocerero Apizarrado

Spermophila schistacea Lawrence, 1862, Ann. Lyc. Nat. Hist. N.Y., 7, p. 474. (Lion Hill, Panamá.)

Sporophila crissalis Carriker, 1908, Ann. Carnegie Mus., 4, p. 301. (Buenos Aires de Térraba, Costa Rica.)

Small; male, upper surface and most of undersurface slate gray; throat and belly white; female dull olive, except for whitish throat and belly.

Description.—Length 106-111 mm. Adult male, entire upper surface slate gray; wings and tail blackish gray, with inner lesser and middle coverts tipped white, and white patch at base of inner primaries; sides of chin and throat and center of belly white; rest of undersurface slate gray; underwing coverts gray and white.

Adult female, entire upper surface dull olive; wings and tail dusky, with feathers edged dull olive; throat whitish, breast, sides, and flanks dull olive; center of belly and undertail coverts yellowish white; underwing coverts white.

A male taken at Pucro, Darién, on January 30, 1964, had the iris dark brown; basal two-thirds of culmen fuscous; rest of bill light orange-yellow; tarsus and toes brownish neutral gray; hind claw light brownish white, other claws fuscous. An immature male taken there February 9, 1964, had the iris wood brown; a narrow line of dull honey yellow on the left hand side of bill from nostril to a little behind bill tip; gonys dull pale brown; rest of bill fuscous; tarsus and toes grayish fuscous, claws fuscous brown.

Measurements.—Males (10 from Panamá), wing 57.2-64.5 (61.8), tail 39.0-44.6 (42.1), culmen from base 10.6-11.8 (11.2), tarsus 13.3-14.5 (13.8) mm.

Females (2 from Panamá and Colombia), wing 57.5-59.3 (58.4), tail 39.6-41.5 (40.6), culmen from base 10.4-10.6 (10.5), tarsus 13.1-13.5 (13.3) mm.

Resident. Rare and localized in second-growth woodlands and forest borders in the more humid lowlands of both slopes. It ranges locally into foothills, such as Cerro Azul and Cerro Santa Rita (Ridgely, 1976, p. 332). It has been collected in the Canal Zone at several locations, in Darién at Cana (Griscom, Bull. Mus. Comp. Zool., vol. 69, 1929, p. 183) and at Pucro, at Puerto Obaldía, San Blas (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 371), in Chiriquí at Bugaba (Hellmayr, Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 11,

1938, p. 174), and at Almirante, Bocas del Toro. Beyond Panamá, this race is found in southwestern Costa Rica and across northern Colombia to the western slope of the Eastern Andes in Norte de Santander; other races range to Brazil and Bolivia.

The Slate-colored Seedeater differs from other seedeaters in that it is found primarily in woodlands. It usually occurs in pairs or small groups. The song is very different from that of other Panamá seed-eaters, but does resemble that of several South American species. The song is "a series of fast high sibilant notes, *st-st-st-st-st-st*, sometimes varied to a thin rattle" (Ridgely, *op. cit.*, p. 333). The stomach of one that I shot from a tree crown along a forest quebrada at Pucro, Darién, had a few developing rice grains that had been hulled.

The one nest I have seen was collected by Dr. A. A. Allen in the Canal Zone. It was made of leaves, lined with rootlets, placed in a bamboo vine about 5 m above the ground. H. von Wedel (*Griscom, op. cit.*) noted that at Puerto Obaldía, San Blas, nearly all individuals were breeding in July and August.

SPOROPHILA TORQUEOLA MORELLETI (Bonaparte): White-collared Seedeater, Arrocerero Cuelliblanco

Spermophila moreletii Bonaparte (ex Pucheran MS), 1851?, *Consp. Avium*. 1 (1850), p. 497. (Petén, Guatemala.)

Very small; bill thick; male, upper surface mostly black, with white band across nape and white bars on wings; upper breast black; rest of undersurface whitish; female, upper surface mostly brownish olive, with two whitish bars on wings; undersurface buffy.

Description.—Length 95-103 mm. Adult male, entire upper surface except rump black, with white band from throat across nape sometimes partially covered; rump light buffy brown; wings black, with middle and greater coverts and tertials tipped white, and all remiges except two outermost primaries white at base; tail black; lower rim of eye white; sides of head black; throat and band extending around nape white; upper breast black; rest of undersurface white, tinged buff; underwing coverts white.

Adult female, entire upper surface brownish olive; lesser wing coverts brownish olive; other wing coverts and tertials dusky, tipped whitish, and edged with buff; remiges and rectrices dusky, finely edged with buff; undersurface cinnamon-buff; underwing coverts white.

Measurements.—Males (10 from Bocas del Toro and Costa Rica), wing 49.3-52.5 (51.1), tail 42.0-46.5 (44.2), culmen from base 8.6-9.9 (9.4), tarsus 14.8-15.9 (15.2) mm.

Females (10 from Bocas del Toro, Costa Rica, and Honduras), wing 48.0-52.4 (50.0), tail 39.6-46.0 (42.4), culmen from base 9.0-10.2 (9.6), tarsus 13.3-15.3 (14.7) mm.

Resident. Known in Panamá only from the lowlands of western Bocas del Toro and western Chiriquí. It was first discovered in Panamá at Changuinola, Bocas del Toro, in 1956 by Eisenmann (Condor, 1957, p. 259), who saw at least 30 there during June and July. In April and May, 1980, Ridgely (*in litt.*) found it fairly common in Changuinola. During October and November 1962, the Gorgas Memorial Laboratory collected 2 at Almirante, Bocas del Toro. On December 16, 1962, Eisenmann found a singing male and several females at Frontera, Chiriquí, along the road skirting the west bank of Río Chiriquí Viejo, about a quarter mile from the Costa Rica border. Elsewhere in Chiriquí, I saw at least 3 at Puerto Armuelles on March 6, 1966, and Ridgely (1976, p. 333) found 4 at the David Airport on January 18, 1974, where as of 1981 it was being seen regularly. In March 1976, Ridgely (*in litt.*) saw about 25 near Estero Rico. North of Panamá, this race ranges to northern Veracruz, Mexico; other races are found north to southern Texas.

This seedeater inhabits open, grassy country. When I saw them at Changuinola in 1958 they seemed to be grouped in little colonies where 15 to 30 or more would occupy an area of a few acres, whereas they would be absent over wide stretches of field between. Their preference is for sections along dikes and old lagoons, where the ground is somewhat broken and is grown with bunch grass and weeds. It must have been in such areas along the open banks of the Changuinola and other rivers that they found their original habitat. The song, as described by Eisenmann (*op. cit.*), is a series of sweet, rich notes, *sweet-sweet-sweet-sweet-sweet*, *teéoo-teéoo-teéoo*, *tew tew tew tew*, the last notes very canary-like.

Of the 4 males I collected at Changuinola on February 13, 1958, the 2 "immatures" with brown backs had testes fully developed while those that were fully black had the sexual organs smaller. The females were very shy. Whenever one appeared on an open perch, one or two males would make a pass at her and she would fly down into the cover of the grass. Skutch (Pac. Coast Avif. no. 31, 1954, pp. 33-37) has found nests of this species in Costa Rica between May and December. The nest is placed in a clump of grass, bush, or low tree, usually from 1 to 1.6 m from the ground. It is built entirely by the female and is a cup with an outer layer of cobwebs, filled in with rootlets, fibers, and grasses, and lined with horse hairs, when available. Two, or more

rarely, three eggs are laid. They are pale blue, bluish-white, or pearl-gray, finely mottled with light brown or chocolate, occasionally more heavily blotched with black or deep brown. Measurements average 16.3×12.7 mm. Incubation requires 13 days and is performed entirely by the female. Both parents feed the young, which remain in the nest 10 or 11 days. As the breeding season is so long, each pair of birds may nest more than once.

**SPOROPHILA AMERICANA (Gmelin): Variable Seedeater,
Arrocero Piquigordo**

FIGURE 46

Loxia americana Gmelin, 1789, Syst. Nat., 1(2), p. 863. (Cayenne.)

Small; male variable, from nearly entirely black, with white speculum, to black with extensive white on throat, underparts, and rump. Female mostly olive-brown.

Description.—Length 98-105 mm. Adult male, variable, from nearly entirely black with white speculum, midline of belly, and underwing coverts, to extensively marked with white on throat, sides of nape, under-surface below black breast band, rump, speculum, and underwing coverts.

Female, mostly olive-brown, becoming lighter on sides of head, throat, and center of belly.

The Variable Seedeater is abundant throughout Panamá in clearings, gardens, and open country. It is commonest in the lowlands. Usually it occurs in small flocks in which females and immatures outnumber the adult males. Although most often found in thickets and grasses, these birds occasionally perch in the tops of fairly tall trees. Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 58) describes the song as "A sweet, rapid, twittering, somewhat canarylike *tsíwee tsíwee tsíwee*, *chee chee chee*, *twée-twée-twée-twée*, *chirr chirr chirr chirr* with variations; the *chirrs* often omitted. The call is a sweet questioning *chíwee* or *tsíwee*; also *cheep*."

This species feeds almost entirely on grass seeds. Of 7 stomachs examined by E. A. Goldman, only 1 contained any animal matter, a bit of a hymenopteran. Plant matter included seeds of *Solanum*, *Paspalum*, *Amaranthus*, *Panicum*, *Sporobolus*, *Carex*, and *Chaetochloa*. I have often seen them fly up to a seed-bearing grass stem and land so that it bent to the ground where the seeds could more easily be picked off. At Juan Mina, Canal Zone, I once saw a number of these birds feed on grass heads growing in water well out from land. Strauch (Bull. Brit.

FIGURE 46.—Distribution of the races of *Sporophila americana* in Panamá (from Olson, 1981).

Orn. Club, 1977, p. 65) collected specimens weighing from 10.0 to 11.9 g.

Olson (Proc. Biol. Soc. Wash., vol. 94, 1981, pp. 380-390) has revised the rather complex variation and nomenclature of this species in Panamá, and his conclusions are followed here.

SPOROPHILA AMERICANA CORVINA (P.L. Sclater)

Spermophila corvina P. L. Sclater, 1859, Proc. Zool. Soc. London, p. 379. (Playa Vicente, Oaxaca, Mexico.)

Spermophila badiiventris Lawrence, 1865, Ann. Lyc. Nat. Hist. N.Y., 8, p. 172. (Greytown, Nicaragua.)

Characters.—Adult males almost entirely black, with only the speculum of the wing and midline of belly white. Speculum smaller than in *hicksii*. Female and subadult males are markedly darker and more sooty than in other subspecies.

Measurements.—Males (10 from Bocas del Toro, Coclé, Colón, and the Canal Zone), wing 52.0-54.5 (53.6), tail 42.0-47.4 (45.0), culmen from base 9.7-11.0 (10.2), tarsus 13.5-15.9 (14.9) mm.

Females (10 from Bocas del Toro and Costa Rica), wing 50.0-55.0 (52.2), tail 39.8-46.2 (43.2), culmen from base 9.8-11.0 (10.3), tarsus 13.7-15.8 (14.9) mm.

Resident. Common on the Caribbean slope from Bocas del Toro to the Canal Zone. The few specimens collected from the Río Calovévora, Veraguas, to the Canal Zone, are slightly less pure, in a plumage having some white on the sides of the neck. Beyond Panama, this subspecies occurs north along the Caribbean slope to Veracruz, Mexico; it is absent from Yucatán.

Two nests I collected at Almirante, Bocas del Toro, on March 12, 1962, were rather thin-walled cups of slender brown rootlets. One had a few small leaves intertwined in the sides and base. The nests were compact, strong, and firm, but with the interior visible from the sides and below. Dimensions of one nest were 75×75 mm. on the outside, with an inside depth of 45 mm. Huber (Proc. Acad. Nat. Sci. Philadelphia, vol. 84, 1932, pp. 241-242) describes several nests and eggs of this race taken in Nicaragua. Clutches were of one or two eggs. "The eggs are grayish white spotted with fuscous and blackish brown. They measure 17.7×13 and 17.6×13.1 mm. respectively." Skutch (Pacific Coast Avif. no. 31, 1954, p. 31) noted that most nests he found contained two eggs or nestlings, but a three-egg clutch is occasionally laid.

SPOROPHILA AMERICANA HOFFMANNI Cabanis

Sporophila hoffmanni Cabanis, 1861, Journ. Orn. 9, p. 6. (Costa Rica.)

Spermophila collaris Lawrence, 1865, Ann. Lyc. Nat. Hist. N.Y., 8, p. 177. (David, Chiriquí, Panamá.)

Characters.—Similar to *hicksii*, but adult males with throat black, with varying amounts of white, either as a narrow collar, or as discontinuous patches on either side of the neck.

A female taken March 1, 1965, at El Volcán, Chiriquí, had the iris dark brown; line of culmen dull black, shading into fuscous-black on rest of maxilla; extreme base of gonys dull brownish white; rest of mandible dusky neutral gray; tarsus and toes fuscous-brown; claws fuscous-black.

Measurements.—Males (10 from Chiriquí and Veraguas), wing 52.0-55.0 (53.3), tail 41.5-46.5 (44.1), culmen from base 9.8-11.3 (10.4), tarsus 13.1-15.4 (14.3) mm.

Females (10 from Chiriquí and Veraguas), wing 49.0-53.0 (51.5), tail 40.1-45.3 (41.8), culmen from base 9.4-10.8 (10.1), tarsus 13.2-15.3 (14.1) mm.

Resident. Common in grasslands on the Pacific slope of Chiriquí and on Isla Coiba, Veraguas. It also occurs in Costa Rica.

When I visited Coiba in January and February of 1956, I found a few of these seedeaters in the open edge of mangrove swamps, particularly near the beaches, which must have been their original range, as they do not penetrate heavy stands of woodland. The birds were commoner at the borders of pastures and cultivated areas. On January 18, I observed them mating.

SPOROPHILA AMERICANA HICKSII (Lawrence)

Spermophila hicksii Lawrence, 1865, Ann. Lyc. Nat. Hist. N.Y., 8, p. 172. ("Panama," probably = Buenaventura, Colombia.)

Spermophila aurita chocoana Meyer de Schauensee, 1950, Proc. Acad. Nat. Sci. Philadelphia, 52, p. 138. (Nuquí, Chocó, Colombia.)

Characters.—Adult males with throat, side of neck, lower breast and abdomen, rump, undertail coverts, and speculum white; pectoral band and variable amounts of chin black.

A male taken February 17, 1963, at Puerto Obaldía, San Blas, had the iris dark brown; bill black except base of mandible and commissure which has a line of dull honey yellow; tarsus and toes dark neutral gray; claws black.

Measurements.—Males (10 from Darién), wing 50.8-55.0 (53.6), tail 41.9-46.4 (44.4), culmen from base 10.0-10.9 (10.2), tarsus 13.8-15.5 (14.7) mm.

Female (8 from Darién and San Blas), wing 51.0-54.0 (52.1), tail 40.2-45.5 (43.2), culmen from base 10.0-10.9 (10.4), tarsus 14.6-15.8 (15.1) mm.

Resident. Common on both slopes east of the Canal Zone and on the Pacific slope in Coclé, Los Santos, and Veraguas. Birds in western Veraguas (Soná) and on Isla Gobernadora appear to be intergrades with *hoffmanni*. Of 2 birds collected on Gobernadora one was typical of *hicksii* and the other was more similar to specimens of *hoffmanni* from Isla Coiba. Beyond Panamá, *hicksii* extends south along the Pacific slope of Colombia to the vicinity of the Río Dagua, Valle.

SPOROPHILA AMERICANA "AURITA" (Bonaparte)

Spermophila aurita Bonaparte, 1850, Consp. Gen. Av., 1(2), p. 497. ("Bras.[il]" —?Panamá.)

Spermophila semicollaris Lawrence, 1863, Ann. Lyc. Nat. Hist. N.Y., 8, p. 10. (Lion Hill, Panama Railroad.)

Spermophila fortipes Lawrence, 1865, Ann. Lyc. Nat. Hist. N.Y., 8, p. 172. (Line of Panama Railroad.)

Characters.—Extremely variable, ranging from individuals similar to *hicksii*, but with slightly more black in the rump, throat, or belly, to individuals nearly as black as *corvina*.

A male taken at the Peluca Hydrographic Station, Colón, February 23, 1961, had the iris dark brown; bill black; tarsus fuscous; claws black.

Measurements.—Males (10 from the Canal Zone), wing 51.0-56.6 (54.3), tail 41.3-50.5 (46.3), culmen from base 10.3-12.3 (11.4), tarsus 14.5-18.0 (16.3) mm.

Females (10 from the Canal Zone), wing 52.0-54.6 (53.0), tail 42.6-45.5 (45.2), culmen from base 10.7-11.8 (11.2), tarsus 14.5-17.0 (15.6) mm.

Olson (Proc. Biol. Soc. Wash., vol. 94, 1981, p. 380-390) has applied the name "*aurita*" to the birds from the hybrid zone created by intergradation of *hicksii* and *corvina* in the area of the Canal Zone. No pure parental types occur in this zone. By the use of a hybrid index, Olson determined that about 63% of these intergrades were intermediate between the two parental types, whereas 18% were closer to *corvina* and 20% were more like *hicksii*. Specimens assigned to "*aurita*" are

known as far west as La Chorrera, western Province of Panamá, and as far east as Buenaventura Island, near Portobelo, Colón, and the Candelaria and Peluca Hydrographic Stations at the headwaters of the Río Chágres. Specimens in almost pure *corvina* plumage have also been collected in some of the same Canal Zone localities. In addition to the variability usual for this population, Olson (Wilson Bull., 1965, p. 127) also reported a specimen from the Canal Zone in which part of the black in the underparts was replaced by chestnut. There are 3 more such specimens in the Smithsonian collections taken in the Canal Zone in 1911 by E. A. Goldman.

In the Canal Zone, the breeding season runs, in different years, from May to October, but the height of the season is in July and August. Gross (Auk, 1952, pp. 433-446) has studied the nesting of the population of Barro Colorado Island. He found that the female builds the nest unaided and the incubation period is 12 days. The young are fed a mixture of insects and seeds, the latter predominating, by both parents. Some pairs will lay a second clutch if the first is destroyed, but it is not known if any normally raise two broods.

SPOROPHILA NIGRICOLLIS NIGRICOLLIS (Vieillot): Yellow-bellied Seedeater, Arrocero Ventriamarillo

Pyrrhula nigricollis Vieillot, 1823, in Bonnaterre and Vieillot, 1823, Tabl. End. Meth., Ornith., 3, livr. 93, p. 1027. (Brazil.)

Small; male, forecrown, throat, and breast black, rest of upper surface grayish olive; rest of undersurface white, tinged pale yellow; female upper surface and throat olive-brown; rest of undersurface pale yellow tinged brown on sides and flanks.

Description.—Length 99-103 mm. Adult male, forecrown, sides of head to eye, throat, and breast black, fading on rest of upper surface to grayish olive; rest of undersurface white, tinged pale yellow; underwing coverts white.

Female, entire upper surface olive-brown; wings and tail dusky, edged olive-brown; throat and sometimes upper breast light olive-brown; rest of undersurface very pale buffy yellow, sometimes more brownish on sides and flanks; underwing coverts white and pale buffy yellow.

Immature male, like adult male, but only spotted with black.

A male collected at Río Indio, Colón, on February 20, 1952, has the iris reddish brown; bill light neutral gray; tarsus and toes fuscous. A male taken at Chamé, Province of Panamá, on June 22, 1953, had the

bill darker than in the dry season, the maxilla being horn color, mandible plumbeous; gape yellowish. A female taken that day had the bill fuscous or horn color, like the mandible of male. An immature male collected at Chiva Chiva, Canal Zone, on January 11, 1955, had the bill darker than do birds in the breeding stage; it was dark neutral gray.

Measurements.—Males (10 from Panamá and Colombia), wing 52.5-57.5 (55.0), tail 42.1-47.7 (44.1), culmen from base 9.2-10.2 (9.6), tarsus 13.1-14.7 (14.1) mm.

Females (6 from Panamá and Colombia), wing 50.0-54.0 (52.0), tail 41.2-44.8 (42.6), culmen from base 8.2-10.1 (9.5), tarsus 13.2-14.6 (13.8) mm.

Resident. Common on the entire Pacific slope, mainly in the lowlands, but in small numbers up to about 1800 m; on the Caribbean slope it is found only in the Canal Zone area. W. W. Brown, Jr., collected 2 on Saboga Island in the Pearl Islands archipelago in April 1904. Beyond Panamá, this race ranges from southern Costa Rica south through northern, central, and eastern South America to Bolivia, southern Brazil, and northern Argentina, and on some islands off the coast of Venezuela, including Trinidad, Tobago, and Grenada.

Like other seedeaters, this species feeds extensively on grass seeds and inhabits grassy and shrubby areas. It perches regularly in low trees and sings from them. Among the preferred plant foods is Guinea grass (*Panicum maximum* Jacq.), an introduced African species widely cultivated as a forage grass. A male collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 9.9 g.

When not nesting, the Yellow-bellied Seedeater usually is found in flocks; during the dry season it vacates many areas on the Pacific slope for more humid ones on the Caribbean side of the Canal Zone area. Ridgely (*in litt.*) has seen close to 1000 near French Canal on Ft. Sherman, Canal Zone, on May 1, 1976.

The male's song is sweet, but ends with two buzzy phrases, *seéwee-seéwee-seéwee-soósoo*, *bzeéwee-bzeéwee* (Eisenmann, Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 58). Both sexes also have a variety of short and scolding notes.

In South Gamboa, on the Caribbean side of the Canal Zone, Cora C. Alderton (Condor, 1961, pp. 390-398) found that during the years 1956-1959 this species would appear in April or June and remain until October or December. Males did not begin singing until several weeks after they arrive, and nest construction may not begin for several more weeks. The nest is built by both sexes; it is a cup woven of grasses and

tougher fibers held in place in a group of twigs by spider webs. Major General G. Ralph Meyer found a nest at Balboa that was only 13 cm off the ground, in a shrub; Alderton found nests in shrubs and small trees up to 3 m from the ground. The inside diameter of the nest averages 5×6 cm. Two eggs form a clutch; they are greenish white mottled with brown to purplish blotches slightly more concentrated on the larger end. Two collected by Meyer measured 16×12.7 and 16.2×12.9 mm. Incubation is performed solely by the female and requires 12 days. The young are fed regurgitated seeds by both parents; they leave the nest at 8 or 9 days of age. In some years the nesting season continues to December, suggesting that at least some pairs attempt to nest more than once.

SPOROPHILA MINUTA CENTRALIS Bangs and Penard: Ruddy-breasted Seedeater, Arrocerero Diminuto

Sporophila minuta centralis Bangs and Penard, 1918, Bull. Mus. Comp. Zool., 62, p. 90. (Near Panamá City, Panamá.)

Very small; crown and upper back grayish olive, rump and entire undersurface reddish brown; wings and tail blackish; female, upper surface drab brown; undersurface cinnamon-buff.

Description.—Length 86-96 mm. Adult male, crown, side of head, upper back, and lesser wing coverts grayish olive; rump, upper tail coverts, and entire undersurface reddish brown; rest of wing feathers blackish, edged light grayish olive, with patch of white at base of inner primaries; tail blackish brown; bend of wing and underwing coverts white.

Adult female, upper surface drab brown; lesser wing coverts like back; rest of wing feathers and tail dark brown, edged cinnamon-buff; undersurface cinnamon-buff; bend of wing cinnamon-buff; underwing coverts white.

Immature male, like female.

Measurements.—Males (10 from Panamá), wing 46.5-50.5 (49.1), tail 36.0-42.6 (38.8), culmen from base 8.5-9.4 (8.9), tarsus 12.2-14.0 (13.3) mm.

Females (4 from Panamá), wing 47.0-50.0 (48.9), tail 34.6-40.8 (38.5), culmen from base 8.7-9.0 (8.8), tarsus 13.0-14.3 (13.5, average of 3) mm.

Resident. Common in the lowlands on the entire Pacific slope; on the Caribbean slope it is known from a few reports near the coast and in the middle Chagres River Valley in the Canal Zone (Ridgely, 1976,

p. 334) and from Mandinga, San Blas, where in January and February of 1957 I saw a few males feeding with other seedeaters and collected 2.

Three races are usually recognized in this species: *S. m. parva* from Mexico through Nicaragua; *S. m. minuta*, which is stated to range through northern South America from Colombia south to Ecuador and east through the Guianas to Brazil; and the race *centralis* which has been used only for birds from Panamá and Costa Rica. Meyer de Schauensee (Proc. Acad. Nat. Sci. Phila., vol. 104, 1952, p. 192) found it "impossible to recognize *S. m. centralis*" but this appears to have resulted from its range having always been misunderstood. The race *centralis* is actually quite distinct from *minuta*. A series from Panamá compared with a fresh series from Pará, Belém, Brazil, is much browner above, rather than decidedly bluish gray, and lighter, less deep chestnut below. Using these two series as paradigms, the Smithsonian specimens from Antioquia, Córdoba, Bolívar, and Huila, Colombia, would definitely be referable to *centralis*, as presumably would be Ecuadorian birds. Specimens from Magdalena, Santander, and Santander del Norte, are decidedly grayer on the back than *centralis* but perhaps not quite as dark below as *minuta*. They are probably intergrades, but are nearer to *minuta*. Thus, not only should the race *centralis* be maintained, but its stated distribution should also be greatly expanded.

This seedeater inhabits grassy savannas where, like other species of *Sporophila*, it feeds on grass seeds and is found in flocks. During the dry season, the birds withdraw from certain areas. On January 1, 1956, I found 2 with other seedeaters in the extensive artificial clearing around the radio towers at Chiva Chiva; this clearing must have attracted them from their usual range on the savannas, as it is the farthest inland I ever encountered the species; Ridgely (*in litt.*) found a flock of 250 or more at the same site on January 8, 1974. A female collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed 8.3 g.

Ridgely (1976, p. 334) describes the song as "the best of the Panama seedeaters, fairly long, sweet, and deliberate, typically *weet, weet, weet, weet, weet, too-weet-tew*, often given from an exposed perch such as a telephone wire."

Major General G. Ralph Meyer found three nests of this seedeater during June and July of 1941. All were cups of grass and grass rootlets placed in clumps of grass or in a small bush surrounded by grass. Each nest had three eggs. They are white or pale buff spotted with brown, most heavily at the blunt end. The eggs of one clutch measured 15.7×11.7 , and 15.7×11.7 mm.

SPOROPHILA ANGOLENSIS (Linnaeus): Lesser Seed-finch,
Arrocero Prieto

Loxia angolensis Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 303. ("Angola," error, eastern Brazil suggested by Hellmayr, 1906, Novit. Zool., 13, p. 19.)

Small; bill very thick; male, entirely black with small patch of white at base of primaries and secondaries and white underwing coverts; female entirely brown, slightly more reddish on undersurface.

Description.—Length 107-115 mm. Adult male, entirely black, slightly glossy, with white at base of all remiges except outermost primary, and white underwing coverts.

Adult female, variable shades of brown; upper surface dark reddish brown; wings and tail dark dusky brown, edged color of upper surface; undersurface mostly color of upper surface or slightly lighter, especially on chin and center of belly; underwing coverts white.

Immature male, like female, but darker and more richly colored.

The species that have been placed in the genus *Oryzoborus* are similar in plumage and morphology to species of *Sporophila*, and several hybrid combinations between the 2 genera are known. Thus, Olson (Proc. Biol. Soc. Wash., 1981, 94:43-51) concludes that "it is best to emphasize the close relationship of these birds, and the fact that they constitute a single radiation, by uniting *Oryzoborus* Cabanis 1851 with *Sporophila* Cabanis 1844."

Olson also showed that 2 groups previously regarded as separate species, *angolensis* and *funerea*, are in fact a single species. The *angolensis* subspecies group, in which the adult males have chestnut bellies, is found in most of tropical South America east of the Andes and in the upper Magdalena Valley of Colombia. The *funerea* subspecies group, in which the males are essentially all black, extends from southern Mexico through Middle America to western Colombia and Ecuador and east to the central Magdalena Valley. Intergrades occur in several places in the Magdalena Valley (Olson, Auk, 1981, pp. 379-381). Within Panamá, 2 races are found, distinguishable only in the female and subadult male plumages. *S. a. salvini* (Ridgway) occurs along the Caribbean coast through Bocas del Toro at least to western Veraguas and through Costa Rica to southern Nicaragua. *S. a. ochrogyne* Olson ranges from southwestern Costa Rica, Panamá except the western Caribbean coast, to western Colombia. Ridgely (*in litt.*) reports that there seems to be a resident population in the elfin cloud forest on Cerro Jefe, (950-1000 m), eastern Province of Panamá.

Two adult males and 2 females from Coiba Island differ from main-

land birds in having definitely larger bills (Wetmore, Smith. Misc. Coll. no. 4295, 1957, p. 102; Olson, Auk, 1981, pp. 379-381). Although it seems probable that they represent a distinct island subspecies, this matter can only be decided when more material becomes available.

The Lesser Seed-finch inhabits shrubby areas and woodland edges. I have found it occasionally in swampy woods and once on a little mangrove island at Almirante. It feeds singly or in pairs, but sometimes associates with flocks of seedeaters; usually it is far more arboreal than most other species of *Sporophila*, singing at times from more than 10 m off the ground in a tree. The seed-finch is also distinguished from seedeaters by a nervous habit of flitting its wings and tail. One collected by E. A. Goldman had the stomach filled with fragments of hard-shelled grass seeds of the genus *Olyra*. Three specimens collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 12.8 to 13.9 g. The song of this species is a long, sweet warble resembling that of an Indigo Bunting (*Passerina cyanella*); the song is usually given from a prominent perch. I have also heard the male give a call that sounded like *chupo-chupo*.

SPOROPHILA ANGOLENSIS SALVINI (Ridgway)

Oryzoborus salvini Ridgway, 1884, Proc. U.S. Nat. Mus. 6, p. 401. (Los Sábalos, Nicaragua.)

Characters.—Females and subadult males much more richly colored than any of the other subspecies; underparts, particularly of the subadult males, deep reddish chestnut.

Measurements.—Males (4 from Nicaragua), wing 53.9-55.0 (54.5), tail 50.0-54.9 (52.5), culmen from base 13.8-14.4 (14.0), tarsus 15.6-16.5 (16.0) mm.

Females (6 from Bocas del Toro and Nicaragua), wing 54.0-56.3 (55.3), tail 48.0-53.8 (51.6), culmen from base 13.3-15.0 (14.2), tarsus 15.3-16.5 (15.8) mm.

Resident. Known in Panamá from Almirante and Changuinola in Bocas del Toro, and Guabal, on the Río Calovévora, Veraguas. Found also from all but extreme southwestern Costa Rica to southern Nicaragua. Two specimens from Boruca, Costa Rica, and that from Changuinola, while nearest *salvini* appear to show signs of intergradation with the following subspecies. Specimens of the race *salvini* are instantly separable from those of the rest of the country by their much richer coloration. The subspecies *salvini* and *ochrogynae* exhibit a pat-

tern of distribution common to a number of other species, whereby a northern, usually darker, form extends into Panamá only along the western Caribbean coast and is replaced elsewhere in the country by a different subspecies that may extend into southwestern Costa Rica. On February 1, 1958, I collected a male at Almirante in brown plumage showing no signs of molt; it had the testes half enlarged toward breeding. Pedro Galindo has found nests at Almirante on May 23 and 30, 1962, but neither contained eggs. Skutch (Auk, 1945, p. 24) lists the incubation period at Almirante as 12 days and the nestling period as from 10 to 12 days.

SPOROPHILA ANGOLENSIS OCHROGYNE Olson

Sporophila angolensis ochrogyne Olson, 1981, Proc. Wash. Biol. Soc., vol. 94(1), p. 47. (Utivé, Río Calobre, Panamá.)

Characters.—Females and subadult males paler than any other subspecies of the *funerea* group, underparts deep buffy, not chestnut; brown of breast and upperparts suffused with a grayish olivaceous wash, not reddish, and much lighter than in other forms.

A male collected at El Copé, Coclé, on February 23, 1962, had the iris dark reddish brown; maxilla and tip of mandible fuscous-black; base of mandible fuscous; cutting edge of maxilla dull brownish white; tarsus and toes fuscous; claws fuscous-black. A female taken at Isla Cébaco, Veraguas, on January 16, 1965, had the iris dark brown; maxilla, except cutting edge at extreme tip, fuscous-black; rest of maxilla and mandible fuscous-brown; tarsus and toes dark neutral gray; claws dusky neutral gray.

Measurements.—Males (10 from Panamá), wing 55.3-58.3 (56.9), tail 47.0-51.8 (49.1), culmen from base 12.5-14.0 (13.3), tarsus 15.0-16.4 (15.8) mm.

Females (10 from Panamá), wing 52.1-58.0 (55.4), tail 48.1-52.0 (50.2), culmen from base 13.1-15.2 (13.9), tarsus 14.8-16.7 (15.8) mm.

Resident. Fairly common in the lowlands on both slopes of central Panamá, excluding the range of *salvini*, on the Caribbean side to Mandinga, San Blas, where I collected an immature male in 1957, and on the Pacific side mainly from Veraguas through Darién. There are several recent Darién reports, all from 1978 or later, from El Real and vicinity, along the air strip at Cana, and near Pucro; Ridgely (*in litt.*) believes the species is increasing in Darién with clearing of forest. In

Chiriquí I have collected only an adult male, at San Félix in 1956, and Ridgely has encountered it once, when he saw 2 males in a shrubby clearing at 1100 m, above the Fortuna Dam site on March 3, 1976. Until females or subadult males are collected from Chiriquí it cannot be determined if this population is referable to *ochrogynae*. In the Pearl Islands, W. W. Brown, Jr., found it at San Miguel and Saboga (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, 1905, p. 159) and I collected it on San José. I also found it common on Coiba Island off the Pacific coast of Veraguas, although Ridgely (*in litt.*) saw only 2 birds during a week in April 1976. Beyond Panamá, this race is found in southwestern Colombia and in western Colombia south at least to Buenaventura and east as far as the Magdalena River Valley.

Hallinan (Auk, 1924, p. 321) found a nest at Gatún, Canal Zone, on April 11, 1909. It was in a small shrub about 1 m from the ground and was made of fine roots and grasses thinly woven. The 3 eggs were grayish white with brown spots; one measured 4.25 by 3.75 cm.

**SPOROPHILA MAXIMILIANI LOFTINI (Wetmore): Great-billed
Seed-finch, Arrocero Piquigrande**

Oryzoborus crassirostris loftini Wetmore, 1970, Proc. Biol. Soc. Washington, 82, p. 774. (Almirante, Bocas del Toro.)

Small; bill extremely thick; male entirely black; female dark brown, slightly lighter, more reddish on undersurface.

Description.—Length 140 mm. Adult male, entirely black.

Adult female, upper surface, including lesser wing coverts, olive-brown, slightly lighter on rump and upper tail coverts; rest of wing feathers blackish brown, edged olive-brown; tail blackish brown; undersurface lighter brown.

Measurements.—Males (2 from Almirante, Bocas del Toro), wing 67.2-67.4 (67.3), tail 58.7-60.7 (59.7), culmen from base 18.0-18.3 (18.2), tarsus 18.2-18.8 (18.5) mm.

Female (1 from Almirante, Bocas del Toro), wing 65.0, tail 59.0, culmen from base 18.1, tarsus 18.2 mm.

Resident. Known only from Almirante, Bocas del Toro. The first intimation of the presence of this large-billed finch in Panamá was a male found at Almirante on June 10, 1965, caught in the edge of a closed mist net set by men capturing birds for banding under the direction of Dr. Pedro Galindo. As it was partly decomposed it could be preserved only in part as a feathered specimen. Those working with

birds in the area were alerted to watch for the species, but others were not found until 2 years later. Two males and a female were netted on October 13, 14, and 30, 1967, by P. Kirmse, V. M. Kleen, and T. V. Heatley, operating the banding station under the direction of Dr. Horace Loftin, for whom the race was named. It is closest morphologically and geographically to *S. m. nuttingi* of Nicaragua and northern Costa Rica, but the female is distinctly darker, less rufescent brown on both upper and lower surfaces; both sexes are slightly smaller, with the bill less massive.

Meyer de Schauensee (Notulae Naturae, no. 428, 1970, pp. 1-6) has shown that the species formerly known as *Oryzoborus* (= *Sporophila*) *crassirostris* actually consists of 2 distinct species that are at least partially sympatric in South America: a small-billed, short-tailed monotypic species that now takes the name *crassirostris*, and a large-billed, long-tailed polytypic species for which the name *maximiliani* has priority. The two Central American populations, *nuttingi* and *loftini*, both belong to the latter.

All recent sightings have been from the Almirante area (Ridgely, *in litt.*). These include a male seen by R. Sharp in January 1970 and a pair observed by N. G. Smith along the Almirante-Changuinola Canal on April 24, 1980. The birds were found in sedges. No details of their nesting behavior have been published.

AMAUROSPIZA CONCOLOR CONCOLOR Cabanis: Blue Seed eater,
Arrocero Azulado

Amaurospiza concolor Cabanis, 1861, Journ. f. Ornith., 9, p. 3. (Costa Rica.)

Small; male entirely slate blue; female with upper surface cinnamon-brown and undersurface ochraceous-tawny.

Description.—Length 109-122 mm. Adult male, entire body and wing coverts slate blue; remiges and rectrices black, edged slate blue.

Adult female, upper surface, including wing coverts, cinnamon-brown; remiges and rectrices dusky brown, edged cinnamon-brown; undersurface tawny.

A male collected on the Volcán de Chiriquí, Chiriquí, March 15, 1967, had the iris dark brown; bill, tarsus, and toes dark gray.

Measurements.—Males (10 from Panamá and Costa Rica), wing 60.0-67.0 (62.2), tail 42.0-53.3 (49.8), culmen from base 10.5-12.3 (11.5), tarsus 15.1-19.0 (16.9) mm.

Females (10 from Panamá, Costa Rica, and El Salvador), wing 58.0-62.0 (60.1), tail 47.6-53.1 (50.0), culmen from base 10.2-12.7 (11.4), tarsus 16.0-18.1 (17.2) mm.

Resident. Rare and very local, known from the foothills and highlands of Chiriquí from 600 to 2700 m, in Veraguas above Santa Fé, where 2 were seen by N. G. Smith on April 7, 1975 (Ridgely, 1976, p. 335), Cerro Largo (360 m), Herrera, where R. R. Benson collected a juvenile male on July 13, 1925, and in the Canal Zone, where A. Hughes collected a male at Paraiso Station in 1867 and more recently Horace Loftin and Storrs Olson have collected birds at Curundu, in 1962 and 1966. Two recent sight reports away from western Chiriquí are known to Ridgely: Carolyn Lowe saw a male on a trail off the Chiva Chiva Road, Canal Zone, on April 24, 1977 (Toucan, vol. 4, no. 5, 1977, p. 3), and R. A. Rowlett and B. Whitney found a pair on Cerro Campana, Province of Panamá, on January 3, 1981. In Chiriquí, from where it has been most frequently recorded, Mönniche collected it on the Volcán de Chiriquí between 1500 and 1920 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958), and M. E. M. Davidson (Proc. Calif. Acad. Sci., ser. 4, vol. 23, no. 17, 1938, p. 261) found it at Cerro Punta (1800 m) and at Quiel, Boquete (2190 m). This race also occurs irregularly in Chiapas, Mexico, and in Honduras, Nicaragua, and Costa Rica; other races are found elsewhere in Mexico and in Colombia and Ecuador. Hellmayr (Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 11, 1938, p. 238) is correct in indicating that Frantzius is not known to have collected at Miravalles, Costa Rica, so that Griscom's designation (Bull. Mus. Comp. Zool., 1934, 75, p. 414) of this place as the type locality of nominate *concolor* is apparently incorrect. It is better to leave it "Costa Rica."

Little is known about the Blue Seedeater. I have never encountered it in Panamá and Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 378) found it only at three places in Costa Rica. Ridgely (*op. cit.*) says it "seems partial to bamboo thickets, at least in the Chiriquí highlands, in which it feeds some ten to thirty feet off the ground." Slud saw it in shrubby growth between 1 and 2 m from the ground. He describes the male's call as "a sort of half hearted singsong, 'wee awee awee awee'."

Rowley (Condor, 1962, p. 265) describes a nest of the Mexican race *relictus* as a cup placed in the forks of a slender shoot of *Lantana*, about 3 m from the ground, made of coarse grasses lined with finer grasses and other plant fibers. The nest contained one egg of the Red-eyed Cowbird (*Molothrus aeneus*) and two of the seedeater; the latter

were unmarked, pale blue, and measured $19\times$ and 18.5×14 mm. I have no information on the nesting of this species in Panamá.

**HAPLOSPIZA RUSTICA BARRILESENSIS (Davidson): Slaty Finch,
Pinzón Apizarrado**

Spodiornis barrileensis Davidson, 1932, Proc. Biol. Soc. Washington, 45, p. 167.
(Barriles, 4500 ft., Chiriquí, Panamá.)

Small; bill slender; male entirely gray; female brownish olive on upper surface; undersurface streaked brownish olive and lighter shades.

Description.—Length 114-126 mm. Adult male, entire upper surface, including lesser wing coverts, dark gray; rest of wing feathers and tail dull black, edged dark gray; entire undersurface and underwing coverts lighter gray.

Adult female, entire upper surface, including lesser wing coverts, brownish olive, slightly more greenish on rump; rest of wing feathers and tail blackish brown edged brownish olive; throat and belly gray, tinged dull green and yellow; breast streaked with buffy olive; sides and flanks buffy olive; underwing coverts gray tinged green.

A male collected at Nueva Suiza, below Cerro Punta, Chiriquí, on March 1, 1968, had the iris brown, bill black, legs flesh colored.

Measurements.—Males (3 from Chiriquí, including the type), wing 71.7-75.0 (73.2), tail 46.8-50.6 (48.4), culmen from base 12.6-15.0 (13.7), tarsus 17.5-18.6 (18.1) mm.

Females (2 from Costa Rica and El Salvador), wing 66.0-70.0 (68.0), tail 41.8-43.2 (42.5), culmen from base 12.5-12.9 (12.7), tarsus 18.5-18.9 (18.7) mm.

Resident. Known in Panamá from only a few localities in the highlands of Chiriquí, where it is rare, and from 1 specimen collected in western Province of Panamá. The type specimen was collected at Barriles (1500 m) on January 28, 1931, by M. E. Davidson. In 1953, F. A. Hartman took a male at Cerro Copete (1800 m), above Boquete. In 1968, 7 were mist-netted and 4 were collected by C. Leck at Nueva Suiza (1620 m), below Cerro Punta. There are also a few recent records from Bambito, near Nueva Suiza (Ridgely, 1976, p. 336). A male was collected by R. Hinds at Fortuna, central Chiriquí, (c. 900 m) on August 14, 1976 (specimen at Gorgas Memorial Laboratory) and another male was taken in western Province of Panamá at Aguacate, near Capiro, at the base of Cerro Trinidad, on July 16, 1979, by H. Montenegro (specimen at American Museum of Natural History). This

race is also found in the highlands of Honduras and Costa Rica; other races occur in Mexico and from Colombia and Venezuela to Bolivia.

Almost nothing is known of this species. In Costa Rica, it is reported to travel in small flocks feeding on the ground in the lush grass of pastures, but near cover of forest (Ridgely, *op. cit.*). The ones Leck caught were in a mist net set along a small stream in a wooded area.

ACANTHIDOPS BAIRDI Ridgway: Peg-billed Finch, Pinzón Piquiagudo

Acanthidops bairdi Ridgway, 1882, Proc. U.S. Nat. Mus. 4, p. 336. (Volcán de Irazú, Costa Rica.)

Small; adult male mostly dark slate gray; female olive-brown on upper surface, somewhat warmer and buffier on undersurface.

Description.—Length 142-145 mm. Adult male, upper surface dark slate gray, slightly lighter on rump and upper tail coverts, remiges and rectrices blackish; undersurface lighter slate gray, tinged with buff on center of belly and undertail coverts.

Adult female, upper surface olive-brown; remiges and rectrices dusky; middle and greater wing coverts tipped with brown; throat and breast grayish olive tinged with buff and indistinctly streaked darker; abdomen and undertail coverts buffy, becoming darker brown on flanks.

Immature male, like adult female.

Measurements.—Males (2 from Costa Rica), wing 68.0-68.5 (68.3), tail 58.4-58.6 (58.5), culmen from base 15.6-16.2 (15.9), tarsus 18.5-20.4 (19.5) mm.

Female (1, from Ridgway, Bull. U.S. Nat. Mus., no. 50, 1901, part 1, p. 519), wing 63.5, tail 52.1, exposed culmen 13.2, tarsus 20.3 mm.

The Peg-billed Finch is known in Panamá from a series of sightings in January through March 1979, when as many as 200 were seen per day in forest along the Boquete Trail above Cerro Punta, Chiriquí, at 2000-2300 m by V. Emanuel and Ridgely (*in litt.*). All were feeding on seeding *Chusquea*. Recognizable photographs were taken by D. Galinat. The maximum number seen was more than 200, in late January, by John Arvin. By March, the number had declined—on March 21, Ridgely found only about 25, although he suspected there may have been more at higher elevations. No birds have been found there since.

This species was previously known only from the highlands of Costa Rica, where it is rare (Slud, Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 380). There it is found above the timberline near the summit of volcanoes. Its fine bill suggests it may take insects as well as seeds,

but nothing has been recorded of its life history. The birds at Cerro Punta were in loose flocks and were quite tame and approachable.

**SICALIS FLAVEOLA FLAVEOLA (Linnaeus): Saffron Finch,
Pinzón Azafranado**

Fringilla flaveola Linnaeus, 1766, Syst. Nat., ed. 12, 1, p. 321. (Surinam.)

Small; crown orange, upper surface greenish yellow; undersurface bright yellow.

Description.—Length 127-134 mm. Adult (sexes alike), crown orange; rest of upper surface, including wing coverts, greenish yellow, finely streaked with dusky, slightly less greenish on rump and upper tail coverts; remiges and rectrices blackish brown, edged bright yellow on outer web and inner webs; sides of head, throat, and breast light orange, becoming rich yellow on rest of undersurface.

Immature, upper surface gray, finely streaked with dusky brown and dull greenish yellow; remiges and rectrices like those of adult; undersurface white, tinged gray, with breast and undertail coverts dull rich yellow.

Measurements.—Males (10 from South America and Jamaica), wing 69.5-76.5 (73.6), tail 49.9-56.3 (52.7), culmen from base 11.2-13.5 (12.3), tarsus 18.2-19.5 (19.0) mm.

Females (9 from South America), wing 68.5-75.0 (71.0), tail 49.1-56.0 (52.3), culmen from base 11.3-12.5 (11.7) tarsus 17.6-20.1 (18.5) mm.

Resident. Confined to the Caribbean coast of the Canal Zone; apparently introduced. The Saffron Finch was first seen in Panamá in 1951, when, on June 3, Dr. and Mrs. Robert Scholes photographed a pair in front of the clubhouse at Gatún, Canal Zone (Scholes, Condor, 1954, p. 167). The birds seemed wild, and nothing about their plumage suggested recent caging, but the possibility cannot be ruled out. Two years later, Eisenmann saw at least 2 birds of this species in the same area. Ridgely (1976, p. 336) reports that it has been seen as far east in the Canal Zone as Coco Solo and there are occasional reports from the Chagres River Valley up to around Gamboa. Ridgely (*in litt.*) notes that as of 1982 the species is locally common in this restricted area, but seems not to be increasing or spreading. It is found almost exclusively on or near lawns in residential areas. The male's song is "an endlessly repeated but rather musical *tzip-tzip-tzee-tzee*."

The normal range of this race is from Colombia along the coast of

northern South America to the Guianas and Trinidad; it has also been introduced in Jamaica. Other races are found in Ecuador, Peru, Brazil, and northern Argentina.

SICALIS LUTEOLA EISENMANNI Wetmore: Grassland Yellow-finch, Pinzón Amarillo

Sicalis luteola eisenmanni Wetmore, 1953, Smiths. Misc. Coll., 122 (8), p. 9. (2 miles east of Antón, Coclé, Panamá.)

Small; upper surface streaked brown, tinged yellow on crown and rump; undersurface yellow; female duller.

Description.—Length 98-108 mm. Adult male, crown and upper back streaked dark brown and light buff; on crown mixed with greenish yellow; lower back, rump, and upper tail coverts greenish yellow; feathers of wings and tail dark brown, edged light buff; outer primaries finely edged yellow; sides of face brownish yellow; band across breast rich yellow; rest of undersurface bright yellow, tinged brown on sides and flanks; bend of wing and underwing coverts yellow.

Adult female, like male, but duller, with yellow almost entirely absent from upper surface; throat light yellow and cinnamon-buff, fading to light buffy brown on breast, sides, and flanks; center of belly, bend of wing, and underwing coverts light yellow.

A male collected at El Coco, Coclé, on March 10, 1962, had the iris dull reddish brown; maxilla fuscous-black; sides and tip of mandible brownish neutral gray; lower surface of mandible dull brownish white; tarsus and toes fuscous; claws fuscous-black. A female taken there that day was similar.

Measurements.—Males (10 from Coclé, including the type), wing 60.4-64.7 (62.5), tail 38.5-45.0 (41.2), culmen from base 8.9-10.0 (9.4), tarsus 14.2-15.8 (15.0) mm.

Females (2 from Coclé), wing 60.1-61.0 (60.6), tail 37.3-40.0 (38.7), culmen from base 9.3-9.7 (9.5), tarsus 15.4-15.6 (15.5) mm.

Resident. Locally fairly common in the lowlands of the Pacific Coast of Coclé; there are 2 sight reports from La Jagua, eastern Province of Panamá, one by N. G. Smith of 7 birds on February 4, 1967, the other of 2 birds seen by S. West et al. on June 14, 1975 (Ridgely, *in litt.*). Other races range from southern Mexico to southern Chile and central Argentina.

I have seen the Grassland Yellow-finch in savannas near Antón, El Coco, and Penonomé. At this last locality, I found a large colony containing at least 75 birds on June 20, 1953. The birds were in open llano with scattered bushes and low trees, sandy soil, and an open growth of

grasses. They were feeding on seed heads by flying up and alighting on them to bend them down. The males were in full breeding condition and the one female I collected had recently laid. Their call was a low churring note. Ridgely (1976, p. 336) describes a song of the males as "a thin buzzy trill, at times somewhat musical, delivered from an exposed perch, sometimes in flight."

This species was first recorded in Panamá through a sight observation late in January 1951 by Dr. R. T. Scholes, who noted it at two localities between Río Hato and Penonomé, and recognized that it was unknown. Eugene Eisenmann and John Bull, in July 1952, found it fairly common, several small colonies being located. In crossing this area in May 1953, I collected 1 near Antón, and later, on June 20, I secured the rest of the series from which the description was written. On the June excursion, I had the pleasure of the company of Mr. Eisenmann, in whose honor the race is named, in recognition of his studies of Panamanian birds.

PEZOPETES CAPITALIS Cabanis: Large-footed Finch,
Pinzón Patigrande

Pezopetes capitalis Cabanis, 1860, Journ. f. Ornith., 8, p. 415. (Costa Rica.)

Large; entire head dark gray and black; upper surface olive-green; undersurface mostly yellowish green.

Description.—Length 174-200 mm. Adult (sexes alike), crown, two stripes extending to nape, sides of head to behind eye, and throat black; nape, rest of sides of head, and border of throat dark gray; gray usually extends from nape to center of crown between broad black stripes; rest of upper surface; including wing coverts, olive-green; remiges blackish, edged olive-green; sides and flanks olive-green, fading to yellowish green on rest of undersurface.

Immature, like adult, with gray of head replaced by olive-green, and undersurface duller, heavily streaked with black.

Juvenile, undersurface buffy brown, lighter buff in center.

A male collected at Volcán de Chiriquí, Chiriquí, on March 1, 1965, had the iris mouse brown; bill, feet, and toes black; claws fuscous.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 86.0-95.5 (89.5), tail 82.7-91.1 (86.7), culmen from base 14.3-16.9 (15.9), tarsus 31.1-34.0 (32.5) mm.

Females (10 from Chiriquí and Costa Rica), wing 80.0-88.4 (84.4), tail 74.6-89.0 (83.2), culmen from base 14.2-17.6 (15.6), tarsus 30.1-34.3 (31.6) mm.

Resident. Fairly common in the highlands of western Chiriquí, ad-

jacent Bocas del Toro, and Costa Rica. On the Volcán de Chiriquí, Mönniche (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 572) collected it between 1500 and 2940 m and W. W. Brown, Jr., took several there between 3000 and 3300 m (Bangs, *Proc. New England Zool. Club*, vol. 3, 1902, p. 69). Around Boquete, it had been taken between 2100 and 2550 m by M. E. Davidson and Frank Hartman. I have found it at Cerro Punta from 2040 to 2160 m.

This finch inhabits the undergrowth of clearings and forest borders, occasionally venturing into the open. It feeds on insects and spiders that it finds on the ground by scratching the leaves with both feet at once. Berries from shrubs a few yards above the ground are also taken. The song as described by Skutch (*Publ. Nutt. Orn. Club*, no. 7, 1967, p. 185) is distinctive: "a unique medley, consisting of a series of widely separated whistled notes, now high, now low in pitch, sometimes double or slurred, and often suggesting a thrush or an oriole (*Icterus*) with a slightly hoarse voice. From time to time, the songster unexpectedly interjected among his disjointed whistles a dry rattle, a loud chatter, or a trill that was almost soft and clear . . ." Skutch found this species to sing most energetically in April, and only sparingly by the end of June. Ridgely (*in litt.*) notes that it also gives a *psee* call note.

A female I collected at Cerro Punta on March 1, 1955, was laying, but I have no other information on the nesting of this species in Panamá. Carriker (*Ann. Carnegie Mus.*, vol. 6, 1910, p. 895-896) found several nests in Costa Rica, where he believed breeding began in early April. Of four nests, three had one egg, the last had two. "The nest is bulky, loosely built, and constructed of weeds stalks and bamboo leaves, lined with soft blades of grass and placed in a thick bush or on a bamboo spray not far above the ground. The eggs vary from dull white, with a faint tinge of blue, to pale bluish, sparsely speckled and dotted over the whole surface with a few markings of lilac and heavier blotches of burnt umber or sooty, thicker at the larger end, and sometimes entirely wanting at the smaller. Average measurements: 29×19.4 mm."

**PSELLIOPHORUS TIBIALIS (Lawrence): Yellow-thighed Finch,
Pinzón Patiamarillo**

Tachyphonus tibialis Lawrence, 1864, *Ann. Lyc. Nat. Hist. New York*, 8, p. 41.
(San José, Costa Rica.)

Medium size; dark gray with black crown, wings, and tail, and yellow thighs.

Description.—Length 158-185 mm. Adult (sexes alike), crown black, rest of body dark gray, slightly blackish on throat, and tinged

green on undersurface; wings and tail black; bend of wing and thighs yellow; underwing coverts blackish gray.

Immature, thighs dark gray.

A male collected at Volcán de Chiriquí, Chiriquí, on March 2, 1965, had the iris pale dull reddish brown; bill black; tarsus and toes fuscous-brown; claws black.

Measurements.—Males (10 from Chiriquí), wing 78.0-89.9 (85.8), tail 81.8-95.2 (89.8), culmen from base 14.3-17.7 (15.9), tarsus 26.0-27.9 (26.9) mm.

Females (10 from Chiriquí), wing 75.5-85.0 (80.2), tail 77.5-89.0 (83.7), culmen from base 15.5-17.2 (16.1), tarsus 24.0-26.5 (25.5) mm.

Resident. Very common in the highlands of western Chiriquí and adjacent Costa Rica. In Panamá, it has been collected on Cerro Punta, near Boquete (1380-2340 m), and Volcán de Chiriquí (1590-3060 m) (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, p. 572).

The Yellow-thighed Finch is a versatile species that inhabits the undergrowth of forests and clearings, and forages from the ground to the treetops. On the ground it searches for insects and spiders among the leaves and in grass at the edge of clearings. In shrubbery it feeds on berries and the nectar of tubular flowers, and high in trees it moves actively through the foliage like a wood warbler. These finches are usually found in pairs, sometimes with other small birds like brush-finches and warblers. Skutch (*Publ. Nutt. Orn. Club*, no. 7, 1967, pp. 188-189) describes two very different songs, "a long-continued, rapid flow of somewhat tinkling notes, all very much alike, with no definite phrasing" given throughout the year, and "short, rapid, breezy little ditties delivered in a peculiar high, dry tone" repeated over and over, chiefly at dawn during March, April, and May. Skutch believes the first song is a form of greeting given by both members of a pair after a separation, while the second song is delivered only by the male.

Skutch found this species nesting in Costa Rica during March, April, and May. The nests were from 1 to 3 m above the ground, concealed in thick grass or foliage of a tree bough. They were bulky open cups made of straws and grass blades, with a thick, soft lining of fine vegetable fibers. Sometimes bamboo leaves are used. Two eggs form a clutch; they are "white or faintly tinged with blue, with a heavy crown of mingled brown and lilac speckles thinly scattered over the remaining surface. The eggs of two sets measured 24.6 by 17.9 and 24.6 by 18.3; 25.4 by 18.3 and 24.6 by 18.3 mm." Skutch could not determine the incubation period, but young remain in the nest until 12 days old.

When examining a bird I collected at Cerro Punta, I found that the yellow feather tufts at the lower end of the tibia are of a stiffer texture than ordinary feathers. The concealed tibio-tarsal joint is white.

PSELLIOPHORUS LUTEOVIRIDIS Griscom: Yellow-green Finch,
Pinzón Verdiamarillo

Pselliophorus luteoviridis Griscom, 1924, Amer. Mus. Novit., no. 141, p. 10. (Cerro Flores, 6,000 ft., eastern Chiriquí, Panamá.)

Medium size; head, wings, and tail black; back dark yellowish green, becoming olive on lower back; undersurface yellowish green, with thighs yellow.

Description.—Length 172-185 mm. Adult (sexes alike), head and throat black; upper back dark yellowish green, becoming olive on lower back; wings and tail black; undersurface mostly yellowish green, slightly lighter in center of belly; thighs and bend of wing yellow.

Measurements.—Male (1 from Veraguas), wing 83.0, tail 84.4, culmen from base 16.7, tarsus 24.9 mm.

Females (6 from Chiriquí and Veraguas, including the type), wing 79.0-84.0 (80.8), tail 78.4-84.5 (81.8), culmen from base 15.1-16.5 (15.7), tarsus 24.6-26.8 (26.0) mm.

Resident. Known only from two locations in eastern Chiriquí and Veraguas. The type, a female, was taken by Griscom in cloud forest at Cerro Flores (1800 m), Chiriquí, on March 14, 1924. In February and March of 1926, R. R. Benson collected 6 at Chitra, Veraguas, between 1200 and 1410 m. This form is so different from *P. tibialis* that its separate status as a full species seems well warranted.

ATLAPETES ALBINUCHA (Lafresnaye and d'Orbigny): Yellow-throated Brush-finch, Pinzón Rastrojero Gargantiamarillo

Embernagra albinucha Lafresnaye and d'Orbigny, 1838, Rev. Zool. [Paris], 1, p. 165. (Caribbean slope of Mexico.)

Medium size; crown black with broad white median stripe; rest of upper surface very dark gray or brown; throat yellow; rest of undersurface white or whitish.

Description.—Length 161-181 mm. Adult (sexes alike), crown and side of face black, with white median stripe extending to nape; rest of upper surface blackish gray or dark brown (*azuerensis*); throat bright yellow; undersurface white with light gray wash on sides and flanks and undertail coverts brown; underwing coverts white.

Juvenile, back dark brown with a few lighter spots; yellow throat

with fine blackish streaks; rest of undersurface tinged light brown, with fine black streaks.

This brush-finch is very common in the highlands of Chiriquí and Veraguas and is also known from Coclé and the Azuero Peninsula. It inhabits shrubby clearings and forest borders; I have usually seen it when it emerges from the vegetation to forage on more open ground. It is found in pairs or small groups. I have seen these birds feeding on berries, and they probably take insects from the leaf litter as well. Its high, squeaky song is usually delivered from a low, inconspicuous perch.

Two races are found in Panamá, *brunnescens* from Chiriquí presumably to Coclé, and the well-marked *azuereensis* of the Azuero Peninsula in Veraguas and Los Santos. Five other races range from Mexico to Colombia. Paynter (Auk, 1964, pp. 223-224) indicates that the races from southwestern Chiapas, Mexico, to Colombia, that formerly went under the name *A. gutturalis*, should be treated as part of *A. albinucha*, a yellow-bellied form of the Caribbean slope of Mexico.

ATLAPETES ALBINUCHA BRUNNESCENS Chapman

Atlapetes gutturalis brunnescens Chapman, 1915, Bull. Amer. Mus. Nat. Hist., 34, p. 387. (Boquete, Chiriquí, Panamá.)

Atlapetes gutturalis coloratus Griscom, 1924, Amer. Mus. Novit., no. 141, p. 9. (Cerro Flores, 3,600 ft., eastern Chiriquí, Panamá.)

Characters.—Undersurface almost entirely white; flanks and undertail coverts grayish with little brown; upper surface blackish gray.

A male collected at El Volcán, Chiriquí, on March 9, 1965, had the iris bright reddish brown; bill black; tarsus and toes dark mouse brown; claws dull brownish neutral gray.

Measurements.—Males (10 from western Chiriquí), wing 72.5-81.0 (76.3), tail 80.2-85.5 (83.0), culmen from base 15.2-17.1 (16.2), tarsus 24.1-28.7 (26.5) mm.

Females (10 from western Chiriquí), wing 72.1-76.5 (73.8), tail 76.7-81.8 (78.8), culmen from base 15.4-17.4 (16.6), tarsus 24.4-28.5 (26.5) mm.

Resident. Common in the highlands of Veraguas and Chiriquí, where it has been collected on Cerro Punta, Volcán de Chiriquí, and near Boquete. On the Volcán de Chiriquí I have encountered it between 1230 and 2040 m, and near Boquete it has been taken from 1050 to 2100 m.

The poorly marked race *coloratus* was described by Griscom from

specimens he and Boulton collected in 1924 at Cerro Flores, eastern Chiriquí, between 1080 and 1200 m. In 1926, R. R. Benson collected a series at Chitra, Veraguas, between 900 and 1080 m, that was also assigned to this race. Specimens taken in the 19th century by Arcé at Calovévora and Castillo, Veraguas, now in the British Museum, prompted Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 1, pt. 28, 1884, p. 321) to write, "The normal colouring of the throat in this species is pale yellow; but specimens occur in which the throat is rich orange. We have several such specimens from the state of Panamá." The American Museum specimens with which Griscom compared *coloratus* were all older and made up so that the throat is less visible. In addition, part of the orangeness on the throat of some of the specimens is due to blood stains. A bird taken by Heyde and Lux March 3, 1889, at Cascajal, Coclé—farther eastward in Panamá than the range has previously been indicated in the literature—is not distinguishable from a large series of *A. a. brunnescens* of western Chiriquí. It is best, therefore, not to recognize the race *coloratus*.

On March 22, 1954, at El Volcán I saw half a dozen of these birds in low undergrowth at the edge of forest at 1560 m on Silla de Cerro Pando. There was evidently some mating activity among them that had brought them into view, as we had seen none before. While they were pursuing one another among the bushes, at any movement or alarm they took to cover precipitously. Blake (Condor, 1956, p. 388) describes a nest collected April 11, 1932, on Volcán de Chiriquí as "made entirely of grass and straw-like materials, finest in the lining, and measures $5 \times 4 \times 2\frac{1}{2}$ inches. Its cup is shallow and ill-defined. This nest, unlike others of the species that have been described, was built on the ground. The two immaculate white eggs are slightly glossy and were faintly tinged with blue when found. Measurements: 23.5×16.3 and 23×16.5 mm."

ATLAPETES ALBINUNCHA AZUERENSIS Aldrich

Atlapetes gutturalis azuerensis Aldrich, 1937, Sci. Publ. Cleveland Mus. Nat. Hist., 7, p. 138. (Cerro Viejo, 3,000 ft., between headwaters of Ríos Negro and Mariato, 18 mi. east of Montijo Bay, Veraguas, Panamá.)

Characters.—Back dark brown, not blackish gray; remiges blackish, edged reddish brown; gray band across breast; flanks and undertail coverts reddish brown, not grayish brown.

Measurements.—Males (3 from Veraguas), wing 71.0-77.5 (74.8), tail 75.5-83.6 (80.4), culmen from base 15.0-16.1 (15.4), tarsus 25.4-26.9 (26.1) mm.

Female (1 from Los Santos), wing 67.5, tail 66.7, culmen from base 15.7, tarsus 25.2 mm.

Resident. Aldrich and Bole discovered this distinctly marked race on the western side of the Azuero Peninsula in Veraguas. Near their camps at Cavulla (1000 m) it occurred in small flocks among the dwarfed trees of the forest margin. On February 21, 1962, C. O. Handley and F. M. Greenwell collected 1 in cloud forest at Cerro Hoya, Los Santos, that matches the original description of this race.

ATLAPETES TORQUATUS (Lafresnaye and d'Orbigny): Stripe-headed Brush-finch, Pinzón Rastrojero Cabecirayado

Embernagra torquata Lafresnaye and d'Orbigny, 1837, Mag. Zool. [Paris], 7, cl. 2, p. 34. (Carcuta, Bolivia.)

Medium size; head black, sometimes with gray superciliary and central crown stripes; upper surface olive-green; most of undersurface white.

Description.—Length 174-184 mm. Adult (sexes alike), head black, in some races with gray superciliary and central crown stripes; upper surface, including wing coverts, olive-green; remiges and rectrices dusky, edged olive-green; sides of breast gray; sides, flanks, and undertail coverts olive-green; rest of undersurface white; bend of wing yellow.

Juvenile, upper surface olive-green; undersurface dark gray, tinged olive-green.

Three races of this species are found in Panamá; they are clearly distinguished by the extent of gray striping on the crown, which is prominent in *costaricensis* of western Chiriquí and decreases eastward until it is just a slight trace in *atricapillus* of Cana, Darién. Thirteen other races are recognized, ranging from north-central Mexico to Bolivia and Argentina.

Paynter (Bull. Mus. Comp. Zool., vol. 148, 1978, pp. 323-369) has reviewed the taxonomy of this species and proposed a classification somewhat different from that of previous authors. He regards *costaricensis* as a disjunct subspecies of *torquatus* and maintains *atricapillus* as a separate species. The form *tacarcunae* was considered to be a subspecies of *atricapillus* and Paynter denied that it is "morphologically intermediate between *costaricensis* and *atricapillus*." This treatment is difficult to understand when viewed in light of the specimens in the Smithsonian collections. Specimens of *tacarcunae* from the Cerro Azul area of eastern Province of Panamá have distinct, though somewhat narrower, gray superciliary and median crown stripes and are actually

quite similar to *costaricensis*. The most extreme example in this series (USNM no. 207563) would in fact be difficult to separate from certain individuals of *costaricensis*. Specimens from Cana, Darién, although referred here to *atricapillus*, retain slight traces of the crown stripes. In summary, the populations of *Atlapetes torquatus* in the eastern half of Panamá form a nearly perfectly graded series between *costaricensis* of western Panamá and Costa Rica, and *atricapillus* of South America. There can be no doubt that all belong to a single species.

This is a shy bird, probably less uncommon than it seems in the dense thickets of forests and borders of the foothills and lower highlands. I have always found it very secretive. Of 2 collected at Cana by E. A. Goldman, the stomach of one held remains of 2 species of ant, about 10 individuals 45%, elytra and legs of a curculionid 5%, broken bits of starchy seeds with a hard outer covering 50%; the other contained bits of thorax of an acridid with other fragments 5%, 3 calandris 10%, a curculionid 8%, bits of an elaterid 2%, carabid remains 5%, ant remains 15%, bits of a bee 15%, fragments of seeds 40%. Skutch (Pac. Coast Avif. no. 31, 1954, p. 88) has observed them eating decaying leaves, perhaps for a fungus growth they contain.

The only vocalization I have ever heard is an occasional low churring given by a pair moving behind dense cover. Skutch has heard a very thin, high, squeaky song given from a low perch by both males and females and a sharp, metallic call note. It sings from February to November.

ATLAPETES TORQUATUS COSTARICENSIS (Bangs)

Buarremon costaricensis Bangs, 1907, Auk, 24, p. 310. (Boruca, Costa Rica.)

Characters.—Gray stripes on crown broad.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 77.0-87.0 (84.3), tail 69.8-84.5 (76.9), culmen from base 16.9-19.2 (18.0), tarsus 22.5-29.3 (26.8) mm.

Females (6 from Chiriquí and Costa Rica), wing 74.0-82.5 (78.6), tail 68.9-77.0 (71.9), culmen from base 17.1-17.6 (17.4), tarsus 23.4-28.7 (26.7) mm.

Resident. Uncommon and local in the foothills and lower highlands of western Chiriquí between 600 and 1500 m. I have encountered it at El Volcán at 1320 m and at Santa Clara at 1230 m. It has also been collected at Bugaba (240 m), Concepción (450 m), and El Banco (1050 m). Ridgely (*in litt.*) knows of no reports for this race since the early 1970's, despite the increase of bird-watching activity in the area

and he believes it may be declining. This race ranges into southwestern Costa Rica.

Although Paynter (Bull. Mus. Comp. Zool. 148, 1978, p. 350) could "find no specific record" for Panamá, Davidson (Proc. California Acad. Sci. ser 4, vol. 23 no 17, 1938, p. 261) reported 2 specimens taken near Concepción, Chiriquí, in 1929, and there are 2 specimens in the American Museum of Natural History and 6 in the Smithsonian collections taken from 1903 to 1960.

Skutch (Pac. Coast Avif. no. 31, 1954, pp. 89-94) has studied the nesting of this race in Costa Rica, where the breeding season may run from February through September. The nest is usually placed in a bush or tangle of vines in a thicket; most are from 2 to 4 m from the ground. Both sexes may build the nest together, or either male or female may build it alone. It is a bulky open cup with a foundation of coarse dry weed stems or pieces of vine, body of large dead leaves, and a lining of fine rootlets, fungal filaments, and rachides of acacia leaves. One measured 15 cm in diameter by 7.5 cm in height, with an interior 7.5 in diameter by 3 to 4 cm deep. Twenty-one nests found by Skutch contained either two eggs or 2 nestlings. The eggs are slightly glossy pure white or faintly tinged with blue. The average measurements of twenty eggs were 25.5×18.5 mm. Incubation is carried out by the female alone and requires 15 days. Both parents feed the young, which remain in the nest about 12 days.

ATLAPETES TORQUATUS TACARCUNAE (Chapman)

Buarremon atricapillus tacarcunae Chapman, 1923, Amer. Mus. Novit., no. 67, p. 11. (Mount Tacarcuna, ca. 3,500 ft., eastern Panamá.)

Characters.—Gray superciliary and median crown stripes narrow, darker gray, sometimes obscure.

A female collected at Tacarcuna Village, Darién on March 12, 1964, had the iris Verona brown; bill black; tarsus, toes, and claws fuscous-black. A juvenile taken at Cerro Jefe, Panamá on November 12, 1970, had the upper mandible black, lower yellow.

Measurements.—Males (6 from Province of Panamá and Darién, including the type), wing 83.0-90.0 (86.4), tail 77.2-85.5 (80.9), culmen from base 16.8-18.9 (17.6), tarsus 25.6-30.3 (28.5) mm.

Females (4 from Province of Panamá), wing 78.0-87.5 (81.7), tail 73.1-82.4 (77.6), culmen from base 17.2-18.2 (17.7), tarsus 27.8-29.2 (28.5) mm.

Resident. Known from Cerro Tacarcuna, Darién, and the Cerro

Azul/Jefe area of the Province of Panamá, where, in 1911, E. A. Goldman found it common from 750 m to the summit of Cerro Azul. Ridgely (*in litt.*) notes that this is one of the more numerous species in the windswept elfin forest near the summit of Cerro Jefe.

On November 12, 1970, Eugene S. Morton collected a juvenile male on Cerro Jefe; it had little fat, weighed 49.5 g, and the skull was not ossified. It was still being fed by an adult; the stomach contained small reptile bones and much gravel.

Though known only from two widely separated mountains, it is possible that these birds are distributed locally along the higher ridges of the Serranía del Darién and the Cordillera de San Blas between the two points in question.

ATLAPETES TORQUATUS ATRICAPILLUS (Lawrence)

Buarremon atricapillus Lawrence, 1874, Ann. Lyc. Nat. Hist., New York, 10, p. 396. ("Bogotá," Colombia.)

Characters.—Crown nearly entirely black.

Measurements.—Males (6 from Darién and Colombia), wing 81.2-91.0 (87.3), tail 73.0-85.7 (81.7), culmen from base 16.0-18.4 (17.7), tarsus 29.7-32.2 (30.8) mm.

Females (7 from Darién and Colombia), wing 80.0-85.7 (82.4), tail 71.8-82.6 (77.8), culmen from base 16.7-18.2 (17.7), tarsus 27.5-31.0 (30.0) mm.

Resident. Known in Panamá only from Cana, Darién, where birds were collected between 600 and 670 m by E. A. Goldman in 1912 and R. R. Benson in 1928. It is also found in northern Colombia. Griscom (Bull. Mus. Comp. Zool., vol. 69, April, 1929, p. 185) assigned the specimens collected by Benson to the race *tacarcunae*, but all 4 of Goldman's skins in the Smithsonian have only the faintest traces of the gray superciliary stripes and only 2 retain a hint of the median crown stripe. Although they can be considered intergrades, they are closer to *atricapillus* than to *tacarcunae*.

ATLAPETES BRUNNEINUCHA (Lafresnaye): Chestnut-capped Brushfinch, Pinzón Rastrojero Cabecicastaño

Embernagra brunnei-nucha Lafresnaye, 1839, Rev. Zool. [Paris], 2, p. 97. (Jalapa, Veracruz, Mexico.)

Medium size; forecrown, sides of head black, rest of crown reddish brown, bordered by thin brownish yellow stripe; rest of upper surface olive-green; undersurface mostly white, with black pectoral band and gray sides and flanks.

Description.—Length 163-187 mm. Adult (sexes alike), forecrown black, with short, fine white stripes beginning near base of maxilla and extending approximately half way through black area; black also above and below eye in mask extending to nape; rest of crown reddish brown, bordered with thin stripe of brownish yellow; rest of upper surface, including wing coverts, olive-green; remiges dusky, edged olive-green, rectrices dusky, edged olive-green in *elsae*, edged brown in *frontalis*; throat white; pectoral band black; sides of breast and sides gray, becoming olive-green on flanks and undertail coverts; rest of under-surface white; bend of wing yellow; underwing coverts olive-green.

Juvenile, forecrown blackish, lacking white marks; rest of crown dark reddish brown; sides of face blackish; rest of upper surface olive-brown; undersurface olive-brown.

The Chestnut-capped Brush-finch inhabits thick undergrowth in the foothills and highlands of both eastern and western Panamá. It is a shy bird, rarely seen although not uncommon, usually found in pairs; as it hops on the ground it uses its long, slender bill to flick or push aside leaves to pick food items underneath. Sometimes it is seen at the outskirts of army ant swarms, probably catching insects fleeing the swarm. The song of this species is high-pitched and squeaky, according to Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 192-193), who heard it in Costa Rica between May, at the beginning of the rainy season, until early November; the birds were singing most profusely in June. The call is a weak, high-pitched *pseet* or *seet*. On one that I collected at Cerro Punta, Chiriquí, I noted that the oil gland was unusually large and well developed.

Parkes (Condor, 1954, pp. 129-138) studied variation in the many different populations of this species, which ranges from central Mexico to southern Peru. Two races are found in Panamá: *elsae*, of Costa Rica and western Panamá as far east as Cerro Campana, Province of Panamá; and *frontalis*, of eastern Darién, and Colombia, Venezuela, Ecuador and Peru.

ATLAPETES BRUNNEINUCHA ELSAE Parkes

Atlapetes brunnei-nucha elsae Parkes, 1954, Condor, 56, p. 135. (Volcán de Irazú, 8,000 to 10,000 feet, Costa Rica.)

Characters.—White of undersurface less extensive than in *frontalis*; upper tail coverts and edges of rectrices olive-green.

A juvenile collected at El Volcán, Chiriquí, on March 17, 1965, had the iris chocolate, maxilla except as noted dull black; gape, side of

maxilla below nostril, cutting edge and extreme tip yellow; mandible yellow with a narrow line of black on side near tip; tarsus and toes grayish brown; claws dusky neutral gray.

Measurements.—Males (9 from Chiriquí and Bocas del Toro), wing 78.9-88.0 (82.4), tail 73.6-89.8 (81.3), culmen from base 15.2-17.2 (16.2, average of 8), tarsus 26.2-30.3 (27.7) mm.

Females (8 from Chiriquí), wing 77.0-82.0 (79.5), tail 74.4-84.9 (78.5), culmen from base 15.0-16.8 (16.0), tarsus 25.6-28.6 (26.9) mm.

Resident. Fairly common but local in the foothills and highlands of Chiriquí, adjacent Bocas del Toro, Veraguas, Coclé, and Cerro Campana in western Province of Panamá. In Chiriquí, W. W. Brown, Jr., collected it at Boquete and Volcán de Chiriquí between 1200 and 2310 m; it has been recorded elsewhere in the province at Cerro Punta, Sereno, and Barriles. In Bocas del Toro, R. Hinds took a male on the Río Changuena at 720 m and, in Veraguas, Arcé collected it at Calovévora and Calobre (Salvin and Godman, *Biol. Centr.-Amer. Aves*, vol. 1, pt. 28, 1884, p. 320). In March 1951, I saw this species at El Valle, Coclé and Cerro Campana, Panamá, where I collected 1 at 900 m.

A juvenile I caught on March 16, 1965, at El Volcán, Chiriquí had just left its nest; in Panamá the breeding season must begin earlier than it does in Costa Rica, where Skutch (*Publ. Nutt. Orn. Club*, no. 7, 1967, pp. 193-196) found the nesting season to run from mid-April to August. The nest is a bulky, open cup made with a foundation of broad dead leaves, twigs, or herbaceous stems, a middle layer of slender dead bamboo leaves, and a lining of horse hairs or fine rootlets. Two nests Skutch found were 1.3 to 1.7 m off the ground in a sapling and a shrub; both were well screened by foliage. One nest had an overall diameter of 20 by 22.5 cm by 12.7 cm in height; the inside was 7.5 cm in diameter by 5.2 cm deep. One or two eggs form a complete clutch; they are pure white and slightly glossy. The average measurements of eight eggs were 25.7×18.9 mm. The incubation period is 14 days and young spend 13 days in the nest. At hatching, they have pink skin and long, dark gray down.

ATLAPETES BRUNNEINUCHA FRONTALIS (Tschudi)

Arremon frontalis Tschudi, 1844, *Archiv. f. Naturg.*, 10 (1), p. 289. (Vicinity of Río Vitoc and Río Tulumayo, Peru.)

Characters.—White of undersurface much more extensive than in *elsae*; upper tail coverts and edges of rectrices brown.

A male collected at Cerro Malí, Darién, on February 24, 1964, had

the iris reddish brown; bill black; tarsus dull black; mottled indistinctly on front and inner side with dull white; toes fuscous-brown; claws dull brown. A juvenile taken the same day had the extreme tip of bill, gape, and inside of mouth dark yellow, clouded on inside of tip of maxilla with dull black; mandible dusky neutral gray, marked with dull yellow on sides of gonys; maxilla, except as described, black; tarsus and toes dark dull brown; claws fuscous-brown tipped faintly with dull yellow.

Measurements.—Males (10 from Darién), wing 81.0-86.3 (84.2), tail 76.8-87.2 (82.5), culmen from base 16.9-19.7 (18.0), tarsus 26.4-29.6 (27.9) mm.

Females (8 from Darién), wing 75.5-83.5 (79.0), tail 71.7-85.9 (78.7), culmen from base 16.7-18.3 (17.6), tarsus 27.3-28.6 (27.9) mm.

Resident. Fairly common but local in the highlands of eastern Darién, where it has been collected at Cerro Malí, Cerro Tacarcuna, Cana, and Cerro Pirre. Ridgely (*in litt.*) observed it in July 1975 in cloud forest near the summit of Cerro Quía (900 m). Some of those taken at Cerro Malí were at 1410 m. This race also has an extensive range in Colombia, Venezuela, Ecuador, and Peru. Variation within the race is discussed by Parkes (Condor, 1959, pp. 156-157). On February 24, 1964, I collected a juvenile at Cerro Malí; here the breeding season evidently begins earlier than in western Panamá.

**LYSURUS CASTANEICEPS (Sclater): Sooty-faced Finch,
Pinzón Carisucio**

Buarremon castaneiceps Sclater, 1859, Proc. Zool. Soc. London, 27, p. 441. (Río Napo, Ecuador.)

Medium size; crown reddish brown; upper surface olive-green; side of head and throat blackish gray, spotted with white; upper breast, sides, and flanks olive-green; rest of undersurface bright yellow.

Description.—Length 150-171 mm. Adult (sexes alike), crown reddish brown; upper surface, including wing coverts, olive-green; remiges and rectrices dusky brown, with outer webs edged olive-green; side of head, including lores and narrow line above eye, and throat blackish gray; upper breast, sides, flanks, and undertail coverts olive-green; rest of undersurface bright yellow.

Juvenile, crown dull brownish olive; rest of upper surface olive-green; chin, upper throat, and side of head blackish; feathers on ramal area lightly marked with white near center, producing partly concealed spots; undersurface olive-green washed lightly with yellow on center of breast.

The Sooty-faced Finch is found very locally in forest undergrowth and borders in foothills and highlands, but is perhaps less uncommon than it seems, since it is numerous at certain localities. In Panamá it has been recorded in Chiriquí, Bocas del Toro, Veraguas, Coclé, and Darién. The form from western Panamá is also found in Costa Rica; the distinctive Darién race is known only from the type specimen. A third race occurs in the west slope of the Western Andes of Colombia, Ecuador, and southeastern Peru.

My only encounter with this species was in Darién, where I caught 1 in a mist net set across a narrow stream in forest. In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 383-384) found that the wet woodland bordering swift rivers or streams was its usual habitat. Here it prefers thickly tangled ground cover in openings or dense second growth dominated by tall trees. It moves in small bands that break up during the nesting season, and forages on the ground, in bushes, and low trees, where it takes berries. Its song is a variety of high, thin, whistled notes, sometimes given in series of four or five; the characteristic call is "a sharp, thin, whistled *pu-pee*, generally uttered when hidden in dense undergrowth" (Ridgely, 1976, p. 338).

LYSURUS CASTANEICEPS CRASSIROSTRIS (Cassin)

Buarremon crassirostris Cassin, 1865, Proc. Acad. Nat. Sci. Philadelphia, p. 170. (Barranca, Costa Rica.)

Characters.—Similar to *L. c. eurous*, but yellow of undersurface more extensive and brighter; gray of head and throat darker; crown lighter, more reddish; bill slightly smaller.

A male collected at Boquete, Chiriquí, on April 6, 1903, had the iris chocolate; bill lead color, whitish below; feet black.

Measurements.—Males (10 from Panamá and Costa Rica), wing 76.0-82.0 (78.0), tail 52.3-68.9 (63.2), culmen from base 15.4-17.8 (16.5), tarsus 26.4-29.0 (27.9) mm.

Females (10 from Panamá and Costa Rica), wing 73.0-77.0 (74.8), tail 56.5-63.4 (60.6), culmen from base 15.4-17.1 (16.4), tarsus 26.8-28.8 (27.8) mm.

Resident. Local, but probably not uncommon in the more humid foothills and highlands of Chiriquí, Bocas del Toro, Veraguas, and Coclé, where Heyde and Lux collected 1 at Cascajal on February 5, 1889 (USNM no. 150868). In Chiriquí, it has been collected between 1200 and 2340 m on the Volcán de Chiriquí and at Boquete by W. W. Brown, Jr., (Bangs, Proc. New England Zool. Club, vol. 3, 1902, p.

69) and in Veraguas on the Cordillera de Tolé and Cordillera del Chucú by Arcé (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1, pt. 28, 1884); elsewhere in Veraguas, Benson collected several at Chitra and Ridgely (1976, p. 338) found it fairly numerous especially along streams in forest above Santa Fé on January 4-5, 1974. Mönniche took a female at Cedral at 1440 m on the Holcomb Trail in Bocas del Toro (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 573).

LYSURUS CASTANEICEPS EUROUS Wetmore

Lysurus crassirostris eurous Wetmore, 1967, Proc. Biol. Soc. Washington, 80, p. 240. (Near head of north fork of Río Pucro, 1,250 m., Cerro Tacarcuna, Darién, Panamá.)

Characters.—Similar to *L. c. crassirostris*, but yellow of undersurface less extensive and faintly duller; gray of side of head and throat slightly lighter; crown darker, more brownish; bill slightly larger.

The type, a male from Cerro Tacarcuna, Darién, collected on February 28, 1964, had the iris dark brown; maxilla, except cutting edge, black; mandible and basal half of cutting edge neutral gray, anterior half of cutting edge brownish neutral gray; tarsus and toes fuscous-brown; claws brownish dark neutral gray.

Measurements.—Male (the type), wing 73.9, tail 58.4, culmen from base 17.3, tarsus 27.5 mm.

Resident. Known only from the type specimen, a male I collected at 1250 m near the head of the north fork of the Río Pucro, Cerro Tacarcuna, Darién, on February 28, 1964. The bird flew into a mist net set across a narrow stream.

ARREMON AURANTIIROSTRIS Lafresnaye: Orange-billed Sparrow, Gorrión Piquianaranjado

Medium size; crown black with white superciliary and gray central stripe; rest of upper surface olive-green; undersurface mostly white with gray on sides and flanks and black pectoral band.

Description.—Length 136-154 mm. Adult male, crown, chin, side of head, and pectoral band black; superciliary, beginning just before eye, white; central crown stripe and nuchal band gray; rest of upper surface yellowish green or olive-green (varies in each race); lesser wing coverts nearest bend of wing, and bend itself, yellow or orange-yellow; rest of wing coverts color of back; remiges and rectrices

blackish brown, with outer webs edged color of back; throat white; sides of flanks gray, sometimes becoming olive-green; rest of under-surface white; underwing coverts olive-green.

Adult female, like male, but with lower border of pectoral band gray and crown colors duller.

Juvenile, entirely olive-green, tinged buffy on throat and belly.

The Orange-billed Sparrow is an unobtrusive resident of the thick undergrowth in humid forest and second growth in the lowlands and foothills of both slopes, ranging up to about 1200 m. It is widespread and fairly common. Three races have been recognized in Panama—*rufidorsalis* of the Almirante Bay region of Bocas del Toro and the Caribbean slope north to Honduras, nominate *aurantiurostris* of Pacific slope Costa Rica and western Panamá, where, from at least El Uracillo, Coclé, it inhabits the Caribbean as well as the Pacific slope as far east as the Canal Zone area, and *strictocollaris*, found from the Canal Zone, where it mixes with the nominate form, to Darién and San Blas and adjacent northwestern Colombia. Three birds I collected in eastern Province of Panamá at Cerro Chucantí and 1 from Cerro Azul seem intermediate between *strictocollaris* and nominate *aurantiurostris*, but closer to *strictocollaris*. The distinctions between the 2 latter races found in Panama are rather fine. Olson's analysis (Bull. Brit. Orn. Club, 1983, vol. 103, no. 2, pp. 84-86) is followed here. *A. a. aaurantiurostris* is the form west of the Canal Zone and *strictocollaris* east of the Canal Zone, with specimens of both occurring in the Canal Zone, the only exception being 2 (of 3) specimens from Mandinga, San Blas, that appear to be more typical of *aurantiurostris*. Other races range from southeastern Mexico to northern Peru and Ecuador.

This species feeds almost entirely on the ground and rarely rises more than 3 m from the forest floor even to sing. It is usually in pairs or family groups. The stomach of 1 collected by E. A. Goldman at Porto Bello, Canal Zone, on May 25, 1911, contained fine fragments of ants of two species 50%, fragments of seeds of Oxalidaceae 15%, bits of seeds of Solanaceae 15%, other ground-up vegetable matter 20%. One that I collected at El Copé, Coclé, contained a long-antennaed cricket. At Jaqué, Darién, I saw 1 near antbirds, but I could not be sure if it was accompanying them. Ridgely (*in litt.*) saw 1 attending an ant swarm at least briefly on April 27, 1980, in the Río Changuinola Valley (200 m), Bocas del Toro. Four collected by Burton (Bull. Brit. Orn. Club, 1975, p. 86) weighed from 29 to 33 g. The song of the male is a series of rising and falling metallic notes; both sexes also have a chipping note.

ARREMON AURANTIIOSTRIS RUFIDORSALIS Cassin

Arremon rufidorsalis Cassin 1865, Proc. Acad. Nat. Sci. Philadelphia, p. 170. (Turrialba, Costa Rica.)

Characters.—Green of upper surface somewhat darker than in other Panamá races; superciliary entirely white, not shaded with gray in rear portion as in other races; flanks olive-green, not gray.

Measurements.—Males (8 from Bocas del Toro and Costa Rica), wing 73.1-80.0 (77.1), tail 61.5-73.2 (66.2), culmen from base 16.0-16.7 (16.4), tarsus 25.2-28.2 (26.4) mm.

Females (7 from Bocas del Toro, Costa Rica, and Nicaragua) wing 73.1-78.0 (75.8), tail 61.8-65.5 (63.6), culmen from base 15.3-17.2 (16.2), tarsus 24.8-27.5 (26.5) mm.

Resident. Fairly common in the Almirante Bay region of Bocas del Toro, where it has been collected on the Boquete Trail and at Guabo and Cricamola (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 339), at Almirante, and at 720 m on the Río Changuena.

ARREMON AURANTIIOSTRIS AURANTIIOSTRIS Lafresnaye

Arremon aurantiiostris Lafresnaye, 1847, Rev. Zool. [Paris], 10, p. 72. (Panamá.)

Characters.—Upper surface yellowish green, lighter than in *A. a. rufidorsalis* or *A. a. strictocollaris*; bend of wing yellow, without tinge of orange as in *strictocollaris*.

A male collected at Puerto Armuelles, Chiriquí, on February 2, 1966, had the iris very dark brown; bill reddish orange; tarsus dull light brown; toes and claws dull brown.

Measurements.—Males (10 from Panamá), wing 74.0-81.0 (77.5), tail 61.3-71.4 (67.7), culmen from base 15.8-17.7 (16.7), tarsus 24.7-26.8 (25.9) mm.

Females (10 from Panamá), wing 70.5-76.8 (72.8), tail 53.6-62.8 (61.1), culmen from base 14.8-17.9 (16.2), tarsus 23.1-28.3 (25.2) mm.

Resident. Fairly common in humid areas on the Pacific slope from the Costa Rican border to at least Cerro Azul, eastern Province of Panamá and on the Caribbean slope from Veraguas east to Mandinga, San Blas. In Chiriquí, it has been collected at El Volcán, San Félix, and Divalá, but in recent years forest destruction in this province has probably reduced the number of places where it may be found.

In Panamá this species seems to nest from May to October. On May 28, 1953, I collected a female at Soná, Veraguas, that had an egg ready to lay. Salvin (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1,

pt. 28, 1884, p. 324) found a nest containing young in May 1873 in the forest near Obispo Station, now in the Canal Zone. Olson found a nest containing two fresh eggs on June 30, 1966, at Curundu, Canal Zone, and W. W. Brown, Jr., collected 1 in nestling plumage at Divalá, Chiriquí on October 27, 1900 (Bangs, Auk, 1901, p. 369-370). In Costa Rica, Skutch (Pac. Coast Avif. no. 31, 1954, pp. 94-100) has found it nesting between April and September. The nest is a bulky, oven-shape structure made of dead leaves, rootlets, sticks, and live, green ferns that help conceal it amid the living vegetation on the ground in which it is placed; the nest is lined with fine, light-colored rootlets. It is often placed on a slope and may have a platform to its side entrance as well as a runway of broken pieces of green fern. The nest may measure as much as 20 cm in external diameter. The inside is 12.7 cm from front to back, 9 cm across, and 10 cm high. Skutch found two eggs or nestlings in each of the thirteen nests he discovered; the eggs are white and moderately glossy, varyingly marked in dark or light brown or black, varying from a few fine dots scattered over the blunt end to a sprinkling over the entire surface or a wreath of black spots around the blunt end. Average measurements are 25.4×17.3 mm. Incubation is performed entirely by the female and requires 14 to 17 days. Both parents feed insects to the young, which are born with pinkish skins and long, dark gray down. When about 13 days old, the young are well feathered and leave the nest.

ARREMON AURANTIROSTRIS STRICTOCOLLARIS Todd

Arremon aurantirostris strictocollaris Todd, 1922, Proc. Biol. Soc. Washington, 35, p. 90. (Sautatá, Río Atrato, Chocó, Colombia.)

Characters.—Upper surface darker, more olivaceous than in nominate *aurantiiostris*; bend of wing orange-yellow, not yellow as in nominate *aurantiiostris*.

A male collected at Tacarcuna Village, Darién, on March 5, 1964, had the iris dark brown; bill orange; tarsus and toes pale brownish white; claws slightly darker.

Measurements.—Males (10 from Darién), wing 73.0-80.0 (76.0), tail 57.7-69.0 (64.1), culmen from base 14.8-16.7 (16.1), tarsus 24.0-27.0 (25.2) mm.

Females (7 from Darién and San Blas), wing 71.0-73.0 (72.0), tail 57.3-60.9 (59.5), culmen from base 15.0-15.8 (15.4), tarsus 23.8-26.7 (25.4) mm.

Resident. Fairly common in Darién and San Blas. In Darién, I have collected it at Jaqué, Río Jaqué, Tacarcuna Village, La Laguna,

and Cerro Pirre, and in San Blas at Mandinga. Von Wedel (Griscom, Bull. Mus. Comp. Zool., vol. 72, 1932, p. 372) collected it in San Blas at Mandinga, and in Darién it is also recorded from Cana (Griscom, Bull. Mus. Comp. Zool., vol. 69, April, 1929, p. 185) and Río Esnápe [sic] (Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, 1922, p. 229).

**ARREMONOPS CONIROSTRIS (Bonaparte): Black-striped Sparrow,
Gorrión Chen-Chen**

Arremon conirostris Bonaparte, 1815?, Consp. Avium, 1 (1850), p. 488. (Columbia.)

Medium size; crown gray with black stripes on side and through eye; rest of upper surface yellowish green; undersurface mostly white with gray band across breast.

Description.—Length 148-178 mm. Adult (sexes alike), sides of head, crown, and nape gray, with black stripes on side of crown extending to nape and from lores to beyond eye; rest of upper surface including wing coverts and tail, yellowish green; remiges dusky, edged yellowish green on primaries, slightly darker and more broadly on secondaries; bend of wing yellow; undersurface white with gray band across breast and gray sides becoming yellowish green on flanks and undertail coverts; underwing coverts pale yellow.

Juvenile, upper and lower surfaces olive-green, streaked with black, especially on crown, upper back, and breast; abdomen more yellowish.

The Black-striped Sparrow is very common in the lowlands of both slopes of Panamá, and somewhat less common in the foothills. In Chiriquí, it has been found as high as 1650 m. A disjunct race occurs on Isla Coiba, off the Pacific coast of Veraguas. The mainland population has traditionally been divided into 2 races, *striaticeps*, from the Canal Zone to Ecuador, and *richmondi* of western Panamá to Honduras. In the extensive series at the Smithsonian it is impossible to distinguish these forms. Although there seems to be a trend for more northern birds, particularly from Honduras, to be darker, there is too much individual variation to render any geographically meaningful division. Museum age of specimens contributes to this variability as well. Monroe (Occ. Pap. Louisiana State Univ. Mus. Zool., no. 28, 1963, pp. 1-12) did not recognize the supposedly darker race *centratus* of Honduras, and Blake (Fieldiana: Zool., vol. 36, no. 5, 1958, p. 574) casts doubt on the validity of *richmondi*. There is no discernable variation in the *striaticeps* group from Honduras to Ecuador and this population should be considered monotypic, apart from the subtly differenti-

ated race *viridicatus* of Coiba Island. Other races are found in Colombia, Venezuela, and northern Brazil.

In Panamá, this species inhabits shrubby clearings, woodland borders, and thickets where it forages on or near the ground and is usually shy and difficult to see. The diet is an equal mixture of animal and vegetable matter. Of several stomachs examined by E. A. Goldman, a typical one contained 6 or more large finely ground ants 30%, bits of 3 different, finely divided beetles 10%, a larval neuropteran (?) 10%, caterpillar remains 25%, 15 entire seeds of *Paspalum* sp. and other fragments 5%, about 60 seeds of *Miconia* sp. 10%, vegetable rubbish 10%. Three specimens collected by Strauch (Bull. Brit. Orn. Club, 1977, p. 65) weighed from 37.6 to 39.5 g.

The Black-striped Sparrow usually delivers its loud and distinctive song from a low or inconspicuous perch. It sings throughout the year, but most during the long nesting season. Skutch (Pac. Coast Avif. no. 31, 1954, p. 104) has heard it singing during the night and at all hours of the day, but most profusely at dawn. Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, pp. 58-59) describes the song and other vocalizations as including "a loud, clear note, repeated at first slowly then gradually faster and faster, *cho, cho, cho, cho cho cho cho-cho-chochocho*. Calls, *whit-cho*; also a whistled *whit* or *white* (like the *white* in the bob-white call); also *whup*; also *cheéoo, cheéoo*; also *chep-chep-chep*." Moynihan (Auk, 1963, pp. 116-144) describes in detail the associated hostile and sexual displays.

ARREMONOPS CONIROSTRIS STRIATICEPS (Lafresnaye)

Embernagra striaticeps Lafresnaye, 1853, Rev. Mag. Zool. [Paris], ser. 2, 5, p. 61. (Panamá.)

Arremonops richmondi Ridgway, 1898, Auk, 15, p. 228. (Greytown, Nicaragua.)

Characters.—Black stripes on crown narrow; gray of undersurface pale, less extensive on breast and sides; green of upper surface lighter, more yellowish.

A female collected February 23, 1962, at El Copé, Coclé, had the iris light brownish red; maxilla, base of cutting edge and tip of mandible black; rest of maxilla pale neutral gray, with a hint of buff at base of gonys; tarsus and toes light brown; claws faintly darker. Others of both sexes I have collected were similar, although lacking the buff at base of gonys.

Measurements.—Males (10 from Panamá), wing 75.4-82.0 (79.1), tail 67.5-75.2 (71.4), culmen from base 17.2-18.9 (18.1), tarsus 27.1-29.6 (28.4) mm.

Females (10 from Panamá), wing 70.2-76.5 (73.7), tail 63.8-72.7 (67.8), culmen from base 16.8-18.2 (17.3), tarsus 26.1-27.2 (26.7) mm.

Resident. Common in the lowlands of both slopes, somewhat less so in the foothills, and found in the highlands of western Chiriquí up to 1650 m (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958, p. 574). In Panamá, the nesting season runs at least from mid-April, when Jewel found nests in the Canal Zone (Stone, Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, pp. 276-277), to September 20, when Major General G. Ralph Meyer found a nest, also in the Canal Zone. Skutch (Pac. Coast Avif. no. 31, 1954, p. 105) found this species building as early as January in Costa Rica, but not in significant numbers until April. The nest is placed within a few feet of the ground in a dense bush or clump of grass. It is a bulky, domed structure made of grasses, decaying leaves, and roots with an entrance on the side; the extent of the roof varies from nest to nest. The nest is built entirely by the female, although the male sometimes escorts her and may pick up and drop bits of nesting material. Two eggs, or occasionally three, form a clutch; they are pure white and slightly glossy. The average measurements of 28 examined by Skutch were 25.2×18.4 mm. Incubation is performed exclusively by the female and requires 13 to 14 days. The young hatch blind, with pink skin and sparse gray down. They are fed by both parents and leave the nest at 11 to 13 days of age. Skutch found some young that were still being fed by their parents when 40 and 63 days old, but this only occurs when a second brood is not attempted.

ARREMONOPS CONIROSTRIS VIRIDICATUS Wetmore

Arremonops conirostris viridicata Wetmore, 1957, Smiths. Misc. Coll., 134 (9), p. 104. (Isla Coiba, off Veraguas, Panamá.)

Characters.—Similar to *A. c. striaticeps* but darker; gray on breast and sides more extensive, with white on lower surface correspondingly less extensive; black stripes of crown broader.

Measurements.—Males (6 from Isla Coiba, including the type), wing 75.5-80.3 (78.0), tail 64.6-69.3 (66.7), culmen from base 16.7-18.3 (17.6), tarsus 27.0-29.0 (27.8) mm.

Females (6 from Isla Coiba), wing 69.9-74.6 (72.3), tail 60.0-64.9 (62.6), culmen from base 16.2-17.9 (16.9), tarsus 26.2-28.5 (27.4) mm.

Resident. Common on Isla Coiba, off the Pacific coast of Veraguas. During my visit to Coiba in January and February of 1956, I found

this sparrow living in thickets near the beaches and at the borders of the swampy lowland forests as well as inland in the undergrowth of the high gallery woodland across the central part of the island. It was found low down near the ground, in pairs or small groups, often in the same localities as the Streaked Saltator (*Saltator albicollis*). Probably some supply of berries or other food brought the two together. At this season they were not singing. Ridgely (*in litt.*) noted that in April 1976 this species was not singing on Coiba while it was on the mainland.

**[AMMODRAMUS SANDWICHENSIS (Gmelin): Savannah Sparrow,
Gorrión Sabanero**

Emberiza sandwichensis Gmelin, 1789, Syst. Nat., 1, p. 875. (Unalaska, Alaska.)

A sparrow seen at France Field, Canal Zone, on December 31, 1976, by D. Engleman and others was probably of this species (Ridgely, *in litt.*). The Savannah Sparrow has been recorded as far south in Central America as Honduras.]

**AMMODRAMUS SAVANNARUM (Gmelin): Grasshopper Sparrow,
Gorrión Saltamontes**

Fringilla savannarum Gmelin, 1789, Syst. Nat., 1(2), p. 921. (Jamaica.)

Small; upper surface streaked brown and gray; undersurface buff; white on center of belly.

Description.—Length 102-116 mm. Adult (sexes alike), upper surface dark brown, with feathers edged gray, producing a streaked effect; lores buff, becoming dark yellow on forepart of superciliary, to first third of eye, remainder of superciliary gray; fine central crown stripe buff; lesser wing coverts nearest bend of wing, and bend itself, yellow; rest of wing feathers blackish brown, tipped reddish and edged whitish or buff; tail blackish brown, finely edged whitish; throat, breast, sides, flanks, and undertail coverts buff; center of undersurface white; underwing coverts white.

The Grasshopper Sparrow is a secretive, though widely distributed, grassland finch found in most of North America and the Greater Antilles, except Cuba, through Middle America as far as Panamá, with 2 subspecies isolated in Curaçao and Bonaire and in Colombia and Ecuador. Three distinct subspecies are found in Panamá (Olson, 1980, Proc. Biol. Soc. Wash. 93(3); pp. 757-759); 2 are resident and 1 is a migrant.

AMMODRAMUS SAVANNARUM PRATENSIS (Vieillot)

Passerina pratensis Vieillot, 1817, *Nouv. Dict. Hist. Nat.*, nouv. ed., 25, p. 24. (New York.)

Characters.—Separated from all resident populations in Middle America by its greater wing length; darker and more richly colored than the birds of western North America, *A. s. perpallidus* Coues.

Measurements.—Males (10 from the breeding range, taken in May), wing 61.0-66.0 (62.9), tail 41.3-47.6 (45.9), culmen from base 11.5-13.3 (12.5), tarsus 16.2-20.1 (18.7) mm.

Females (10 from the breeding range, taken in April, May, and June), wing 58.7-63.5 (61.4), tail 41.5-49.5 (44.7), culmen from base 11.5-13.0 (12.2), tarsus 18.4-20.0 (19.2) mm.

Migrant. Known only from Almirante, Bocas del Toro, where an unsexed adult specimen was taken in November 1963 by personnel of the Gorgas Memorial Laboratory (USNM no. 533402) (Olson, 1980, *Proc. Biol. Soc. Wash.* 93(3), p. 757). This specimen marks a significant range extension, the southernmost occurrence of the subspecies heretofore being in Belize (British Honduras). Ridgely (1976, p. 339) mentions a specimen of this species that was captured and released, also at Almirante, on November 4, 1967. He suggests that this was probably a migrant, which seems likely in view of the identity of the above specimen and the general lack of sufficient habitat in the Almirante area to sustain a breeding population of this species.

AMMODRAMUS SAVANNARUM BIMACULATUS Swainson

Ammodramus bimaculatus Swainson, 1827, *Philos. Mag.*, new ser., 1, p. 435. (Temisaltepec, Mexico, Mexico.)

Characters.—Streaking in nape reddish rather than brownish black as in *A. s. cauae* of northern Colombia. Darker and more richly colored than *beatriceae*.

Measurements.—Males (10 from Panamá, Costa Rica, and Mexico), wing 54.6-60.0 (57.6), tail 38.7-45.3 (42.1), culmen from base 11.0-13.2 (12.0, average of 9), tarsus 17.3-20.1 (18.6) mm.

Females (2 from Panamá), wing 56.0-56.5 (56.3), tail 38.4-39.0 (38.7), culmen from base 11.6-13.0 (12.3), tarsus 18.0-18.7 (18.4) mm.

Resident. Uncommon and very local in the lowlands of western Chiriquí (4 specimens, now in the American Museum of Natural History, were taken at Francés by H. J. Watson in 1905) and eastern Province of Panamá around Chepo, where E. A. Goldman collected 3 in

1911 (Aldrich, Auk, 1945, pp. 111-112) and Pacora (Ridgely, *in litt.*). This race is also found in parts of Mexico, Honduras, Nicaragua, and Costa Rica.

Goldman's specimens were collected in late March and include an immature male molting from juvenal to adult plumage. The juvenal plumage remaining on the undersurface has a yellowish ground color very different from that in juvenile specimens from North America, which are practically white. The presence of this nearly juvenile specimen indicates that the Grasshopper Sparrow breeds in the dry season, in eastern Province of Panamá, whereas I found an active colony of the Coclé birds in May. As additional evidence that the breeding season, in the Province of Panamá at least, takes place in the dry season, Aldrich (*op. cit.*) notes that the 2 adult specimens, 1 female and 1 unsexed, are "in fresh plumage, apparently having recently completed the post-nuptial molt." Ridgely (*in litt.*) and J. Karr, however, noted that Grasshopper Sparrows at Pacora were singing during the peak of the rainy season of 1968. Ridgely and Karr also observed that when areas of ungrazed savanna holding Grasshopper Sparrows were burned during the dry season the birds did not return the following year.

AMMODRAMUS SAVANNARUM BEATRICEAE Olson

Ammodramus savannarum beatriceae Olson, 1980, Proc. Biol. Soc. Wash., 93(3), pp. 757-759. (El Coco, Coclé Province, Panamá.)

Characters—Palest of all the subspecies of *A. savannarum*. Equal in size to *A. s. bimaculatus*, but throat, breast, flanks, and undertail coverts pale pinkish buff, not rich ochraceous-yellow. Dorsum much grayer than in *bimaculatus* and median crown stripe very pale, almost white, instead of deep buff.

A female, the type, collected at El Coco, Coclé, on March 10, 1962, had the iris light brown; cutting edge of maxilla and mandible except extreme tip dull brownish white; rest of maxilla and tip of mandible fuscous; tarsus, toes, and hind claw light brownish white; three anterior claws dark brown.

Measurements.—Males (4 from Coclé), wing 52.8-57.6 (55.9), tail 40.5-42.8 (41.6), culmen from base 11.5-12.2 (11.8), tarsus 17.9-19.8 (18.5) mm.

Females (5 from Coclé), wing 54.6-56.0 (55.0), tail 38.3-42.2 (39.7), culmen from base 11.1-12.2 (11.6), tarsus 17.6-19.1 (18.3) mm.

Resident. Known only from the savannas of southern Coclé Prov-

ince, on the Pacific slope. It has been collected at El Coco, Gago, near Antón, and near Penonomé. As this is perhaps the most easily distinguished of all the forms of *Ammodramus savannarum*, it is indicative of a fair degree of isolation for the grassland birds of the llanos of Coclé. Further evidence of this is supplied by another endemic emberizine, *Sicalis luteola eisenmanni*, described from many of the same localities, the only population of *S. luteola* occurring between Guatemala and Colombia.

This species is very localized in Panamá. My only experience with this population was near Antón, Penonomé, and El Coco. On May 10, 1953, 3 miles northwest of Antón, I found a small colony in which males were singing and females had nests. One female performed a broken wing act. The birds were in a stretch of previously burned pasture surrounded by taller grass that would probably be burned later. The songs of the males resemble those of North American birds. The birds were very inconspicuous and might be mistaken for pipits that were all around. I saw one darting at a passing Mourning Dove (*Zenaida macroura*).

JUNCO VULCANI (Boucard): Volcano Junco, Junco del Volcán

FIGURE 47

Zonotrichia vulcani Boucard, 1878, Proc. Zool. Soc. London, p. 57, pl. 4. (Volcán de Irazú, 10,000 ft., Costa Rica.)

Medium size; bill rather slender; upper surface mostly streaked dark brown; side of head and undersurface gray.

Description.—Length 152-161 mm. Adult (sexes alike), lores and narrow mask around eye white; narrow superciliary gray; crown olive-brown; rest of upper surface buffy brown, streaked with dark brown on upper back; feathers of wing dark brown, edged lighter; rectrices dark brown, edged lighter; sides of head and undersurface light gray, becoming whitish on abdomen and buffy brown on flanks and undertail coverts.

Immature, brown of upper surface more reddish than in adult, streaking heavier; undersurface dingy buff, streaked with sepia except on center of belly.

A male collected on Volcán de Chiriquí, Chiriquí, on March 3, 1965, had the iris bright orange-yellow; maxilla light mouse brown; mandible flesh color; tarsus light brownish white; toes slightly darker; claws fuscous-brown.

Measurements.—Males (10 from Volcán de Chiriquí, Chiriquí),

wing 76.0-81.0 (78.6), tail 68.1-75.0 (72.0), culmen from base 13.9-14.9 (14.3), tarsus 25.6-27.1 (26.3) mm.

Females (10 from Volcán de Chiriquí and Costa Rica), wing 70.8-77.6 (74.7), tail 64.9-71.8 (68.3), culmen from base 13.8-15.7 (14.6), tarsus 25.2-27.8 (26.9) mm.

FIGURE 47.—Volcano Junco, Junco del Volcán, *Junco vulcani*.

Resident. Found only on Volcán de Chiriquí, Chiriquí, and on the high peaks of Costa Rica. On Volcán de Chiriquí, it is common at and above timberline; I collected some at 2685 and 2700 m, but it is usually not encountered below 3000 m. The Volcano Junco is generally found singly or in pairs accompanied by young birds. It inhabits openings with tangles of bushes and scrub, and sometimes rises into trees when they are present. It forages on the ground, where it hops and runs. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 389) describes the song as "a somewhat involved set of about 10 notes followed by a variable, strongly undulant trill or warble." It also has various chirping and twittering notes. In the series that W. W. Brown, Jr., (Bangs, Proc. New England Zool. Club, vol. 3, 1992, p. 70) collected on Volcán de Chiriquí in May and June 1901 were young in nestling plumage.

F. G. Stiles found a nest with two eggs in Costa Rica that is now in the collection of the Western Foundation of Vertebrate Zoology. The nest was a cup of grass lined with animal hair and thistle floss. It was set in a niche in a rocky embankment overgrown with moss, the moss overhanging and forming a roof for the nest. The outside was some-

what decorated with moss. The eggs from the nest are pale blue with faint lilac dots occurring mostly on the large ends. They measure 22.06×16.33 and 23.12×16.81 mm.

ZONOTRICHIA CAPENSIS COSTARICENSIS Allen: Rufous-collared Sparrow, Gorrión de Collar Rojizo

FIGURE 48

Zonotrichia capensis costaricensis J. A. Allen, 1891, Bull. Amer. Mus. Nat. Hist., 3, p. 374. (San José, Costa Rica.)

Zonotrichia capensis orestera Wetmore, 1951, Smiths. Misc. Coll., 117 (2), p. 9. (Southwest face of Cerro Campana, 2,000 ft., Panamá, Panamá.)

Small; crown streaked gray and black; hindneck to side of breast reddish brown; rest of upper surface streaked brown and blackish; undersurface mostly whitish with black patch on side of breast.

Description.—Length 118-134 mm. Adult (sexes alike), broad central crown stripe, superciliary stripe, auricular area, extending forward to gape, gray; broad lateral crown stripes and narrower stripes around auricular area black; hindneck and sides of neck rufous, forming a collar; rest of upper surface buffy brown, with feathers of upper back blackish brown in center, producing streaked effect; middle coverts blackish brown tipped white; greater coverts blackish brown, edged tawny and tipped white; remiges blackish brown, edged, tawny; tertials broadly edged tawny; rectrices blackish brown; throat white; sides of upper breast black, connected by black spots; sides of lower breast hazel, continuing from side of neck; sides and flanks buffy brown; rest of undersurface white, sometimes tinged with buff; underwing coverts white.

Juvenile, gray and black absent from head, replaced with stripes of blackish brown and buffy brown; rufous stripe of neck absent; rest of upper surface like adult, but slightly more reddish brown; white spots of wing buffy; throat white; breast, sides, and flanks buff, streaked with blackish brown; rest of undersurface white, tinged buff.

A male collected at El Volcán, Chiriquí, on February 28, 1965, had the iris light reddish brown; maxilla and extreme tip of mandible dull slaty black; rest of mandible dull greenish gray; tarsus light brown; toes darker brown; claws mouse brown. A female taken that day was the same.

Measurements.—Males (10 from Chiriquí), wing 61.8-65.5 (63.8), tail 52.2-56.5 (54.7), culmen from base 12.6-14.0 (13.1), tarsus 19.3-21.8 (20.7) mm.

Females (10 from Chiriquí and Costa Rica), wing 59.0-62.0 (60.5), tail 46.5-54.8 (50.8), culmen from base 12.7-13.7 (13.0), tarsus 18.7-22.9 (20.8) mm.

FIGURE 48.—Rufous-collared Sparrow, Gorrión de Collar Rojizo, *Zonotrichia capensis costaricensis*.

Resident. Abundant in the highlands of Chiriquí and Veraguas and found also on Cerro Campana and Cerro Chamé in western Province of Panamá. On Volcán de Chiriquí and around Boquete, Chiriquí W. W. Brown, Jr., (Bangs, Proc. New England Zool. Club, vol 3, 1902, p. 70) collected it between 1200 and 3000 m. I found it at Sereno, Chiriquí, at 1110 m. In Veraguas, Arcé collected it at Chitra, Calovévora, and Castillo (Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 1, pt. 48, 1886, p. 371). There is also an old skin in the Smithsonian marked Cascajal, Coclé. Presumably this was taken on the high open slopes on the Pacific side, above the head of the Río Cascajal, which is a tributary of the Río Coclé del Norte. Dr. Matthew W. Stirling, who has been on the Cascajal, informs me that the Caribbean slope is heavily forested, but that there are open, grass slopes just over the divide toward La Pintada.

M. E. Davidson collected a female at Chamé on January 8, 1932, and Gerald Rogers observed a bird there at 480 m on April 22, 1942, on "an isolated rocky, sedge-covered hilltop which projected above the coastal plain" (Rogers, Auk, 1945, p. 641). On March 26, 1955, I searched for it in vain on the high slopes.

The Rufous-collared Sparrow is of northern origin, as Chapman (Bull. Amer. Mus. Nat. Hist., 77, pp. 381-438) pointed out, but it has spread over the highlands of Central America from southern Mexico to Panamá and in South America all the way to Tierra del Fuego, from the Pacific to the Atlantic, and on the Caribbean islands of Hispaniola, Aruba, and Curaçao. Paynter (Check-list Birds World, vol. 13, 1970, pp. 55-59) recognizes 25 races. Despite this striking polymorphism, the populations from Costa Rica, Panamá, the three Andean ranges of Colombia, and parts of northern Ecuador and western Venezuela cannot be subdivided and constitute a single race, *costaricensis*. Although the birds from Cerro Campana, Province of Panamá, were at one time considered to constitute a separate race, *orestera* (Wetmore, 1951, Smiths. Misc. Coll. 117(2), pp. 1-11), these individuals cannot be consistently separated from specimens of *costaricensis* in comparable plumage (Olson, 1981, Proc. Biol. Soc. Wash. 94(2), pp. 371-372). The original assessment of the Campana birds was probably influenced by the fact that the specimens in the type series were taken practically simultaneously and thus present a more uniform appearance than a more randomly selected series with specimens in different states of molt and wear.

This is a very common species around agricultural fields, shrubby hillsides, and houses in the highlands, where it is often quite tame. The birds are usually found in pairs, although sometimes they are so abundant that they seem to form flocks; however, if flushed they scatter in different directions. At Cerro Campana in 1951, I put cracked rice at the edge of the porch of the house where I was staying and the pair that ranged there came immediately to eat, remaining until heavy dusk and then suddenly taking flight into the grass below. There they walked and crept, pushing their way through thin stands of grass rather than hopping over.

In Panamá the song of the Rufous-collared Sparrow is a two-note whistle, *tseeip tsee* being one of my notations for it. It suggests the song of the Eastern Meadowlark (*Sturnella magna*) and the tone of the White-throated Sparrow (*Z. albicollis*). The birds also give a series of *tsip* notes. Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp.

201-202) noted that in Costa Rica it sings from January to August, but most vigorously in February and July. This is correlated with the birds' two-part nesting season: in Costa Rica breeding takes place between February and May or June and again in July or August. Wolf (Condor, 1969, pp. 212-219) found that in Costa Rica the annual molt took place between the two breeding periods and there was a partial pre-nuptial molt prior to spring reproduction.

Blake (Fieldiana: Zool., vol. 36, no. 51, 1958, p. 575) noted that at Volcán de Chiriquí breeding peaks were in May and August, and he reports juveniles in the Mönniche collection taken from March 19 to October 10. The earliest juvenile I collected was on February 9, 1960, at El Volcán. A nest in the Mönniche collection was found on February 23, 1933, when it contained two incubated eggs. The nest was on the ground at the base of a precipice. It was a loosely made cup of coarse straw, grass, and leaves, lined with very fine grass stems and skunk hair. Outside dimensions of the nest were $11.5 \times 12.7 \times 7.5$ cm, the cup 6.2×3 cm. The two eggs were bluish white, generously and almost evenly speckled with lilac and reddish brown; they measured 20×16 and 20.5×16 mm. (Blake, Condor, 1956, p. 388). In Costa Rica, Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 204-205) has found 9 sets of two eggs and 2 sets of three eggs. The nests he found were located on the ground in a bank sheltered from rain, in thorny shrubs, and, once, on a beam in a cowshed, 3 m above the ground. Ten adult specimens collected by Leck (Bird-Banding, 1975, p. 202) at Cerro Punta, Chiriquí weighed from 18.7 to 23.2 g.

At Cerro Campana I found the birds ranging over open, grass-covered ridges, where exposures of volcanic rock thrust out from the poor, stony soil, and woody vegetation is composed of low, scrubby growth in sheltered valleys, only scattered shrubs appearing elsewhere. The sparrows remained mainly on the grassland, perching on boulders or in the low bushes. They were found from 540 m upward. In 1951, the birds were common and I heard several singing there on June 21, 1953, when they were quite shy, but on December 21, 1955, it took considerable search to find a group of 3. I believe that the heavy and complete burning of the grasslands, which had taken place since my previous visit, had a definite effect on their number. On March 2, 1951, I collected a series of males that were in or near breeding condition. One was carrying food in its throat. I flushed 2 from grass at my feet that I was certain were females that had come off nests, but I could find nothing.

[**ZONOTRICHIA LEUCOPHRYS** (Forster): White-crowned Sparrow,
Zacatero Mixto

Emberiza leucophrys Forster, 1772, Philos. Trans. Roy. Soc. London, 62, p. 340.
(Severn River, west shore of Hudson Bay.)

An immature White-crowned Sparrow was observed on the grounds of the Hotel Washington, Colón, Canal Zone, January 15-22, 1982, by J. and R. A. Rowlett and many other observers familiar with the species in North America (Ridgely, *pers. comm.*). Photographs were taken by Bret Whitney. The normal winter range of this species extends south to Florida, Cuba, Jamaica, and central Mexico.]

ZONOTRICHIA LINCOLNII LINCOLNII (Audubon): Lincoln's
Sparrow, Gorrión de Lincoln

Fringilla Lincolnii Audubon, 1834, Birds Amer. (folio), 2, pl. 193. (Near mouth of Natashquan River, Quebec.)

Small; upper surface grayish brown, streaked with blackish; under-surface mostly white, finely streaked.

Description.—Length 120-131 mm. Adult (sexes alike), narrow central crown stripe and broad superciliary light gray; side stripes of crown auburn, streaked black; upper surface, including wing coverts, finely streaked blackish brown; remiges and rectrices auburn; lores and auricular area whitish or buffy gray; fine buff and blackish stripes on side of throat; center of throat white, very slightly streaked with blackish; breast, sides, flanks, and undertail coverts buff; finely streaked with blackish; rest of undersurface white.

Measurements.—Males (10 from North America, taken in May), wing 59.0-64.4 (62.7), tail 53.5-60.2 (56.3), culmen from base 10.9-11.8 (11.2), tarsus 18.7-20.0 (19.4) mm.

Females (10 from North America, taken in May and June), wing 57.2-65.3 (60.8), tail 50.4-59.3 (55.0), culmen from base 10.4-12.0 (11.3), tarsus 18.3-21.0 (19.6) mm.

Accidental. This species is known in Panamá from 2 records, a very old specimen collected in the Canal Zone, and a bird recently mist-netted and released. The normal winter range is south to Honduras. The Smithsonian has a male collected at "Lion Hill, near Aspinwall" by McLeannan. The specimen is unquestionably a McLeannan skin, as shown by the small cardboard tag attached to one foot marked "m 358" in McLeannan's handwriting. The skin was purchased from McLeannan by S. and T. Rhodes (not Rhoads as stated on label) in December 1865 with a number of other specimens. On October 31, 1967, a Lin-

coln's Sparrow was mist-netted and released at Almirante, Bocas del Toro, by V. Kleen (Ridgely, 1976, p. 340). Panamá is the most southern locality from which this species has been recorded.

EMBERIZOIDES HERBICOLA HYPOCHONDRIACUS Hellmayr:
Wedge-tailed Grass-finch, Pinzón Yerberero Coliacuñado

FIGURE 49

Emberizoides herbicola hypochondriacus Hellmayr, 1906, Bull. Brit. Ornith. Club, 19, p. 28. (Francés, 2,000 ft., Volcán de Chiriquí, Panamá.)

Emberizoides herbicola lucaris Bangs, 1908, Proc. New England Zool. Club, 4, p. 34. (Boruca, Costa Rica.)

Emberizoides herbicola floresae Griscom, 1924, Amer. Mus. Novit., no. 141, p. 8. (Cerro Flores, 3,600 ft., eastern Chiriquí, Panamá.)

Medium sized; with long, graduated tail; upper surface streaked dark brown and buff; undersurface whitish, with buff on sides and flanks.

Description.—Length 164-178 mm. Adult (sexes alike), upper surface very dark brown with feathers edged buff and light brown, creating streaked appearance; wings dark brown with most coverts and all but innermost secondaries edged greenish yellow on outer web; tail streaked like back; undersurface whitish, with buff across breast and on sides and flanks; bend of wing bright yellow.

A male taken at Cerro Campana, Province of Panamá, June 21, 1953, had the iris plain brown; mandible and cutting edge of maxilla honey yellow; tarsus hair brown, toes and nails fuscous-brown. A female collected the same day had the yellow of the bill very slightly duller.

Measurements.—Males (10 from Panamá and Costa Rica), wing 62.5-70.2 (66.5), tail 82.6-99.8 (88.0), culmen from base 13.7-15.2 (14.5, average of 9), tarsus 20.4-23.3 (21.9) mm.

Females (4 from Panamá), wing 64.5-69.0 (66.1), tail 77.9-92.3 (84.7), culmen from base 13.2-14.7 (14.1), tarsus 18.8-22.7 (21.4) mm.

Resident. Rare to uncommon and very local in foothills on the Pacific slope of Chiriquí and in the Province of Panamá at Cerro Campana and in the Tocumen/Chepo area. In Chiriquí, it has been collected at Francés, in the foothills of Volcán de Chiriquí, and at Cerro Flores; in elevation it ranges from 600 to 1080 m. Beyond Panamá, this race is found in the Térraba area of southwestern Costa Rica. Four other races are recognized, ranging from Colombia to north-eastern Argentina and southeastern Brazil.

The race *floresae* of Griscom is based on a single specimen whose distinguishing characters seem to be due to its being in non-adult plumage. The race *lucaris* of Bangs, from Costa Rica, also appears to be indistinguishable. Tails tend to be longer in *lucaris*, but the habits of this bird cause it to be subject to extreme amounts of wear, so that while it might be possible to recognize 2 subspecies eventually, there is not sufficient good material of either this population or of typical *hypochondriacus* to demonstrate the validity of *lucaris*. Hellmayr (Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 11, 1938, p. 613) long ago expressed reservations about *lucaris* due to specimens not being from comparable seasons.

FIGURE 49.—Wedge-tailed Grass-finch, Pinzón Yerberero Coliacuñado, *Emberizoides herbicola hypochondriacus*.

The grass-finch inhabits grasslands and grassy hillsides. When flushed, it flies low over the grasses and then drops down again, being difficult to relocate. Nothing appears to be known of its life history. It has two songs, "a musical *tleedeé*, *tleedeé*, *tleedeé* with variations, and a very different buzzy *tzit-zeereéa* or *zit-zipzirree*" (Ridgely, 1976, p. 340). When singing, the bird usually perches in the open on a fence post or the top of a grass clump.

Taxonomy of this genus and the little known of its ecology are discussed by Eisenmann and Short (Amer. Mus. Novit. no. 2740, 1982, pp. 20-21).

CARDUELIS XANTHOASTRA XANTHOASTRA (Du Bus):
Yellow-bellied Siskin, Pinzón Ventriamarillo

Chrysomitris xanthoastrea Du Bus, 1855, Bull. Acad. Roy. Sci. Bruxelles, 22, pt. 1, p. 152. (Ocaña, Colombia.)

Very small; male, throat, breast, and upper surface black except for patch of bright yellow at base of remiges and rectrices; remainder of undersurface bright yellow; female mostly yellowish green with patch of yellow at base of black remiges and rectrices.

Description.—Length 97-108 mm. Adult male, throat, breast, and entire upper surface including wings and tail black, except for patches of bright yellow on basal third to half of both inner and outer webs of remiges and rectrices; remainder of lower surface rich yellow; underwing coverts pale yellow.

Adult female, throat, breast, and entire upper surface dark olive; wing coverts black, tipped dark olive; remiges and rectrices like male's, but yellow slightly less extensive; sides and flanks yellowish green, becoming more yellowish at center of belly; abdomen and undertail coverts whitish; underwing coverts white, tinged light yellow.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 64.0-66.8 (65.3), tail 36.4-43.0 (39.3), culmen from base 9.9-11.4 (10.7), tarsus 12.7-14.8 (13.6) mm.

Females (10 from Chiriquí, Costa Rica, and Colombia), wing 61.0-66.3 (63.9), tail 33.9-39.8 (37.7), culmen from base 9.2-10.8 (10.1), tarsus 12.0-15.6 (13.5) mm.

Resident. Fairly common in the highlands of western Chiriquí; elsewhere it occurs in Costa Rica and from Venezuela to western Ecuador; another race is found in central Bolivia. In Panamá, Mönniche (Blake, Fieldiana: Zool., vol. 36, no. 5, 1958) collected it on Volcán de Chiriquí between 1560 and 1800 m. I have found it at similar elevations on Cerro Punta, and it has also been collected at Boquete. Ridgely

(*in litt.*) notes that he has found it common down to about 1250 m around Volcán and toward Cerro Punta, from there upward on the western side of El Volcán, but it seems much less numerous on the eastern side.

The Yellow-bellied Siskin inhabits clearings, pastures with trees, and forest edges. It is usually seen in small flocks except when nesting, and often feeds high in trees. At Cerro Punta, a pair fed at the heads of a tall thistle-like composite in the garden behind our house. The song of this species is a thin, musical twitter, often delivered when the birds are in groups. Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 179-180) found two nests built by a pair of these siskins in Costa Rica, but the eggs vanished from each before hatching. The first nest was built in late April. Both nests were 3 m from the ground in trees; they were made by the female out of fibrous bark and rootlets, fungal strands, and pieces of bear-lichen, probably *Usnea* sp. The outside of one was irregularly covered with tufts of green moss and was thickly lined with fine, black, fungal filaments. This nest measured 8.5 cm in diameter by 6.2 cm in height; the diameter of the cavity was 4.5 cm and its depth 2.7 cm. The eggs were white with a slight greenish tinge; three were laid in the first nest, two in the second.

**CARDUELIS PSALTRIA CROCEA (Jouy): Dark-backed Goldfinch,
Pinzón Dorado Espaldinegro**

Spinus psaltria crocea Jouy, "1893," Proc. U.S. Nat. Mus., 16, p. 780, pub. April 18, 1894. (Panamá.)

Very small; male, upper surface glossy bluish black, with white patches on wings and tail; undersurface bright yellow; female, upper surface yellowish green; wings and tail blackish with white patches; undersurface yellow.

Description.—Length 89-95 mm. Adult male, upper surface glossy bluish black; wings black with small white patch at base of inner primaries, and outer web of tertials tipped white; tail black with large white patch on inner web of outer two pairs of rectrices; entire undersurface rich yellow; underwing coverts white.

Adult female, upper surface yellowish green; wing coverts blackish, tipped yellowish green; remiges blackish, with small white patch at base of inner primaries; outer web of tertials tipped white; tail blackish, with outer webs finely edged yellowish green and white patch on inner web of outer pair of rectrices; undersurface rich yellow, slightly more greenish on breast; underwing coverts white and light gray.

Immature, like female, but duller, more greenish.

A male collected at El Volcán, Chiriquí, on March 17, 1965, had the iris dark chestnut; tip of maxilla dusky neutral gray; rest of bill dull greenish yellow, becoming more yellow at base; tarsus, toes, and claws dull brown.

Measurements.—Males (10 from Panamá), wing 57.0-61.0 (58.4), tail 34.9-38.7 (36.6), culmen from base 9.7-10.8 (10.3), tarsus 11.2-12.2 (11.7) mm.

Females (10 from Panamá), wing 55.0-58.5 (57.2), tail 33.4-40.3 (36.1), culmen from base 9.0-10.7 (9.9), tarsus 11.2-12.0 (11.5) mm.

Resident. Locally common but erratic in the lowlands and foothills of the Pacific slope from Chiriquí to the Canal Zone, but less common in central Panamá than in the west. On the Caribbean slope, it is known only from occasional but increasing reports in the middle Chagres River Valley in the Canal Zone; the maximum is 4 seen at the Madden Lake Scout Camp on July 10, 1975 (Ridgely, *in litt.*). East of the Canal Zone there is one old sighting, at Río Tapia, eastern Province of Panamá, in 1934 by R. S. Arbib (Ridgely, 1976, p. 341), but many recent ones. Although this goldfinch is kept as a cage bird, E. A. Goldman collected specimens at Gatún and Corozal in the Canal Zone during 1911, suggesting that even at that time not all found here were escaped from captivity. The species now occurs locally east to Cerro Azul and the Tocumen-Pacora area in eastern Province of Panamá (Ridgely, *in litt.*). On January 26, 1976, Ridgely observed a pair building a nest at Cerro Azul, and on March 11, 1979, he saw a pair feeding 3 partially fledged young there. Beyond Panamá, this race ranges north to Chiapas, Mexico; other races are found north to southwestern Washington and east to Oklahoma, and south to Venezuela and northwestern Peru.

Although the race *crocea* is now usually merged with *colombiana* Lafresnaye 1843, the series now available at the Smithsonian indicates that the birds from Panamá north to Mexico are in fact separable from those of northern South America. Although the amount of white in the tail of *colombiana* does vary, it is hardly, if ever, as extensive, particularly distally, as in *crocea*, in which the large white patch seems invariably present in fully adult males. Furthermore, although poorly represented in most collections, females from Panamá are much brighter yellow below and lack the decided olive suffusion found on the chest of *colombiana*.

In Panamá, this species inhabits open country with scattered trees and bushes. Mönniche (Blake, *Fieldiana: Zool.*, vol. 36, no. 5, 1958, pp. 571-572) collected it on Volcán de Chiriquí at 1590 m, and M. E.

Davidson took it at Boquete at the same elevation. Ridgely (*in litt.*) notes that it can be very common around the town of Boquete and on the east slope of El Volcán; on the west side of El Volcán it is outnumbered by *C. xanthogastra*. I have also found it in Chiriquí at San Félix, in Veraguas at Soná; at Pesé and El Barrero in Herrera; at Punta Mala, Los Santos; and El Valle and El Potrero, Coclé. It usually travels in pairs or small flocks feeding on flowers in trees or seeds nearer the ground, where it sometimes joins seedeaters and Dickcissels (*Spiza americana*). The song is a long outpouring of clear musical notes rising and falling and interspersed with twitters.

In Costa Rica, Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 182-184) found nests in August, December, and January. He noted that the birds sang from June to February. The nests were from 4 to 7 m above the ground in trees or shrubs. One had an outer layer of bits of grasses and decaying weed stems, a middle layer of rootlets and other vegetable fibers, and a thick lining of horse hairs, fine vegetable fibers, a few rootlets, and thread-like rachides of *Acacia* leaves. The nest measured 7.5 cm in diameter by 5 cm in height; the interior was 4.5 cm in diameter by 3 cm deep. Half the nests Skutch found held two eggs, the other half had four. They were white and unmarked.

APPENDIX

Family SPHENISCIDAE: Penguins, Pingüinos

SPHENISCUS MENDICULUS Sundevall: Galapagos Penguin, Pingüino de las Galápagos

Spheniscus mendiculus Sundevall, 1871, Proc. Zool. Soc. London, pp. 126, 129.
(Galápagos Islands.)

"Only record is an immature captured alive in the surf at Puerto Armuelles, Chiriquí, by a local fisherman in February 1955. The bird was kept alive for a month, then died, and was ultimately prepared as a specimen, now at the Smithsonian. It seems likely that the bird was captured by some visiting vessel in the Galápagos, then released (or escaped) off Chiriquí" (Ridgely, 1976, p. 27). On the other hand it should be noted that individuals of many other species of penguins have turned up as vagrants far out of their normal range. This species normally is confined to the Galápagos Islands.

Family TINAMIDAE: Tinamous, Tinamous

CRYPTURELLUS KERRIAE (Chapman): Chocó Tinamou, Perdiz del Chocó

Crypturellus kerriae Chapman, 1915, Bull. Am. Mus. Nat. Hist., 34, p. 636.
(Baudó, Chocó, Colombia.)

Medium size; upper surface dark reddish brown; undersurface lighter, more orangish brown, especially on belly.

Description.—Length 235-275 mm. Adult (sexes alike), crown very blackish brown; rest of upper surface between russet and hazel with ends of lower back and rump feathers black; wing coverts and tail hazel with some black barring and flecks of warm buff; remiges blackish brown, with some spots of light reddish brown on edges of secondaries; chin white, becoming light drab on throat; breast blackish brown becoming ochraceous-tawny on belly, darker on sides and flanks, and barred with black on thighs; undertail coverts ochraceous-buff, barred black; underwing coverts blackish brown.

Measurements.—Male (1 from Darién), wing 165.0, tail 42.4, culmen from base, 28.8, tarsus 45.3 mm.

Female (1 from Darién), wing 160.0, tail 39.6, culmen from base 27.2, tarsus 48.8 mm.

Resident. Known in Panamá from 2 specimens collected on Cerro Quía, Darién. Both were taken by Dr. Pedro Galindo, an adult female on February 21, 1970, at 760 m, near the trail leading down to the Río Mono, and an adult male near the same trail at 750 m on March 13 of that year. The species was fairly common on the steep slopes of the higher ridges, down to about 460 m, with a few noted as low as 300 m. Though their low, tremulous, single-noted whistles, repeated constantly at 2- or 3-second intervals, were heard regularly, the birds were shy and were seen only occasionally, usually as they rose in rapid flight. All observed were in adult plumage (Wetmore and Galindo, Proc. Biol. Soc. Washington, vol. 85, no. 25, 1972, pp. 309-312). This species is also found in northwestern Colombia.

Family PROCELLARIIDAE: Shearwaters and Petrels;
Pardelas y Petreles

[PROCELLARIA PARKINSONI G. R. Gray: Parkinson's Black Petrel,
Pardela Negra

Procellaria parkinsoni G. R. Gray, 1862, Ibis, p. 245. (New Zealand.)

There are 3 sight reports of birds seen off the Pacific Coast of Panamá that may refer to this species; one "almost surely this species" seen 35 miles southeast on Punta Mala, Azuero Peninsula, on April 27, 1965, by Dr. George E. Watson; another that was probably this species was seen west of Punta Mala on March 31, 1935, by Dr. James P. Chapin; and "a large, all-black shearwater," suggesting this species, was seen in the Gulf of Panamá on November 9-10, 1958, by C. R. Robins (Ridgely, 1976, p. 31). Parkinson's Black Petrel breeds on islands off New Zealand and ranges east in the tropical Pacific as far as the Galápagos Islands and off Central America (Jehl, 1974, Auk, pp. 687-689).]

[PUFFINUS PUFFINUS (Brünnich): Manx Shearwater,
Pardela de Mann

Procellaria puffinus Brünnich, 1764, Orn. Bor., p. 29. (Färoes and Norway.)

There is 1 sight report of this species, a bird seen by an experienced observer, R. Brown, in Panamá Bay (08°44'N, 78°50'W) on October 30, 1977 (Ridgely, *in litt.*).]

Family OCEANITIDAE: Storm Petrels, Paiños

OCEANITES OCEANICUS OCEANICUS (Kuhl): Wilson's Storm Petrel, Pardela de Wilson

Procellaria oceanica Kuhl, 1820, Beitr. Zööl., Abth. 1, p. 136, pl. 10, f. 1. (South Georgia.)

Small; entirely dark brownish gray except for white on upper and undertail coverts.

Description.—Length 150-180 mm. Adult (sexes alike), upper surface, except for tail coverts, deep mouse gray; inner, middle and greater wing coverts sometimes tipped white; upper tail coverts white; remiges blackish; rectrices blackish on distal half, white on basal half; under-surface mouse gray, with white on feathers of lower flanks and outer undertail coverts; underwing coverts mouse gray, tipped white.

Measurements.—Males (averages of 8 "*chilensis*," taken on or near breeding grounds at Wallaston and Morton Islands, Nassau Bay, and at Magallanes in the Strait of Magellan), wing 133.9, tail 57.7, culmen 11.6, tarsus 34.6 mm.

Females (averages of 3 "*chilensis*" from the same localities), wing 138.3, tail 61.3, culmen 11, tarsus 35.7 mm. (Murphy, Oceanic Birds of South America, 1936, p. 754).

Accidental. Known in Panamá from 1 specimen, a bird collected near San José, Pearl Islands, off the Pacific coast, on August 29, 1969, by Horace Loftin of the Smithsonian Pacific Seabird Project. Eisenmann identified the specimen as the subspecies *chilensis* Murphy (Ridgely, 1976, p. 33). Bourne (in Palmer, Handbook of North American Birds, vol. 1, 1962, pp. 244-245) considers birds of this form too close to the other small-dimensioned populations of lower latitudes to deserve subspecific rank, and includes them in nominate *oceanicus*. Although the Wilson's Storm Petrel migrates regularly from its Antarctic and sub-Antarctic breeding grounds to the North Atlantic, in the Pacific it is very rare or casual north of the Equator.

Family ARDEIDAE: Herons, Garzas

[EGRETTA RUFESCENS (Gmelin): Reddish Egret, Garzón Rojizo]

Ardea rufescens Gmelin, 1789, Syst. Nat., 1, pt. 2, p. 628. (Louisiana.)

A dark-phase adult was seen and photographed on Isla Coiba, off the Pacific Coast of Veraguas on April 12, 1976, by Ridgely (*in litt.*). The normal range on the Pacific Coast is lower California and Mexico.]

Family PLATALEIDAE: Ibises and Spoonbills; Cocos y
Garzas Paletas

[**EUDOCIMUS RUBER** (Linnaeus): Scarlet Ibis, Coco Escarlata

Scolopax rubra Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 145. (Bahamas.)

This species is known in Panamá from the report of an adult seen on the Farfan mudflats at the Pacific entrance to the Canal "on and off" from January 25 to February 17, 1967, and again on March 14 of that year by N. G. Smith (Ridgely, 1976, p. 49). The Scarlet Ibis, native to Colombia, Venezuela, the Guianas, and eastern Brazil, is often kept in captivity, so the origin of this individual is uncertain.]

Family ACCIPITRIDAE: Hawks, Eagles, and Allies; Gavilanes,
Aguilas, y Especies Afines

[**GAMPSONYX SWAINSONII** Vigors: Pearl Kite, Gavilán Aperlado

Gampsonyx swainsonii Vigors, 1825, Zool. Journ., 2, p. 69. (Tableland 10 leagues in the interior of Bahia, w.s.w. from the Bay of St. Salvador, Brazil.)

An individual of this species was seen and photographed by J. Pujals, J. Wall, and D. Wilcove (American Birds, 1977, pp. 1099-1100) near the Empire Range in the southwestern Canal Zone on June 12, 1977. The normal range is in western Nicaragua and in South America from the Santa Marta region of Colombia to Peru, northern Argentina, and Paraguay. Eisenmann believes that the bird seen in Panamá probably came from South America because the clearing of forest in northwestern Colombia and eastern Panamá has removed much of the natural barrier that formerly blocked the northward spread of open-country birds like the Pearl Kite.

Single individuals have since been noted on several occasions in various localities in central Panamá, and one was also seen near Changui-nola, Bocas del Toro, on April 24, 1980, by N. G. Smith.]

[**ELANUS LEUCURUS** (Vieillot): White-tailed Kite,
Gavilán Coliblanco

Milvus leucurus Vieillot, 1818, Nouv. Dict. Hist. Nat., 20, p. 563. (Paraguay.)

The White-tailed Kite was first noted in Panamá in 1967 and has become extremely common and widespread since then. No specimens, however, have been collected in the Republic, so the race to which Panamá birds belong cannot be ascertained. Eisenmann (American Birds,

1971, pp. 529-536) documents the population expansion from California to Central America, but points out that several years elapsed between the bird's appearance in Costa Rica in 1958 (Slud, Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 54) and its discovery in Panamá. The first individual seen there was on January 11, 1967, at Finca San José (La Jagua marshes) east of Panamá City, closer to the known range of the nominate race in northern Colombia than to the presumed northern race, *majusculus*, in Costa Rica; eastern Province of Panamá remains the area where this kite is most numerous in Panamá (Ridgely, 1976, p. 58). The nominate race is found from Colombia south to Chile and Argentina and east to Paraguay; *majusculus* ranges north to the southwestern United States.

Today the White-tailed Kite is common in grasslands and savannas on the Pacific slope from eastern Province of Panamá to western Chiriquí and in cleared areas on the Caribbean slope in Bocas del Toro and in the Canal Zone area. It is less common in the lower Chiriquí highlands around Volcán and Boquete up to 1260 m. Eisenmann (*op. cit.*, p. 532) reports 2 breeding records: on July 14, 1970, in eastern Chiriquí he and several others saw 2 full-grown immatures giving food-begging calls, while below them in the same tree was an adult; in February 1971, R. Cooke observed nest-building near Aguadulce, Coclé.

This species is easily seen in cleared land along the edges of highways. It often hovers, searching for small rodents. Most of its hunting is done in early morning and late afternoon; during the other hours it rests on exposed perches.]

Family RALLIDAE: Rails, Gallinules, and Coots; Cocalecas
y Gallinetas de Agua

NEOCREX COLOMBIANUS RIPLEYI Wetmore: Colombian Crane,
Rascón Colombiano

Neocrex columbianus [sic] *ripleyi* Wetmore, 1967, Proc. Biol. Soc. Washington, 80, p. 229. (Achiote, Colón, Panamá.)

Medium size; head gray, tinged brown; rest of upper surface brown; throat white; rest of undersurface dark bluish gray.

Description.—Length 185 mm. Adult (sexes alike), crown dark gray, tinged brown; rest of upper surface brown; wing coverts buffier; remiges grayer; chin and center of throat white; sides of head and rest of undersurface to flanks and abdomen gray; flanks drab; center

of abdomen white; underwing coverts white, with dusky streak on wing edge.

Measurements.—Males (2 from Colón and Colombia, including the type), wing 99.5-101.0 (100.3), tail 32.4-34.2 (33.3), culmen from base 22.4-24.1 (23.3) tarsus 32.0-33.3 (32.7) mm.

I know of no females in collections.

Resident. Known in Panamá from a single specimen, a male collected by Henry van Horn in a small marshy area on Achiote Road, just beyond the Canal Zone border in western Colón, on November 8, 1965. In addition to the holotype of *ripleyi*, I have examined another male collected at Acandí, extreme northern Chocó, Colombia, taken in low second growth near the Río Acandí on January 2, 1950, by M. A. Carriker, Jr. The nominate subspecies, described originally from the Sierra Nevada de Santa Marta, is now known to range in small numbers through Colombia, from west of the Eastern Andes south into northwestern Ecuador. *Neocrex colombianus* has often been considered a geographic race of *Neocrex erythrops* (Sclater). These two species are closely similar in the pattern on the flanks and undertail coverts, which in *erythrops* is slate gray barred with white, but *colombianus* has the bill more slender, with the external slit of the external nares narrowed by the greater width of the membrane on the upper margin of the opening, whereas in *erythrops* the nostril is widely open and easily seen to be pervious. The bill in *colombianus* is not bright red at the base as in *erythrops*, the vent is plain light buff, not barred, and the underwing is plain whitish, not barred as in *erythrops*. These differences, plus the overlapping ranges, are such that it seems reasonable to treat *erythrops* and *colombianus* as distinct species, each with 2 races.

NEOCREX ERYTHROPS OLIVASCENS Chubb: Paint-billed Crane,
Polla Pico Rojo

Neocrex erythrops olivascens Chubb, 1917, Bull. Brit. Orn. Cl., 38, p. 33. (Venezuela.)

Medium-sized; upper surface grayish brown, undersurface slate gray; underwing coverts, lower flanks, and undertail coverts barred gray and white.

Description.—Length 183-193 mm. Adult (sexes alike), crown and rest of upper surface, including wings and tail, grayish brown; throat white; sides of head and undersurface slate gray; underwing coverts, lower flanks, and undertail coverts barred gray and white.

An unsexed bird collected at Changuinola, Bocas del Toro, on November 10, 1981, had the iris chestnut brown, bill bright orange-red on

basal third, remainder yellow-green, tarsi and toes dull orange.

Measurements.—Males (2 from Venezuela), wing 99.5-106.5 (103.0), tail 38.0-41.8 (39.9), culmen from base 21.1-23.8 (22.5), tarsus 25.8 mm.

Female (1 from Venezuela), wing 100.0, tail 31.1, culmen from base 22.6, tarsus 25.4 mm.

This species is known in Panamá from 2 specimens collected by D. C. Booth and W. Martinez in ricefields 6 km west of the airport at Changuinola, Bocas del Toro, on November 10, 1981. The collectors noted that "these birds seem to be common in the tall grass and ditches around the fields. Difficult to observe in the day, but at dusk are readily observed at wet openings and roadsides, frequently in pairs. White-throated Crake [*Laterallus albigularis*] is found in the same habitat." (Booth and Martinez, notes attached to specimens.)

N. G. Smith (*in litt.* to S. D. Ripley) has visited the same area in April and July, when he saw *Laterallus albigularis* in numbers but did not encounter *Neocrex erythrops*. He suggests that the latter may be a migrant from South America.

Only 1 specimen of the 2 from Changuinola survives, and it matches birds of the race *olivascens* from Venezuela. The previously known range of the species includes Venezuela, Guyana, Suriname, Brazil, Paraguay, and northwestern Argentina.

Family SCOLOPACIDAE: Snipe, Sandpipers, and Allies;
Agachadizas, Playeros, y Aliados

HETEROSCELUS INCANUS (Gmelin): Wandering Tattler,
Agachadiza Vagabunda

Scolopax incana Gmelin, 1789, Syst. Nat. 1, pt. 2, p. 658. (Moorea, Society Group, and Palmerston Islands.)

Medium size; light gray with white above and below eye, on center of throat, and from belly to undertail coverts.

Description.—Length 265-273 mm. Adult (sexes alike) in basic plumage, stripe from bill to eye whitish, upper and lower eyelids white; rest of upper surface, including wings and tail mouse gray; center of throat and center of belly to undertail coverts white; rest of under-surface mouse gray, slightly lighter on breast.

Measurements.—Males (10 from Alaska, taken in May and June), wing 164.0-176.0 (169.4), tail 73.4-79.6 (76.1), culmen from base 39.0-43.9 (40.4), tarsus 28.9-35.2 (32.5) mm.

Females (10 from Alaska, taken in May), wing 163.0-182.0 (174.0), tail 70.0-80.6 (76.8), culmen from base 38.6-46.8 (42.1), tarsus 29.2-32.3 (30.5) mm.

Winter visitor from the north. Known in Panamá from 3 reports: a bird collected on Valladolid Rock in Panamá Bay between Chamé and Otoque Islands (not far from Taboga) on March 3, 1969, by H. Loftin and R. Crossin; a sighting by S. West of a bird almost certainly this species at Fort Kobbe, Canal Zone, on April 22, 1973 (Ridgely, 1976, p. 98); and 1 seen by Ridgely on Isla Barco Quebrado off the south coast of Coiba Island, Veraguas (Ridgely, *in litt.*). All three were in nonbreeding plumage. The specimen (USNM no. 544832) was a female with moderate fat and in heavy body molt. This species breeds in Alaska and northwestern Canada and winters mostly in the South Pacific, but also on rocky Pacific coasts from California to Peru and on the Galápagos Islands.

NUMENIUS AMERICANUS Bechstein: Long-billed Curlew,
Zarapito Piquilargo

Numenius americanus Bechstein, 1812, in Latham, Allgem. Ueb. Vog., 4, pt. 2, p. 432. (New York.)

Winter visitor from the north. This species, which usually winters only occasionally as far south as Guatemala and Honduras, has been reported 3 times in the Canal Zone. Two were seen on a grassy field at Fort Sherman on the Caribbean coast September 24-30, 1966, and 1 of these was collected (Loftin, Martin, and Powell, Condor, 1968, p. 91), another was seen at the same locality on December 4, 1967 (Ridgely, 1976, p. 104), and a fourth was seen and photographed at Coco Solo from November 23 to December 19, 1975, by J. Pujals (Ridgely, *in litt.*). These represent the most southern records of occurrence for the species. The measurements of the collected individual fall within the reported mensural overlap of the two purported subspecies. They are: wing chord 277 and 280; tail, worn, 105; exposed culmen, 170; tarsus, 85 mm.

[PHILOMACHUS PUGNAX (Linnaeus): Ruff, Redoblador

Tringa Pugnax Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 148. (Sweden.)

This species is known in Panamá from 2 sight reports of males, both in nonbreeding plumage, in the Canal Zone. One was seen on the wet grassy fields at Coco Solo on September 29, 1968, by Ridgely and observed there 3 days later by H. Loftin; the other was seen and photo-

graphed by S. West at Howard Air Force Base on November 19-20, 1974 (Ridgely, 1976, p. 103). The Ruff breeds in northern Eurasia and winters in southern Europe, Africa, and southern Asia. It is a rare but regular transient in eastern North America and on Barbados, and there is also a record from Colombia.]

Family LARIDAE: Gulls and Terns; Gaviotas y Gaviotines

[**LARUS BELCHERI** Vigors: Band-tailed Gull,
Gaviota Colirrayada

Larus Belcheri Vigors, 1829, Zool. Journ., 4, p. 358. (No locality given.)

There are 3 sight reports of the Band-tailed Gull from the Pacific coast of the Canal Zone and Panamá City: a nonbreeding adult or sub-adult at Panamá Viejo on December 20, 1962 (Eisenmann); 1 at Fort Amador on May 10 and August 24, 1964 (W. Belton and H. Loftin, photographed), and 1 at Albrook Air Force Base on December 2, 1967 (H. Loftin) (Ridgely, 1976, p. 110). No specimens have been collected in Panamá, so it cannot be determined if the birds are from the nominate, Pacific population that breeds on the coast of Peru and Chile, or the Argentine form *atlanticus* (Olrog, Acta Zoologica Lilloana, vol. 15, 1958, pp. 8-9), which may be a separate species.]

[**LARUS FUSCUS** Linnaeus: Lesser Black-backed Gull, Gaviota Obscura

Larus fuscus Linnaeus, 1758, Syst. Nat., ed. 10, 1, p. 136. (Europe, restricted type locality, Sweden.)

A Lesser Black-backed Gull believed to be of the race *graellsii* has been seen and photographed at various times on the beaches of Panamá City, Province of Panamá, from December 1979 to at least February 1982 (N. G. Smith, American Birds, vol. 36, 1982, p. 336). The bird was first noted on December 1, 1979, by Paul Scharf. A peculiar dark mark near the tip of the upper mandible has made it possible to identify this individual when it has returned in successive Decembers. In 1981, the bird remained as late as April 12; other years it evidently departed earlier. The bird was usually found on the same area of beach at Ft. Amador, often alone. Smith (*op. cit.*) discusses diagnostic field marks possessed by the bird.

The usual winter range of this Palearctic species is from Great Britain to the Gulf of Guinea and East Africa. The Panamá bird and one from Guyana (Devillers, Le Gerfaut, 1979, pp. 79-80) are the southernmost reports for the Western Hemisphere. In recent years

there have been numerous sightings of this species from California, Texas, and the Atlantic coast of North America.]

[**LARUS CIRROCEPHALUS** Vieillot: Gray-hooded Gull,
Gaviota Cabecigris

Larus cirrocephalus Vieillot, 1818, Nouv. Dict. Hist. Nat., 21, p. 502. (Brazil.)

The Gray-hooded Gull is known in Panamá from a single sight report of a bird seen by M. Moynihan in nonbreeding plumage at a sewer outlet into Panamá Bay in Panamá City on September 25, 1955 (Ridgely, 1976, p. 111). The nominate race breeds on the coast of western Peru and from Bolivia and southern Brazil to northern Argentina; it ranges commonly north to Ecuador and northern Brazil. Another race is found in Africa.]

[**LARUS PHILADELPHIA** (Ord): Bonaparte's Gull,
Gaviota de Bonaparte

Sterna Philadelphia Anonymous = Ord, in Guthrie's Geogr., 1815, 2nd. An. ed., 2, p. 319. (Near Philadelphia, Pennsylvania.)

The Bonaparte's Gull has been seen twice in Panamá; both were immatures found in the Canal Zone. One was photographed by J. Pujals at Coco Solo on December 26-29, 1972, and another was observed at the Gatún Dam spillway on January 13, 1974, by C. Leahy and Ridgely (Ridgely, 1976, p. 112). This species breeds in Alaska and western Canada and winters mainly on the coasts of the United States and Mexico and, in smaller numbers, in the West Indies.]

[**PHAETUSA SIMPLEX** (Gmelin): Large-billed Tern,
Gaviotín Piquigrande

Sterna simplex Gmelin, 1789, Syst. Nat., 1, pt. 2, p. 606. (Cayenne.)

The Large-billed Tern was first reported in Panamá in 1973; more recently one or two have been seen each year in the Caribbean Canal Zone area (Ridgely, *in litt.*). The first recorded were 2 immatures seen repeatedly and well photographed at Coco Solo, Canal Zone, from June 15 to July 7, 1973 (J. Pujals, et al.) with 1 seen intermittantly through December of that year at various localities along the Caribbean coast of the Canal Zone. On the Pacific slope 1 was well seen at a fresh water pond near El Rincón, Herrera, on March 27, 1974, by Pujals, Eisenmann, and Skutch (Ridgely, 1976, p. 113). This tern inhabits the rivers and coastlines of South America, primarily east of the Andes, and normally ranges as close to Panamá as the Magdalena Valley in northern Colombia.]

[**STERNA SUPERCILIARIS** Vieillot: Yellow-billed Tern,
Gaviotín Piquiamarillo

Sterna superciliaris Vieillot, 1819, Nouv. Dict. Hist. Nat., 32, p. 176. (Paraguay, ex Azara, no. 415.)

This species is known in Panamá from a single record; on October 20, 1977, J. Pujals photographed 1 that was with Least Terns (*S. albigrons*) at Coco Solo, Canal Zone (Ridgely, *in litt.*). The Yellow-billed Tern is usually found on the rivers of South America east of the Andes from Colombia, Venezuela, and the Guianas to Paraguay, eastern Argentina, and Uruguay.]

[**THALASSEUS ELEGANS** (Gambel): Elegant Tern,
Gaviotín Elegante

Sterna elegans Gambel, 1848 (1849), Proc. Acad. Nat. Sci. Philadelphia, 4, p. 129. (Mazatlán, Sinaloa, Mexico.)

This species is a rare transient and visitant to the Pacific Coast and offshore waters, but no specimens have been collected. The sight reports are as follows: 2 believed seen in the Gulf of Panamá south of the Pearl Islands (Rey) by R. C. Murphy on September 8, 1937; 1 photographed in flight at Fort Amador, Canal Zone, on January 23, 1969, by Ridgely; a group of 55 seen at the Aguadulce Salinas, Coclé, on June 26, 1971, by Eisenmann and J. Pujals; 1 seen among a group of Sandwich Terns (*T. sandvicensis*) at Panamá City on February 7, 1973; and 12 seen on rocks with 2 Royal Terns (*T. maximus*) on the coast south of Aguadulce on January 6, 1974, by G. Stiles and Ridgely (Ridgely, 1976, p. 116). The Elegant Tern breeds on the west coast of extreme southern California, Baja California, and islands in the Gulf of California, and winters on the coast from Ecuador to central Chile; nonbreeders remain on the South American coast throughout the year.]

Family COLUMBIDAE: Pigeons and Doves; Palomas y Tortolitas

[**COLUMBA GOODSONI** Hartert: Dusky Pigeon, Paloma Negruzca

Columba goodsoni Hartert, 1902, Bull. Brit. Orn. Cl., 12, p. 42. (San Javier, Pambilar, and Carondelet, northwestern Ecuador; the type is from Pambilar.)

On March 7, 1981, V. Emanuel and Ridgely (*in litt.*) heard 2 birds of this species calling along the trail between Baizal, on the Río Tuira, and Pucuro, on the Río Pucuro (=Pucro), Darién. One of these was examined closely after it responded to a tape playback. The birds were

found in lowland forest, similar to that in which Dusky Pigeons are found in Colombia.

This species was previously known from western Colombia and northwestern Ecuador. Haffer (Bonner. Zool. Monog. no. 7, 1975, p. 89) records it north to Mutatá, Colombia, about 200 km south of the Panamá locality.]

[ZENaida AURICULATA (Des Murs): Eared Dove, Tórtola Torcaza

Peristera auriculata Des Murs, in Gay, 1847, Hist. Fis. Pol. Chile, Zool., 1, p. 381. (Santiago, Chile.)

This species is known in Panamá from a single immature individual seen and photographed at Coco Solo, Canal Zone, on February 3, 1973, by Ridgely, Eisenmann, J. Gwynne, and C. Leahy. The bird still had scaling on the back and was very tame. It is possible that it escaped from captivity. Normally it is found in the southern Lesser Antilles and most of South America.]

COLUMBINA PASSERINA NEGLECTA (Carriker): Common Ground Dove, Tortolita Grisácea

Chaemepelia passerina neglecta Carriker, 1910, Ann. Carnegie Mus., 6, p. 390 (in key), p. 398. (Espana, Costa Rica.)

Small; mostly brown, with scaly appearance on head and breast; sides of head, undersurface, pinkish brown; crown gray.

Description.—Length 146-159 mm. Adult male, forecrown, sides of head, and throat pinkish brown, becoming slightly darker on rest of undersurface; lower portion of some breast feathers dusky blackish, creating a scaled appearance; rest of crown feathers pinkish, edged darker; back and upper tail coverts light brown; wing coverts pinkish brown, flecked with iridescent dark purple, primaries dusky blackish on tips and most of outer web, chestnut on most of inner web; secondaries light brown; rectrices dusky blackish; underwing coverts chestnut.

Adult female, like male, but with forecrown and throat white; breast feathers white with blackish bases and dusky tips, creating scaled appearance; rest of undersurface grayish brown, with much white on undertail coverts.

Immature like female.

Measurements.—Males (8 from Costa Rica), wing 83.5-89.2 (86.3), tail 50.5-61.7 (55.2), culmen from base 12.3-14.0 (13.1), tarsus 14.5-16.1 (15.3) mm.

Females (7 from Costa Rica), wing 81.0-87.5 (84.6), tail 51.7-59.8

(55.9), culmen from base 13.1-14.5 (13.8), tarsus 14.0-16.4 (15.2) mm.

Resident. This race of the Common Ground Dove, formerly known from Honduras to Costa Rica, has been discovered recently at three localities along the Pacific coast of Herrera and Los Santos. Presumably the species had previously been overlooked. In Herrera, Francisco Delgado collected 2 females at Cienegón del Mangle, near Chitré, on June 20, 1977, and 1 male at Playa El Agallito, on February 27, 1980. The specimens are in the collection of the Gorgas Memorial Laboratory Museum. On December 30, 1977, Victor H. Tejera N. collected 2 at Salinas Villas, Los Santos. They are in the Museo de Vertebrados of the University of Panamá.

Family PSITTACIDAE: Parrots; Loros y Pericos

PYRRHURA PICTA subsp.: Painted Parakeet, Perico Cabecirroado

Pyrrhura picta subsp. Delgado, in press, Ornith. Monogr. (Los Piraguales, El Cortozo de Tonosí, Los Santos Province, Panamá.)

Most remarkable was the discovery in 1979 by Francisco Delgado of a population of this parakeet in the Marroquin Mountains in the southwestern Azuero Peninsula, Los Santos Province, as the nearest population of this species is *P. p. subandina* Todd, from the valley of the Río Sinú in northern Colombia. Specimens in breeding condition were obtained in January and February in 1979 and 1980. These proved to be a distinct new subspecies, differing both in coloration and bill size, and soon to be named after Eugene Eisenmann (Delgado, Ornith. Monogr., in press). The birds occur in humid forest and at forest edges, usually in groups of 2 or 3 but at times in flocks of up to 20. There is some evidence of seasonal elevational movements.

Family RAMPHASTIDAE: Toucans; Tucanes

PTEROGLOSSUS TORQUATUS TORQUATUS (Gmelin) x **P. SANGUINEUS** Gould

Ramphastos torquatus Gmelin, 1788, Syst. Nat. 1, pt. 1, p. 354. (Veracruz.)
Pteroglossus sanguineus Gould, 1854, Mongr. Ramphastidae, ed. 2, pl. 21. (San José, western Colombia.)

Two araçaris collected recently in Darién are intermediate between *P. t. torquatus*, found on the Pacific slope from the western Canal Zone area eastward through Darién to the Colombian border, and on the

Caribbean slope from western Bocas del Toro to eastern San Blas, and *P. sanguineus* of the west coast of Colombia and northwest Ecuador. As Haffer (Amer. Mus. Nov., no. 2294, 1967, pp. 27-36) has discussed, a zone of hybridization occurs in northern Chocó, Colombia, on the border with Darién, so it is not surprising that birds from Darién should also be intermediate.

The 2 specimens are in the collection of the Gorgas Memorial Laboratory. One, no. 0608, is a male collected by Dr. Pedro Galindo at the Río Mono Base Camp on February 18, 1969. It lacks a band across the hindneck, as in *sanguineus*, has the stripe along the upper mandible half developed, and the tip of the upper mandible mixed yellowish and blackish; it would be ranked a 4, on Haffer's hybrid index, i.e., closer to *sanguineus* (0) than pure *torquatus* (12). The other specimen, unsexed and unnumbered, was collected by Ridgely at Quebrada Matujanti, 50 m, on July 20, 1975, in a small stand of second growth and forest. It had the iris yellow, tarsi olive-green, bare skin around eye carmine, most of maxilla ivory whitish, outer fifth more yellow, reddish toward base; mandible and tip of maxilla black, with an ivory-white stripe at the base of both. The band across the hind neck is barely indicated, the stripe along the upper mandible weakly developed, and tip of the upper mandible black, giving it a value of 7 in Haffer's index.

Family CUCULIDAE: Cuckoos, Anis, and Allies; Culillos,
Garrapateros, y Especies Afines

[**COCCYZUS PUMILUS** Strickland: Dwarf Cuckoo, Cucillo Gusanero

Coccyzus pumilus Strickland, 1852, in Jardine's Contr. Orn., p. 28, pl. 83. (Venezuela.)

An individual of this species was seen at Tocumen marsh, eastern Province of Panamá, on January 9, 1979, by V. Emanuel, D. Wolf, and others (Ridgely, *in litt.*). This species inhabits dry forest in Venezuela and Colombia, where, with the cutting of humid forests, its range has recently expanded (Ralph, Condor, 1975, p. 60).]

[**COCCYZUS LANSBERGI** Bonaparte: Gray-capped Cuckoo,
Cucillo Acanelado

Coccyzus lansbergi Bonaparte, 1850, Consp. Av., 1, p. 112 (Sante Fé de Bogotá.)

An individual was seen at Tocumen marsh, eastern Province of Panamá, on February 10, 1980, by V. Emanuel and M. Braun (Ridge-

ly, *in litt.*). Possibly the same bird (though it was reported as a Dark-billed Cuckoo, *C. melacoryphus*) was also seen on January 26 (Toucan, vol. 7, no. 1, 1980, p. 2). Another Gray-capped Cuckoo was seen January 7-8, 1982, at Tocumen marsh by V. Emanuel, J. and R. A. Rowlett, and several other observers (Ridgely, *in litt.*). The normal range of this species is from the Santa Marta region of Colombia and Venezuela, to southwestern Ecuador and northern Peru.]

Family COTINGIDAE: Cotingas, Cotingas

[**PLATYPSARIS AGLAIAE** (Lafresnaye): Rose-throated Becard, Cotinga Gargantirrosada

Pachyrhynchus aglaiae Lafresnaye, 1839, Rev. Zool., 2, p. 98. (Jalapa, Vera Cruz, Mexico.)

The Rose-throated Becard is known in Panamá from a single sighting at Santa Clara, Chiriquí, on January 17, 1977, by A. Greensmith and others (Ridgely, *in litt.*). The normal range is from Arizona and Texas to northwestern Costa Rica.]

Family PIPRIDAE: Manakins, Saltrines

[**MANACUS CANDEI** (Parzudaki): White-collared Manakin, Saltarin Cuelliblanco

Pipra candei Parzudaki, 1841, Rev. Zool., 4, p. 306. (Truxillo, Honduras.)

Found to be fairly common at forest edge in lower Teribe and Changuinola River Valleys, Bocas del Toro, where it was first recorded in October 1978 by J. Pujals. Specimens were taken by W. Martinez and W. Booth on February 17, 1979, and additional specimens were collected by personnel of the Gorgas Memorial Laboratory in January 1980. There is no evidence of hybridization with the locally sympatric Golden-collared Manakin (*M. vitellinus*), but further study is needed.

Family TYRANNIDAE: Tyrant Flycatchers, Atrapamoscas

[**MACHETORNIS RIXOSUS** (Vieillot): Cattle Tyrant, Atrapamoscas Jinete

Tyrannus rixosus Vieillot, 1819, Nouv. Dict. Hist. Nat. nouv. éd., 35, p. 85; based on "Suirirí," no. 197, of Azara, 1805, Apuntamientos Hist. Nat. Pájaros Paraguay Río Plata, 2, p. 148. (Paraguay.)

The Cattle Tyrant is known in Panamá from a single sighting at the gold mine clearing at Cana, Darién, on June 18, 1981, by Paul Scharf, Gary L. Vaucher, and Gordon B. Small (Toucan, vol. 8, no. 4, 1981, p. 2). The bird was perched on top of a leaf of a plantain tree in the manner typical of the species in South America.

The normal range of this species is northern and eastern Colombia, Venezuela, and Brazil, south to Bolivia, northern Argentina, Paraguay, and Uruguay. The race *flavigularis* is found as close to Panamá as the lower Río Sinú Valley in northwestern Colombia.]

INDEX

(Spanish vernacular names are printed in *italics*. The keys are not indexed.)

- Acanthidops, 498
 - bairdi, 582
- accentor, *Catharus gracilirostris*, 164
- acceptus, *Myioborus miniatus*, 309
- Accipitridae, 626
- acentetus, *Microcerculus*, 121
- actuosus, *Basileuterus rufifrons*, 324
 - Basileuterus delatrii*, 324
- aedon, *Troglodytes*, 101
- aeneus, *Molothrus*, 358, 580
 - Molothrus aeneus*, 358
 - Psarocolius*, 358
- aenigmaticus, *Campylorhynchus albobrunneus*, 60
- aequalis, *Stegidopteryx ruficollis*, 41
- aequatorialis, *Dendroica petechia*, 265
- aequinoctialis, *Geothlypis*, 296
- aestiva, *Dendroica*, 262, 263, 264
 - Dendroica petechia*, 263
 - Motacilla*, 263
- affinis, *Cyanocorax*, 45
 - Cyanocorax affinis*, 48
- Agachadiza vagabunda*, 629
- agilis, *Oporornis*, 290
 - Sylvia*, 290
- Aglaia, 437
 - fanny, 421
- aglaiae, *Pachyrhynchus*, 637
 - Platypsaris*, 637
- aithocorys, *Dendroica petechia*, 266
- albicollis, *Saltator*, 536
 - Turdus*, 130
- albifrons, *Petrochelidon*, 17
- albigularis, *Cyphorhinus*, 98
 - Laterallus*, 629
 - Thryothorus fasciatoventris*, 98
- albilinea, *Hirundo*, 11
 - Petrochelidon*, 8
 - Tachycineta*, 8
- albilora, *Dendroica dominica*, 278
- albinucha, *Atlapetes*, 588
 - Embernagra*, 588
- albior, *Cyanolyca argentigula*, 50
- albirostris, *Ramphocelus dimidiatus*, 442
 - Tanagra*, 442
- albobrunneus, *Campylorhynchus*, 60
 - Campylorhynchus albobrunneus*, 62
 - Heleodytes*, 62
- albovittatus, *Donacobius atricapillus*, 55
- aliciae, *Catharus minimus*, 149
- almae, *Catharus ustulatus*, 145
 - Hylocichla ustulata*, 145
- altiloqua, *Muscicapa*, 223
- altiloquus, *Vireo*, 221
 - Vireo altiloquus*, 223
- Amaurospiza concolor, 579
 - concolor concolor, 579
 - concolor relictus, 580
- Amblycercus holocericeus, 353
 - holosericeus centralis, 353
- americana, *Emberiza*, 334
 - Loxia*, 566
 - Parula*, 256
 - Spiza*, 332, 334, 360
 - Sporophila*, 566
- americanus, *Coccyzus*, 270
 - Numenius*, 630
 - Parus*, 256
- Ammodramus bimaculatus, 607
 - sandwichensis, 606
 - savannarum, 606
 - savannarum beatriceae, 608
 - savannarum bimaculatus, 607
 - savannarum pratensis, 607
- amnicola, *Dendroica aestiva*, 262
 - Dendroica petechia*, 262
- angolensis, *Loxia*, 575
 - Sporophila*, 575
- Ani, Groove-billed, 360
- anneae, *Euphonia*, 397, 398
 - Euphonia anneae*, 397
- Ant-tanager, Red-crowned, 462
 - Red-throated, 463, 464

- Antbird, Spotted, 303
 Anthus lutescens, 190
 lutescens parvus, 190
 parvus, 190
 Antwren, White-flanked, 403
 aprica, Phlogothraupis sanguinolenta, 450
 apricus, Ramphocelus sanguinolentus, 450
 arophata, Petrochelidon albifrons, 17
 arada, Myrmornis, 117
 aradus, Cyphorhinus, 117
 arboricola, Progne subis, 23, 24
 arcae, Buthraupis, 434
 Buthraupis arcae, 434
 Calospiza florida, 411
 Ardea rufescens, 625
 Ardeidae, 625
 ardesiacus, Cinclus mexicanus, 52
 arestus, Ramphocelus dimidiatus, 444
 argentigula, Cyanolyca, 48
 Cyanolyca argentigula, 48
 Cyanocitta, 48
 arguta, Chlorophanes spiza, 516
 armenti, Molothrus aeneus, 360
 Arremon aurantirostris, 599
 aurantiostriis aurantiostriis, 601
 aurantiostriis rufidorsalis, 601
 aurantiostriis strictocollaris, 602
 conirostris, 603
 frontalis, 596
 ophthalmicus, 490
 rufidorsalis, 601
 Arremonops conirostris, 603
 conirostris centratus, 603
 conirostris striaticeps, 604
 conirostris viridicata, 605
 conirostris viridicatus, 605
 richmondi, 603, 604
Arrocero apizarrado, 563
 azulado, 579
 cuelliblanco, 564
 diminuto, 573
 pasajero americano, 334
 piquiagudo, 557
 piquigordo, 566
 piquigrande, 578
 prieto, 575
 ventriamarillo, 571
 yerbero, 559
 assimilis, Turdus, 133
 Ateleodacnis leucogenys, 408
 leucogenys panamensis, 408
 atlanticus, Larus belcheri, 631
 Atlapetes albinucha, 588
 albinucha azuerensis, 590
 albinucha brunnescens, 589
 brunneinucha, 594
 brunneinucha elsa, 595
 brunneinucha frontalis, 596
 gutturalis, 589, 590
 gutturalis azuerensis, 590
 gutturalis brunnescens, 589
 gutturalis coloratus, 589
 torquatus, 591
 torquatus atricapillus, 594
 torquatus costaricensis, 592
 torquatus tacarcunae, 593
Atrapamoscas jinete, 637
 atricapillus, Atlapetes torquatus, 594
 Buarremon, 593, 594
 Donacobius, 57
 atriceps, Saltator, 530
 atripennis, Thraupis palmarum, 439
 atrogularis, Thryothorus, 94, 96
 auduboni, Dendroica coronata, 273
 Aulacorhynchus caeruleogularis, 174
 aurantiaca, Setophaga, 309
 aurantiacus, Myioborus miniatus, 309
 aurantiicapilla, Habia rubica, 462
 aurantiifrons, Hylophilus, 231
 Hylophilus aurantiifrons, 231
 aurantirostris, Arremon, 599
 Arremon aurantirostris, 601
 Catharus, 160
 Turdus, 160
 aurantius, Lanius, 467
 auricapillus, Icterus, 368
 auriceps, Tangara florida, 411
 auriculata, Peristera, 634
 Zenaida, 634
 aurita, Sperophila, 569, 570
 Sporophila americana, 570
 aurocapilla, Motacilla, 285
 aurocapillus, Seiurus, 284
 Seiurus aurocapillus, 285
 axillaris, Chlorospingus, 472
 Myrmotherula, 228
 Tachyphonus luctuosus, 472

- azuerensis, *Atlapetes albinucha*, 590
Atlapetes gutturalis, 590
Azulejo golondrina, 388
- badiiventris, *Spermophila*, 568
 bairdi, *Acanthidops*, 582
 Geothlypis, 298
 Geothlypis semiflava, 298
 ballux, *Myioborus miniatus*, 310
 Bananaquit, 500
 bangsi, *Calospiza gyroloides*, 427
 Tangara gyrola, 427
 barbatulus, *Phyllomanes*, 222
 Vireo altiloquus, 222
 barrilesensis, *Haplospiza rustica*, 581
 Spodiornis, 581
Basileuterus bensoni, 320
 bolivianus, 326
 coronatus, 326
 culicivorus, 316
 culicivorus godmani, 316
 delatrii, 324
 delatrii actuosus, 324
 fulvicauda, 325
 fulvicauda gaffneyi, 328
 fulvicauda leucopygius, 328
 fulvicauda semicervinus, 329
 fulvicauda toddi, 328
 godmani, 316
 leucopygius, 328
 leucopygius veraguensis, 328
 melanotis, 314
 melanogenys, 318
 melanogenys bensoni, 320
 melanogenys eximius, 319
 melanogenys ignotus, 316, 319, 321
 melanogenys melanogenys, 319
 mesochrysus, 322
 rivularis, 325, 327
 rufifrons, 321
 rufifrons actuosus, 324
 rufifrons mesochrysus, 322
 semicervinus, 329
 tacarcunae, 315
 tristriatus, 313
 tristriatus chitrensis, 314
 tristriatus melanotis, 314
 tristriatus tacarcunae, 315
- beatriceae, *Ammodramus savannarum*, 608
 Becard, Rose-throated, 637
 belcheri, *Larus*, 631
 bensoni, *Basileuterus*, 320
 Basileuterus melanogenys, 320
 Catharus gracilirostris, 165
 berliozi, *Heterospingus xanthopygius*, 475
 bicknelli, *Catharus minimus*, 149
 bicolor, *Hirundo*, 7
 bicolor, *Tachycineta*, 7
 bidentata, *Piranga*, 455
 bimaculatus, *Ammodramus*, 607
 Ammodramus savannarum, 607
Bin-bin, 401
Bisbita amarillenta, 190
 Blackbird, Red-breasted, 378
 Yellow-headed, 377
 blandita, *Cyanolyca*, 48
 Bobolink, 381
 bolivianus, *Basileuterus*, 326
 Bombycilla cedrorum, 193
 Bombycillidae, 193
 bonariensis, *Molothrus*, 361
 brachidactylus, *Geothlypis trichas*, 295
 Trichas, 295
 brachypterus, *Donacobius*, 57
 Donacobius atricapillus, 57
 brevipennis, *Helinae*, 235
 Pachysylvia ochraceiceps, 235
 brevirostris, *Campylorhynchus zonatus*, 60
 brewsteri, *Dendroica aestiva*, 264
 brissonii, *Fringilla*, 553
 browni, *Troglodytes*, 108
 Troglodytes browni, 108
 brunneinucha, *Atlapetes*, 594
 Embernagra, 594
 brunnescens, *Atlapetes albinucha*, 589
 Atlapetes gutturalis, 589
 Brush-finch, Chestnut-capped, 594
 Stripe-headed, 591
 Yellow-throated, 588
 Buarremon atricapillus, 593, 594
 atricapillus tacarcunae, 593
 castaneiceps, 597
 costaricensis, 592
 crassirostris, 598
 bullocki, *Icterus galbula*, 376

- bulunensis, *Hylophilus ochraceiceps*, 236
 Hylophilus, 236
 Bunting, Indigo, 553
 Painted, 554
 Bush-tanager, Common, 490
 Pirre, 495
 Sooty-capped, 497
 Tacarcuna, 494
 Yellow-throated, 496
Buthraupis arcae, 434
 arcae arcae, 434

cabanisii, *Molothrus*, 361
 Molothrus bonariensis, 361
Cacicus cela, 346, 357
 cela cela, 347
 cela vitellinus, 346
 holosericeus, 353
 holosericeus holosericeus, 353
 montezuma, 336
 uropygialis, 349
 uropygialis microrhynchus, 350
 uropygialis pacificus, 352
 uropygialis uropygialis, 350
 vitellinus, 346
 wagleri, 341
Cacique, Scarlet-rumped, 349
 Yellow-rumped, 346
 Yellow-billed, 353
Caereba carneipes, 513
caerulea, *Cyanerpes*, 511
 Loxia, 552
 Passerina, 552
 Passerina caerulea, 552
 Polioptila, 178, 181
caeruleogularis, *Aulacorhynchus*, 174
caerulescens, *Cyanocompsa cyanoides*, 459
 Dendroica, 271
 Motacilla, 271
 Tanagra, 549
caeruleus, *Cyanerpes*, 511
caesita, *Thraupis episcopus*, 438
 Thraupis virens, 438
callaina, *Dacnis cayana*, 518, 519
Callispiza frantzii, 415
Calliste dowii, 432
 florida, 411
 Calliste—Continued.
 franciscoe, 420
 icterocephala, 417
 inornata, 423
 larvata, 417
 lavinia, 431
callophrys, *Chlorophonia occipitalis*, 391
 Triglyphidia, 391
Calospiza florida, 411
 florida arcae, 411
 gyroloides, 427, 428
 gyroloides bangsi, 427
 gyroloides delecticia, 428
 larvata, 419
 larvata centralis, 419
 lavinia, 430
 lavinia dalmasi, 430
 palmeri, 422
Campylorhynchus albobrunneus, 60
 albobrunneus aenigmaticus, 60
 albobrunneus albobrunneus, 62
 albobrunneus harterti, 63
 griseus, 55
 hemileucurus, 57
 turdinus, 60
 zonatus, 64
 zonatus brevirostris, 60
 zonatus costaricensis, 64
cana, Tangara, 437
 Thraupis episcopus, 435, 437
canadensis, *Caryothraustes*, 338, 541
 Loxia, 541
 Muscicapa, 305
 Wilsonia, 305
candei, *Manacus*, 637
 Pipra, 637
Candelita americana, 306
 collareja, 311
 gargantigris, 308
canivirens, *Seiurus aurocapillus*, 285
caniviridis, *Vireo olivaceus*, 217
cantans, *Cyphornis*, 120
capensis, *Zonotrichia*, 611
capitalis, *Pezopetes*, 585
captus, *Psilorhynchus mexicanus*, 42
Capulinerio colilargo, 171
 orinegro, 175
cara, Tangara *lavinia*, 430
Carduelis psaltria, 619
 psaltria crocea, 619

Carduelis—*Continued.*

- xanthogastra, 618
- xanthogastra xanthogastra, 618
- carmioli, Chlorothraupis, 458
- Chlorothraupis carmioli, 458
- Phoenicothera, 458
- Vireo, 211

carneipes, Caereba, 513

Cyanerpes cyaneus, 513

carolinensis, Dumetella, 127

Muscicapa, 127

carrikeri, Icterus mesomelas, 372

carychrous, Troglodytes aedon, 104

Caryothraustes canadensis, 338, 541

canadensis simulans, 543

canadensis scapularis, 542

Cascá barriga blanca, 135

gargantiblanco, 130

pardo, 137

serrana, 140

tiznada, 142

cassius, Turdus grayi, 137

Cassidix microrhynchus, 350

Cassicus uropygialis, 349

Cassidix oryzivora, 355

oryzivora violea, 355

cassini, Mitrospingus, 481

Mitrospingus cassini, 482

Tachyphonus, 482

castanea, Dendroica, 280

Sylvia, 280

castaneiceps, Buarremon, 597

Lysurus, 597

castaneus, Thryophilus, 87

Thryothorus, 88

Thryothorus nigricapillus, 88

castanonotus, Thryophilus rufalbus, 78

Thryothorus rufalbus, 78

Catbird, Gray, 127

Catharus aurantiirostris, 160

aurantiirostris griseiceps, 162

aurantiirostris russatus, 161

dryas, 158

frantzii, 158

frantzii frantzii, 158

frantzii wetmorei, 158

fumosus, 152

fuscater, 154

fuscater fuscater, 157

fuscater hellmayri, 155

Catharus—*Continued.*

fuscater mirabilis, 156

fuscescens, 149

fuscescens fuliginosus, 151

fuscescens fuscescens, 150

fuscescens salicicola, 152

fuscescens subpallidus, 150

gracilirostris, 163

gracilirostris accentor, 164

gracilirostris bensoni, 165

gracilirostris gracilirostris, 164

griseiceps, 160, 161, 162

griseiceps russatus, 161

mexicanus, 152

mexicanus fumosus, 152

minimus, 148

minimus aliciae, 149

minimus bicknelli, 149

minimus minimus, 148

ustulatus, 144

ustulatus almae, 145

ustulatus oedicus, 147

ustulatus swainsoni, 147

ustulatus ustulatus, 146

caudatus, Ptilogonys, 171

cayana, Dacnis, 518

cayana, Motacilla, 518

Cazajén carileonado, 186

gargantigris, 182

piquilargo, 183

tropical, 178

cedrorum, Bombycilla, 193

cela, Cacicus, 346, 357

Cacicus cela, 347

centralis, Amblycercus holosericeus, 353

Calospiza larvata, 419

Sporophila minuta, 573

Tangara larvata, 419

centratus, Arremonops conirostris, 603

cerinoclonis, Coereba, 503

Coereba flaveola, 503

Cerrojillo, 313

Certhia flaveola, 500

Certhiola colombiana, 504

mexicana, 502

cerulea, Dendroica, 275

Sylvia, 275

Chacarero común, 341

crestado, 344

Chacarero—Continued.

- de Montezuma*, 33
- negro*, 339
- Chaempelia passerina*, 634
- passerina neglecta*, 634
- Chaetura*, 31
- chalybea*, *Hirundo*, 19
 - Progne*, 19
 - Progne chalybea*, 19
- Chamaethlypis poliocephala*, 299
- poliocephala ridgwayi*, 299
- Changamé*, 362
- Chango cabeciamarillo*, 377
 - pechirrojo*, 378
- Charro de rabadilla amarilla*, 346
- de rabadilla escarlata*, 349
- piquihueso*, 353
- Chat*, Yellow-breasted, 301
- Chicao*, 373
- chilensis*, *Oceanites oceanicus*, 625
- Chinito cedroso*, 193
- chiriquensis*, *Geothlypis*, 296
 - Geothlypis aequinoctialis*, 296
 - Vireo gilvus*, 226
- Vireosylvia josephae*, 226
- chitrensis*, *Basileuterus tristriatus*, 314
- chivi*, *Vireo*, 219
- Chlorophanes spiza*, 516
 - spiza arguta*, 516
 - spiza guatemalensis*, 517
- Chlorophonia occipitalis*, 391
 - occipitalis callophrys*, 391
- Chlorophonia*, Blue-crowned, 391
- Chlorospingus axillaris*, 472
 - flavigularis*, 493, 495, 496
 - flavigularis hypophaeus*, 496
 - hypophaeus*, 496
 - inornatus*, 495
 - novicius*, 492
 - ophthalmicus*, 490, 495, 496
 - ophthalmicus novicius*, 492
 - ophthalmicus punctulatus*, 493, 496
 - ophthalmicus regionalis*, 491
 - ophthalmicus venezuelanus*, 491
 - pileatus*, 497
 - pileatus diversus*, 497
 - punctulatus*, 493
 - regionalis*, 491
 - tacarcunae*, 494

- Chlorothraupis carmioli*, 458
 - carmioli carmioli*, 458
 - carmioli lutescens*, 460
 - carmioli magnirostris*, 459
 - olivacea*, 461
- Chochó*, 45
- chocoana*, *Cyanerpes caerulea*, 511
 - Spermophila aurita*, 569
- chocoanus*, *Cyanerpes caeruleus*, 511
- chocoensis*, *Euphonia xanthogaster*, 396
- chrysater*, *Icterus*, 373
- chryseola*, *Wilsonia pusilla*, 304
- chrysomelas*, *Chrysothlypis*, 487
 - Chrysothlypis chrysomelas*, 489
 - Tachyphonus*, 489
- Chrysomitris xanthogastra*, 618
- chrysopleus*, *Pheucticus*, 546
- chrysoptera*, *Motacilla*, 250
 - Vermivora*, 250
- Chrysothlypis chrysomelas*, 487
 - chrysomelas chrysomelas*, 489
 - chrysomelas ocularis*, 489
 - chrysomelas titanota*, 489
- Chrysothraupis*, 415
- Cinclidae*, 52
- Cinclus mexicanus*, 52
 - mexicanus ardesiacus*, 52
- cinereiventris*, *Microbates*, 186
 - Microbates cinereiventris*, 189
 - Ramphocaenus*, 187
- cinereus*, *Ptilogonys*, 177
- cinericia*, *Poliophtila plumbea*, 181
- ciris*, *Emberiza*, 556
 - Passerina*, 554
 - Passerina ciris*, 556
- cirrha*, *Parula pitiayumi*, 258
- cirrhocephalus*, *Larus*, 632
- Cistothorus platensis*, 66
 - platensis lucidus*, 66
 - polyglottus*, 66
 - polyglottus lucidus*, 66
- citrea*, *Motacilla*, 248
- Piranga bidentata*, 455
- Protonotaria*, 248
- citrina*, *Muscicapa*, 302
 - Wilsonia*, 302
- cnephosa*, *Merula leucauchen*, 131
- cnephusus*, *Turdus albicollis*, 131
- Coccyoborus cyanoideus*, 551

- Coccyzus americanus*, 270
 erythrophthalmus, 270
 lansbergi, 636
 pumilus, 636
Coco esкарlata, 626
Coereba cerinoclunus, 503
 flaveola, 500
 flaveola cerinoclunus, 503
 flaveola colombiana, 504
 flaveola mexicana, 502
Coerebidae, 2, 498
coibae, *Cyclarhis gujanensis*, 203
coibae, *Cyclorhis*, 203
coibensis, *Turdus albicollis*, 133
 Turdus assimilis, 133
collaris, *Spermophila*, 569
collina, *Henicorhina*, 114
 Henicorhina leucophrys, 114
colombiana, *Certhiola*, 504
 Coereba flaveola, 504
colombianus, *Neocrex*, 627
coloratus, *Atlapetes gutturalis*, 589
 Myadestes, 169
Columba goodsoni, 633
columbianus, *Neocrex*, 627
 Spinus psaltria, 620
Columbidae, 633
Columbina passerina, 634
 passerina neglecta, 634
Compsothlypis gutturalis, 254
 pitiayumi, 257, 259
 pitiayumi nana, 259
 pitiayumi speciosa, 257
concolor, *Amaurospiza*, 579
 Amaurospiza concolor, 579
conditus, *Thryophilus galbraithi*, 71
 Thryothorus leucotis, 71
Conebill, *White-eared*, 508
conirostris, *Arremon*, 603
 Arremonops, 603
Conirostrum leucogenys, 508
 leucogenys leucogenys, 508
connectens, *Thryophilus nigricapillus*, 90
Coracias galbula, 375
coronata, *Dendroica*, 271
 Dendroica coronata, 271
 Motacilla, 271
 Zeledonia, 330
 coronatus, *Basileuterus*, 326
Corvidae, 41
corvina, *Spermophila*, 568
 Sporophila americana, 568
costaricensis, *Atlapetes torquatus*, 592
 Buarremon, 592
 Campylorhynchus zonatus, 64
 Mitrospingus cassinii, 482
 Ramphocelus, 447
 Ramphocelus passerinii, 447
 Thryophilus, 86
 Thryothorus nigricapillus, 86
 Zonotrichia capensis, 611
Cotinga gargantirrosada, 637
Cotingidae, 637
Cotyle uropygialis, 39
Cowbird, *Bronzed*, 358
 Giant, 339, 344, 349, 355
 Shiny, 361
Crake, *Colombian*, 627
 Paint-billed, 628
 White-throated, 629
crassirostris, *Euphonia*, 408
 Buarremon, 598
 Euphonia lanirostris, 408
 Lysurus, 599
 Lysurus castaneiceps, 598
 Oryzoborus, 578
crissalis, *Sporophila*, 563
cristata, *Eucometis penicillata*, 480
 Pipilopsis, 480
crocea, *Carduelis psaltria*, 619
 Spinus psaltria, 619
Crotophaga sulcirostris, 360
Crypturellus kerriae, 623
Cucarachero cabeciblanco, 60
 cabecinegro, 85
 cabeza fuliginosa, 95
 cantor, 117
 castaño cabecimoreno, 92
 común, 101
 de sierra, 105
 de volcán, 108
 garganta rayada, 83
 gargantinegro, 94
 listado, 64
 pechi-amarillojo, 68
 pechirayado, 81
 pechiblanco, 110

*Cucarachero—Continued.**pechigris*, 114*rojizo*, 78*ruiseñor*, 121*sencillo*, 72*vientrenegro*, 96

Cuckoo, Dwarf, 636

Gray-capped, 636

Striped, 77, 79

Cuchillo acanelado, 636*gusanero*, 636

Cuculidae, 636

cucullata, *Cyanolyca*, 50*Cyanolyca cucullata*, 50cucullatus, *Cyanocorax*, 50culicivorus, *Basileuterus*, 316cumatilis, *Thraupis episcopus*, 438*Thraupis virens*, 438

Curlew, Long-billed, 630

cyanea, *Loxia*, 553*Tanagra*, 553cyanella, *Emberiza*, 553*Passerina*, 553, 576*Cyanerpes caerulea*, 511*caerulea chocoana*, 511*caeruleus*, 511*caeruleus chocoanus*, 511*cyaneus*, 513*cyaneus carneipes*, 513*lucidus*, 509*lucidus isthmicus*, 509*cyaneus*, *Cyanerpes*, 513*Cyanocitta argentigula*, 48*ornata*, 51*Cyanocompsa cyanoides*, 549*cyanoides caeruleus*, 549*Cyanocorax affinis*, 45*affinis affinis*, 48*affinis zeledoni*, 45*cucullatus*, 50*morio*, 45*ornatus*, 51*cyanogenys*, *Psilorhinus*, 42*Psilorhinus morio*, 42*cyanoides*, *Coccyborus*, 551*Cyanocompsa*, 549*Passerina*, 548*Passerina cyanoides*, 551cyanoleuca, *Hirundo*, 32*Notiochelidon*, 32cyanoleuca—*Continued.**Notiochelidon cyanoleuca*, 32*Cyanolyca argentigula*, 48*argentigula argentigula*, 48*argentigula albior*, 50*blandita*, 48*cucullata*, 50*cucullata cucullata*, 50

Cychlarhidae, 2, 196

Cyclarhis gujanensis, 198*gujanensis coibae*, 203*gujanensis flavens*, 202*gujanensis perrygoi*, 201*gujanensis subflavescens*, 200*Cyclorhis coibae*, 203*subflavescens*, 200*Cyphorhinus albigularis*, 98*aradus*, 117*aradus infuscatus*, 118*aradus lawrencii*, 119*lawrencii*, 118, 119*lawrencii infuscatus*, 118*leucostictus*, 110*phaeocephalus*, 118*Cyphornis cantans*, 120*Dacnis cayana*, 518*cayana callaina*, 518, 519*cayana ultramarina*, 518, 520*leucogenys*, 508*ultramarina*, 520*venusta*, 522*venusta fuliginata*, 525*venusta venusta*, 524*viguieri*, *frontispiece*, 521*Dacnis*, Blue, 518

Scarlet-thighed, 522

Viridian, *frontispiece*, 521daguae, *Turdus*, 134*Turdus albicollis*, 134*dalmasi*, *Calospiza lavinia*, 430*Tangara lavinia*, 430*dariensis*, *Henicorhina leucosticta*, 113*Hylophilus decurtatus*, 230*Pachysylvia minor*, 230decolor, *Stelgidopteryx ruficollis*, 39decumanus, *Ostinops*, 344*Psarocolius*, 344

- decurtata, *Sylvicola*, 299
 decurtatus, *Hylophilus*, 228
 Hylophilus decurtatus, 229
 delatrii, *Basileuterus*, 324
 Tachyphonus, 458, 473
 delecticia, *Calospiza gyroloides*, 428
 Tangara gyrola, 428
Dendroica aestiva, 262, 263, 264
 aestiva amnicola, 262
 aestiva brewsteri, 264
 aestiva ineditus, 264
 aestiva morcomi, 264
 caerulescens, 271
 castanea, 280
 cerulea, 275
 coronata, 271
 coronata auduboni, 273
 coronata coronata, 271
 discolor, 284
 dominica, 278
 dominica albilora, 278
 erihthachorides, 268
 fusca, 276
 magnolia, 269
 occidentalis, 275
 palmarum, 256, 283
 palmarum palmarum, 283
 pensylvanica, 278
 petechia, 259
 petechia aestiva, 263
 petechia aequatorialis, 265
 petechia aithocorys, 266
 petechia amnicola, 262
 petechia erithachorides, 268
 petechia iguanae, 267
 petechia jubaris, 269
 petechia morcomi, 264
 petechia rubiginosa, 263
 petechia sonorana, 264, 265
 striata, 282
 tigrina, 271
 townsendi, 273
 virens, 274
diaconus, *Tanagra*, 437
 Thraupis episcopus, 435
 Dickcissel, 332, 334, 360
 Diglossa, 498
 baritula plumbea, 505
 plumbea, 505
 plumbea veraguensis, 505, 506
 dilucida, *Tanagra cana*, 437
 dimidiatus, *Ramphocelus*, 440
 Ramphocelus dimidiatus, 442
 discolor, *Dendroica*, 284
 Sylvia, 284
 disjunctus, *Vireo gilvus*, 228
 dissita, *Tiaris olivacea*, 561
 dissors, *Vireo gilvus*, 227
 diversus, *Chlorospingus pileatus*, 497
 Dolichonyx oryzivorus, 381
 domestica, *Fringilla*, 196
 Progne chalybea, 21, 22
 domesticus, *Passer*, 196
 dominica, *Dendroica*, 278
 Motacilla, 278
 dominicensis, *Icterus*, 367
 Donacobius, 2, 55, 56
 atricapillus, 57
 atricapillus albobittatus, 55
 atricapillus brachypterus, 57
 Black-capped, 57
 brachypterus, 57
 Dove, *Common Ground*, 634
 Eared, 634
 Mourning, 609
 dowii, *Calliste*, 432
 Tangara, 431
 Tangara dowii, 432
 dryas, *Catharus*, 158
 Dumetella carolinensis, 127

 Egret, *Reddish*, 625
 Egretta rufescens, 625
 eisenmanni, *Sicalis luteola*, 584, 609
 Elanus leucurus, 626
 leucurus majusculus, 627
 elegans, *Progne*, 25
 Sterna, 633
 Thalasseus, 633
 elegantissima, *Euphonia musica*, 393
 Pipra, 393
 elsae, *Atlapetes brunneinucha*, 595
 elutus, *Thryophilus modestus*, 75
 Thryothorus modestus, 75
 Emberiza americana, 334
 ciris, 556
 cyanella, 553
 leucophrys, 615
 militaris, 378

Emberiza—Continued.

- olivacea, 559
- sandwichensis, 606
- Emberizoides herbicola*, 616
 - herbicola floresae*, 616
 - herbicola hypochondriacus*, 616
 - herbicola lucaris*, 616
- Embernagra albinucha*, 588
 - brunneinucha*, 594
 - striaticeps*, 604
 - torquata*, 591
- episcopus*, *Tanagra*, 435
 - Thraupis*, 435
- erithachorides*, *Dendroica*, 268
- erithachorides*, *Dendroica petechia*, 268
- erythrogaster*, *Hirundo*, 13
 - Hirundo rustica*, 13
- erythrophthalmus*, *Coccyzus*, 270
- erythrope*, *Neocrex*, 628
- Estornino*, 196
- Eucometis penicillata*, 478
 - penicillata cristata*, 480
 - penicillata stictothorax*, 479
 - spodocephala*, 479
 - spodocephala stictothorax*, 479
- Eudocimus ruber*, 626
- Euphonia anneae*, 397, 398
 - anneae anneae*, 398
 - anneae rufivertex*, 398
 - crassirostris*, 408
 - fulvicrissa*, 402, 405
 - fulvicrissa fulvicrissa*, 402
 - gouldi*, 403, 404
 - gouldi praetermissa*, 404
 - hirundinacea*, 409
 - hirundinacea gnatho*, 409
 - imitans*, 403, 405
 - laniirostris*, 408, 410
 - laniirostris crassirostris*, 408
 - luteicapilla*, 401, 403
 - minuta*, 399
 - minuta humilis*, 399
 - musica*, 398
 - musica elegantissima*, 393
 - musica vincens*, 394
 - rufivertex*, 398
 - violacea*, 409
 - xanthogaster*, 395

Euphonia—Continued.

- xanthogaster chocoensis*, 396
- xanthogaster oressinoma*, 395
- Euphonia*, *Blue-hooded*, 393
 - Fulvous-vented*, 402
 - Olive-backed*, 404
 - Orange-bellied*, 395
 - Tawny-capped*, 398
 - Spot-crowned*, 405
 - Thick-billed*, 408
 - White-vented*, 399
 - Yellow-crowned*, 401, 403
 - Yellow-throated*, 409
- eurous*, *Lysurus castaneiceps*, 599
 - Lysurus crassirostris*, 599
- eusticta*, *Tangara guttata*, 412
- excellens*, *Tapera naevia*, 77, 79
- eximia*, *Rhodinocichla rosea*, 483
- eximius*, *Basilieuterus melanogenys*, 319
 - Smaragdolanus*, 208
 - Vireolanus*, 208
- fanny*, *Aglaia*, 421
 - Tangara larvata*, 421
- fasciatoventris*, *Thryothorus*, 96
- festinus*, *Troglodytes*, 107
 - Troglodytes solstitialis*, 107
- Finch*, *Chestnut-capped Brush-*, 594
 - Cocos*, 558
 - Grassland Yellow-*, 584
 - Great-billed Seed-*, 578
 - Large-footed*, 585
 - Lesser Seed-*, 575
 - Peg-bill*, 582
 - Saffron*, 583
 - Slaty*, 581
 - Sooty-faced*, 597
 - Stripe-headed Brush-*, 591
 - Wedge-tailed Grass-*, 616
 - Yellow-green*, 588
 - Yellow-thighed*, 586
 - Yellow-throated Brush-*, 588
- flammigerus*, *Ramphocelus*, 448
- flava*, *Piranga*, 451
- flavens*, *Cyclarhis gujanensis*, 202
- flaveola*, *Certhia*, 500
 - Coereba*, 500
 - Fringilla*, 583

flaveola—Continued.

- Sicalis*, 583
- Sicalis flaveola*, 583
- flavicollis*, *Hemithraupis*, 486, 498
- flavifrons*, *Vireo*, 213
- flavigularis*, *Chlorospingus*, 493, 495, 496
- Machetornis rixosus*, 638
- flavipes*, *Hylophilus*, 237
- flavoviridis*, *Vireo*, 217
- Vireo flavoviridis*, 217
- Vireosylva*, 217
- floresae*, *Emberizoides herbicola*, 616
- florida*, *Calliste*, 411
- Calospiza*, 411
- Tangara*, 411
- Flower-piercer*, *Slaty*, 505
- Flycatcher*, *Piratic*, 344, 349
- Follajero cejiamarillo*, 208
- verde*, 204
- formosa*, *Sylvia*, 289
- formosus*, *Oporornis*, 289
- forreri*, *Vireo flavoviridis*, 219, 220
- fortipes*, *Spermophila*, 570
- francescae*, *Tangara larvata*, 419, 420
- francescae*, *Calliste*, 420
- Tangara larvata*, 419, 420
- frantzii*, *Callispiza*, 415
- Catharus*, 158
- Catharus frantzii*, 159
- Tangara icterocephala*, 415
- frazieri*, *Oreomanes*, 498
- Fregata magnificens*, 268
- Frigatebird*, *Magnificent*, 268
- Fringilla brissonii*, 553
- domestica*, 196
- flaveola*, 583
- gyrola*, 426
- lincolni*, 615
- oryzivora*, 381
- rubra*, 452
- savannarum*, 606
- splendens*, 557
- Fringillidae*, 526
- frontalis*, *Arremon*, 596
- Atlappes brunneinucha*, 596
- Frutero aceitunado*, 458
- albilino*, 469
- aliblanco*, 457

Frutero—Continued.

- carisucio*, 481
- cejiamarillo*, 461
- comeabejas*, 452
- crestileonado*, 473
- de rabadilla amarilla*, 448
- escarlata*, 453
- espaldiamarillo*, 486
- espaldiblanco*, 470
- flamigero*, 455
- follajero gargantiblanco*, 467
- hepatico*, 451
- hormiguero cabecigris*, 478
- hormiguero cejiescarlata*, 474
- hormiguero coronirrojo*, 462
- hormiguero gargantirojo*, 464
- occidental*, 454
- orinegro*, 487
- rastrojero cabecicenizo*, 497
- rastrojero común*, 490
- rastrojero gargantiamarillo*, 496
- rastrojero pirreño*, 495
- rastrojero tacarcuneño*, 494
- rosaceo*, 483
- sanguinolento*, 450
- fucosa*, *Tangara dowii*, 433
- fucosus*, *Tangara*, 433
- fuliginata*, *Dacnis venusta*, 525
- fuliginosa*, *Hylocichla fuscescens*, 151
- fuliginosus*, *Catharus fuscescens*, 151
- fulva*, *Petrochelidon*, 18
- fulvicauda*, *Basileuterus*, 325
- Muscicapa*, 325
- fulvicrissa*, *Euphonia*, 402, 405
- Euphonia fulvicrissa*, 402
- fumigatus*, *Turdus*, 135, 136
- fumosus*, *Catharus*, 152
- Catharus mexicanus*, 152
- furax*, *Saltator albicollis*, 537
- Saltator striatipictus*, 537
- furvior*, *Seiurus aurocapillus*, 286
- fusca*, *Dendroica*, 276
- Hirundo*, 27
- Motacilla*, 276
- Progne tapera*, 27
- fuscater*, *Catharus*, 154
- Catharus fuscater*, 157
- Myioturdu*, 157
- fuscescens*, *Catharus*, 149

fuscens—*Continued.*

Catharus fuscens, 150

Hylocichla, 151, 152

Turdus, 150

fuscicauda, Habia, 463, 464

Habia fuscicauda, 465

Phoenicotherapis, 465

fuscus, Larus, 631

gaffneyi, Basileuterus fulvicauda, 328

galbraithi, Thryophilus, 71

galbraithii, Thryothorus, 69

Thryothorus leucotis, 69

galbula, Coracias, 375

Icterus, 270, 367, 375, 436

Icterus galbula, 375

Gampsonyx swainsonii, 626

Garzón rojizo, 625

Gavilán aperlado, 626

coliblanco, 626

Gaviota cabecigris, 632

colirayado, 631

de Bonaparte, 632

obscura, 631

Gaviotin elegante, 633

piquiamarillo, 633

piquigrande, 632

Geospiza jacarina, 557

jacarina splendens, 557

Geothlypis aequinoctialis, 296

aequinoctialis chiriquensis, 296

bairdi, 298

chiriquensis, 296

poliocephala, 299

poliocephala ridgwayi, 299

semiflava, 298

semiflava bairdi, 298

trichas, 294, 299

trichas brachidactylus, 295

trichas pelagitis, 295

trichas minnesotica, 296

trichas roscow, 296

trichas typhicola, 296

gilva, Muscivora, 225

gilvus, Mimus, 124

Vireo, 225

giraudii, Icterus, 373

Icterus chrysater, 373

Gnatcatcher, Blue-gray, 178, 181

Slate-throated, 182

Tropical, 178

gnatho, Euphonia hirundinacea, 409

Phonasca, 409

Gnatwren, Long-billed, 183

Tawny-faced, 186

godmani, Basileuterus, 316

Basileuterus culicivorus, 316

Goldfinch, Dark-backed, 619

Golondrina ala de sierra, 36

azul, 22

barranquera, 5

barranquera azul, 32

bicolor, 7

de paso, 14

manglera, 8

muslos blancos, 29

negra, 25

parda, 27

pueblera, 18

tijereta, 13

urbana, 19

verde, 11

goodsoni, Columba, 633

Gorrión chen-chen, 603

de collar rojizo, 611

de Lincoln, 615

inglés, 196

piquianaranjado, 599

sabanero, 606

saltamontes, 606

gouldi, Euphonia, 403, 404

Tanagra, 404

gracilirostris, Catharus, 163

Catharus gracilirostris, 164

Grackle, Great-tailed, 362

graellsii, Larus fuscus, 631

Grass-finch, Wedge-tailed, 616

Grassquit, Blue-black, 557

Yellow-faced, 559

grayi, Planesticus, 137

Turdus, 137

Greenlet, Golden-fronted, 231

Lesser, 228

Scrub, 237

Tawny-crowned, 234

griseiceps, Catharus, 160, 161, 162

Catharus aurantirostris, 162

- griseus, *Thryophilus leucopogon*, 83
 Thryothorus leucopogon, 83
 griseus, *Campylorhynchus*, 55
 Vireo, 210
 Grosbeak, Black-faced, 338, 541
 Blue, 552
 Blue-black, 548
 Rose-breasted, 547
 Slate-colored, 544
 Yellow, 546
 grossus, *Pitylus*, 544
 guatemalensis, *Chlorophanes spiza*, 517
 guatimozinus, *Ostinops*, 339
 Psarocolius, 339
 gujanensis, *Cyclarhis*, 198
 Tanagra, 198
 Gull, Band-tailed, 631
 Bonaparte's, 632
 Gray-hooded, 632
 Lesser Black-backed, 631
 guttata, *Tangara*, 412
 gutturalis, *Atlappetes*, 589, 590
 Compsothlypis, 254
 Vermivora, 254
 Gymnostinops, 339
 gyrola, *Fringilla*, 426
 Tangara, 426
 gyroloides, *Calospiza*, 427, 428

Habia fuscicauda, 463, 464
 fuscicauda fuscicauda, 465
 fuscicauda willisi, 465
 rubica, 462
 rubica aurantiicapilla, 462
 rubica vinacea, 462
 Haplospiza, 498
 rustica, 581
 rustica barrilesensis, 581
 harterti, *Campylorhynchus albobrun-*
 neus, 63
 Heleodytes, 63
 hauxwelli, *Turdus*, 136
 Heleodytes albobrunneus, 62
 harterti, 63
 zonatus, 64
 zonatus panamensis, 64
 Helinai brevipennis, 235
 hellmayri, *Catharus fuscater*, 155

Helmitheros vermivorus, 249
hemileucurus, *Campylopterus*, 507
Hemithraupis flavicollis, 486, 498
 flavicollis ornata, 486
 ornatus, 486
Henicorhina collina, 114
 leucosticta, 110
 leucosticta darienensis, 113
 leucosticta pittieri, 111
 leucophrys, 114
 leucophrys collina, 114
 leucophrys leucophrys, 116
 pittieri, 111
 prosteleuca, 111
 prosteleuca tropaea, 111
herbicola, *Emberizoides*, 616
hesperia, *Progne subis*, 25
Heteroscelus incanus, 629
Heterospingus xanthopygius, 474
 xanthopygius berliozii, 475
 xanthopygius rubrifrons, 476
 xanthopygius xanthopygius, 477
hicksii, *Spermophila*, 569
 Sporophila americana, 569
hirundinacea, *Euphonia*, 409
Hirundinidae, 4
Hirundo albilinea, 11
 bicolor, 7
 chalybea, 19
 cyanoleuca, 32
 erythrogaster, 13
 fusca, 27
 leucopygia, 11
 melanogaster, 18
 patagonica, 34
 pyrrhonota, 16
 riparia, 5
 ruficollis, 36
 rustica, 13
 rustica erythrogaster, 13
 serripennis, 37
 stolzmanni, 11
 subis, 24
 hoffmanni, *Sporophila*, 569
 Sporophila americana, 569
holocericeus, *Amblycercus*, 353
 Cacicus, 353
 Cacicus holosericeus, 353
 Sturnus, 353

- hondae*, *Icterus chrysater*, 374
 Honeycreeper, Green, 516
 Purple, 511
 Red-legged, 513
 Shining, 509
humilis, *Euphonia minuta*, 399
 Phonasca, 399
Hylocichla fuscescens, 151, 152
 fuscescens fuliginosa, 151
 fuscescens salicicola, 152
 mustelina, 143
 ustulata, 145
 ustulata almae, 145
 ustulata oedica, 147
Hylophilus aurantiifrons, 231
 aurantiifrons aurantiifrons, 231
 bulunensis, 236
 decurtatus, 228
 decurtatus darienensis, 230
 decurtatus decurtatus, 229
 flavipes, 237
 flavipes viridiflavus, 238
 flavipes xuthus, 241
 minor, 228
 ochraceiceps, 234
 ochraceiceps bulunensis, 236
 ochraceiceps nelsoni, 235
 ochraceiceps pallidipectus, 234
 pusillus, 229
 viridiflavus, 238
 viridiflavus pallescens, 238
Hylophylax naevioides, 303
Hylospingus inornatus, 495
hyperythrus, *Thryothorus*, 99
 Thryothorus rutilus, 99
hypochochriacus, *Emberizoides herbi-*
 cola, 616
hypophaeus, *Chlorospingus*, 496
 Chlorospingus flavigularis, 496
hypopolia, *Petrochelidon albifrons*, 17
 Petrochelidon pyrrhonota, 17

Ibis, Scarlet, 626
Icteria virens, 301
 virens virens, 301
Icteridae, 2, 332
icterocephala, *Calliste*, 417
 Tangara, 414
 Tangara icterocephala, 417

icteronotus, *Ramphocelus*, 448
 Ramphocelus flammigerus, 448
Icterus auricapillus, 368
 chrysater, 373
 chrysater giraudii, 373
 chrysater hondae, 374
 dominicensis, 367
 dominicensis praecox, 367
 dominicensis prothemelas, 368
 galbula, 270, 367, 375, 436
 galbula bullocki, 376
 galbula galbula, 375
 giraudii, 373
 mesomelas, 369
 mesomelas carrikeri, 372
 mesomelas salvinii, 371
 prothemelas, 367
 prothemelas praecox, 367
 salvinii, 371
 spurius, 365, 376
 spurius spurius, 365
 xanthocephalus, 377
ictus, *Lanio leucothorax*, 468
ignotus, *Basileuterus melanogenys*, 316,
 319, 321
iguanae, *Dendroica petechia*, 267
imitans, *Euphonia*, 403, 405
 Tanagra, 405
impacificus, *Psomocolax oryzivorus*,
 355
incana, *Scolopax*, 629
incanus, *Heteroscelus*, 629
ineditus, *Dendroica aestiva*, 264
infuscatus, *Cyphorhinus aradus*, 118
 Cyphorhinus lawrencii, 118
inornata, *Calliste*, 423
 Pinaroloxias, 558
 Tangara, 423
inornatus, *Chlorospingus*, 495
 Hylospingus, 495
inquietus, *Troglodytes*, 102
 Troglodytes aedon, 102
insulanus, *Vireo*, 217
 Vireo flavoviridis, 219, 220
insularis, *Psarocolius decumanus*, 346
intermedius, *Saltator*, 534
 Saltator maximus, 534
 Troglodytes aedon, 103, 104
Iridophanes, 498
isthmicus, *Cyanerpes lucidus*, 509

- isthmicus—*Continued*.
 Ramphocelus dimidiatus, 442
 Saltator, 537
 Saltator albicollis, 537
iungens, Saltator maximus, 535
- jacarina, Geospiza, 557
 Jay, Azure-hooded, 50
 Black-chested, 45
 Brown, 42, 174
 Silvery-throated, 48
josephae, Vireosylva, 226
jubaris, Dendroica petechia, 269
Julián chivi, 217
Junco del volcán, 609
 Junco vulcani, 609
 Volcano, 609
- kerriae, Crypturellus, 623
 Kite, Pearl, 626
 White-tailed, 626
- lacertosus, Saltator, 530
 Saltator atriceps, 530
languens, Tangara inornata, 425
laniirostris, Euphonia, 408, 410
Lanio aurantius, 467
 leucothorax, 467
 leucothorax ictus, 468
 leucothorax melanopygius, 468
 melanopygius, 468
lansbergi, Coccyzus, 636
Laridae, 631
Larus belcheri, 631
 belcheri atlanticus, 631
 cirrhocephalus, 632
 fuscus, 631
 fuscus graellsii, 631
 philadelphia, 632
larvata, Calliste, 417
 Calospiza, 419
 Tangara, 417
Laterallus albigularis, 629
latifasciata, Piranga leucoptera, 457
lavinia, Calliste, 431
 Calospiza, 430
 lavinia—*Continued*.
 Tangara, 429
 Tangara lavinia, 431
lawrencii, Cyphorhinus, 118, 119
 Cyphorhinus aradus, 119
Legatus leucophaeus, 344, 349
Leistes militaris, 378
 militaris militaris, 378
lepida, Tachycineta, 11
 Tachycineta thalassina, 11
leucauchen, Merula, 131
leucogenys, Ateleodacnis, 508
 Conirostrum, 508
 Conirostrum leucogenys, 508
 Dacnis, 508
leucophaeus, Legatus, 344, 349
leucophrys, Emberiza, 615
 Henicorhina, 114
 Henicorhina leucophrys, 116
 Troglodytes, 116
 Vireo, 225
 Zonotrichia, 615
leucopogon, Thryophilus, 83
 Thryothorus, 83
leucoptera, Piranga, 457
leucopygia, Hirundo, 11
leucopygius, Basileuterus, 328
 Basileuterus fulvicauda, 328
leucosticta, Henicorhina, 110
leucostictus, Cyphorhinus, 110
leucothorax, Lanio, 467
leucotis, Thryothorus, 68
leucurus, Elanus, 626
 Milvus, 626
ligea, Troglodytes solstitialis, 106
limatus, Ramphocelus, 443
 Ramphocelus dimidiatus, 443
lincolni, Fringilla, 615
 Zonotrichia, 615
 Zonotrichia lincolni, 615
Llanero arrocero, 381
 oriental, 379
loftini, Oryzoborus crassirostris, 578
 Sporophila maximiliani, 578
Loxia americana, 566
 angolensis, 575
 caerulea, 552
 canadensis, 541
 cyanea, 553
 ludoviciana, 547

- lucaris, *Emberizoides herbicola*, 616
 lucidus, *Cistothorus platensis*, 66
 Cistothorus polyglottus, 66
 Cyanerpes, 509
 luctuosus, *Tachyphonus*, 470
 ludoviciana, *Loxia*, 547
 Piranga, 454
 Tanagra, 454
 ludovicianus, *Pheucticus*, 547
 lunifrons, *Petrochelidon*, 17
 luscina, *Microcerculus*, 121
 Microcerculus marginatus, 121
 luteicapilla, *Euphonia*, 401, 403
 Phonasca, 401
 luteola, *Sicalis*, 584, 609
 luteoviridis, *Pselliophorus*, 588
 lutescens, *Anthus*, 190
 Chlorothraupis carmioli, 460
 Lysurus *castaneiceps*, 597
 castaneiceps crassirostris, 598
 castaneiceps eurus, 599
 crassirostris, 599
 crassirostris eurus, 599

 Machetornis *rixosus*, 637
 rixosus flavigularis, 638
 Macrosphenus, 177
 macroura, *Zenaida*, 609
 maculipectus, *Thryothorus*, 101
 magdalena, *Microbates cinereiventris*, 188
 magna, *Sturnella*, 379
 magnificens, *Fregata*, 268
 magnirostris, *Chlorothraupis carmioli*, 459
 magnoides, *Saltator*, 534
 Saltator maximus, 534
 magnolia, *Dendroica*, 269
 Sylvia, 269
 majusculus, *Elanus leucurus*, 627
 Manacus *candei*, 637
 Manakin, White-collared, 637
 marginatus, *Microcerculus*, 121
 Martin, Brown-chested, 27
 Gray-breasted, 19
 Purple, 22
 Southern, 25
 maxima, *Tanagra*, 532
 maximiliani, *Sporophila*, 578

 maximus, *Saltator*, 532
 Thalasseus, 633
 Meadowlark, Eastern, 379
 melanogaster, *Hirundo*, 18
 Petrochelidon pyrrhonota, 18
 Thryothorus, 97
 Thryothorus fasciatoventris, 97
 melanogenys, *Basileuterus*, 318
 Basileuterus melanogenys, 319
 melanops, *Myadestes*, 167
 melanopectera, *Thraupis palmarum*, 440
 melanopectus, *Mimus gilvus*, 125, 126
 melanopygius, *Lanio*, 468
 Lanio leucothorax, 468
 melanotis, *Basileuterus*, 314
 Basileuterus tristriatus, 314
 melanoxyantha, *Phainoptila*, 175
 melanurus, *Ostinops decumanus*, 344
 Psarocolius decumanus, 344
 melanura, *Poliophtila*, 181
 melanurus, *Rhamphocaelus*, 183
 melicus, *Saltator albicollis*, 539
 mendiculus, *Spheniscus*, 623
 Merula *leucauchen*, 131
 leucauchen cnephosa, 131
 wilsonii, 147
 mesochrysis, *Basileuterus*, 322
 Basileuterus rufifrons, 322
 mesomelas, *Icterus*, 369
 mesomelas, *Psarocolius*, 369
 mexicana, *Certhia*, 502
 Coereba flaveola, 502
 mexicanus, *Catharus*, 152
 Cinclus, 52
 Psilorhinus, 42
 Quiscalus, 362
 Microbates *cinereiventris*, 186
 cinereiventris cinereiventris, 189
 cinereiventris magdalena, 188
 cinereiventris semitorquatus, 187
 Microcerculus *acentetus*, 121
 luscina, 121
 marginatus, 121
 marginatus luscina, 121
 philomela, 122
 squamulatus, 123
 microrhynchus, *Cassidix*, 350
 Cassidix uropygialis, 350
 Miolero *azul*, 513
 esmeraldino, frontispiece, 521

Mielerio—Continued.

- patirrojo*, 522
- picaflor*, 505
- piquiagudo*, 508
- platanero*, 500
- purpureo*, 511
- resplandeciente*, 509
- turquesa*, 518
- verdon*, 516
- migratorius*, *Turdus*, 128, 131, 138
- militaris*, *Emberiza*, 378
 - Leistes*, 378
 - Leistes militaris*, 378
- Milvus leucurus*, 626
- Mimidae*, 124
- Mimus gilvus*, 124
 - gilvus melanopterus*, 125, 126
 - gilvus tolimensis*, 124
 - polyglottos*, 125, 126
- miniata*, *Setophaga*, 308
- miniatus*, *Myioborus*, 308
- minima*, *Neochelidon tibialis*, 29
 - Petrochelidon albifrons*, 17
- minimus*, *Catharus*, 148
 - Catharus minimus*, 148
 - Neochelidon tibialis*, 29
 - Turdus*, 148
- minnesotica*, *Geothlypis trichas*, 296
- minor*, *Hylophilus*, 228
 - Pachysylvia*, 230
 - Phainoptila melanoxantha*, 175
- minuta*, *Euphonia*, 399
 - Sporophila*, 573
 - Sporophila minuta*, 574
- mirabilis*, *Catharus fuscater*, 156
- Mirlo acuático americano*, 53
- Mitrospingus cassinii*, 481
 - cassinii cassinii*, 482
 - cassinii costaricensis*, 482
- Mniotilta varia*, 246
- Mockingbird*, *Tropical*, 124
- modesta*, *Progne*, 26
- modestus*, *Thryophilus*, 75
 - Thryothorus*, 72
- molochinus*, *Ramphocelus dimidiatus*, 441
- Molothrus aeneus*, 358, 580
 - aeneus aeneus*, 358
 - aeneus armenti*, 360
 - bonariensis*, 361

Molothrus—Continued.

- bonariensis cabanisi*, 361
- cabanisi*, 361
- montezuma*, *Cacicus*, 336
 - Psarocolius*, 336
- morcomi*, *Dendroica aestiva*, 264
 - Dendroica petechia*, 264
- moreletti*, *Spermophila*, 564
 - Sporophila torqueola*, 564
- morio*, *Cyanocorax*, 45
 - Psilorhinus*, 42, 174
 - Psilorhinus morio*, 45
- Motacilla aestiva*, 263
 - aurocapilla*, 285
 - caerulescens*, 271
 - cayana*, 518
 - chrysoptera*, 250
 - citrea*, 248
 - coronata*, 271
 - dominica*, 278
 - fusca*, 276
 - noveboracensis*, 286
 - palmarum*, 283
 - pennsylvanica*, 278
 - petechia*, 259
 - pileolata*, 304
 - rubiginosa*, 263
 - ruticilla*, 306
 - tigrina*, 271
 - varia*, 246
 - vermivora*, 249
 - virens*, 274
- motacilla*, *Seiurus*, 288
 - Turdus*, 288
- Motacillidae*, 190
- murphyi*, *Progne*, 26
- Muscicapa alticola*, 223
 - canadensis*, 305
 - carolinensis*, 127
 - citrina*, 302
 - fulvicauda*, 325
 - gilva*, 225
 - noveboracensis*, 210
 - olivacea*, 216
 - pusilla*, 305
 - solitaria*, 214
 - striata*, 282
- musculus*, *Troglodytes*, 102
- musica*, *Euphonia*, 393
- mustelina*, *Hylocichla*, 143

- mustelinus*, *Turdus*, 143
mutabilis, *Vireolanius eximius*, 208
Myadestes, 2, 129
 coloratus, 169
 melanops, 167
 ralloides, 170, 171
Myioborus miniatus, 308
 miniatus acceptus, 309
 miniatus aurantiacus, 309
 torquatus, 311
Myiodioctes tristriatus, 313
Myioturdus fuscater, 157
Myrmornis arada, 117
Myrmotherula axillaris, 228, 403
- naevia*, *Tapera*, 77, 79
naevioides, *Hylophylax*, 303
nana, *Compothlypis pitaiyumi*, 259
 Parula pitaiyumi, 259
neglecta, *Chaemepelia passerina*, 634
 Columbina passerina, 634
 Sturnella, 380
nelsoni, *Hylophilus ochraceiceps*, 235
 Pachysylvia ochraceiceps, 235
Neochelidon tibialis, 29
 tibialis minima, 29
 tibialis minimus, 29
Neocrex colombianus, 627
 columbianus, 627
 colombianus ripleyi, 627
 erythroptus, 628
 erythroptus olivascens, 628
Nightingale-thrush, *Black-billed*, 163
 Black-headed, 152
 Orange-billed, 160
 Ruddy-capped, 158
 Slaty-backed, 154
nigrescens, *Turdus*, 142
nigricapillus, *Thryophilus*, 90, 91
 Thryothorus, 85, 94
nigricollis, *Pyrrhula*, 571
 Sporophila, 571
 Sporophila nigricollis, 571
nigrocincta, *Tangara*, 418
nitens, *Phainopepla*, 177
nitidissimus, *Tachyphonus*, 471
 Tachyphonus luctuosus, 471
- Notiochelidon cyanoleuca*, 32
 cyanoleuca cyanoleuca, 32
 cyanoleuca patagonica, 34
Notiocorys, 190
novaboracensis, *Muscicapa*, 210
 Motacilla, 286
 Seiurus, 270, 286
 Vireo griseus, 210
novicius, *Chlorospingus*, 492
 Chlorospingus ophthalmicus, 492
Numenius americanus, 630
nuttingi, *Sporophila maximiliani*, 579
- obsoletus*, *Turdus*, 135, 136
 Turdus fumigatus, 135
occidentalis, *Dendroica*, 275
 Pelecanus, 268
 Procnias, 388
 Sylvia, 275
 Tersina viridis, 388
occipitalis, *Chlorophonia*, 391
oceanica, *Procellaria*, 625
oceanicus, *Oceanites*, 626
 Oceanites oceanicus, 625
Oceanites oceanicus, 625
 oceanicus oceanicus, 625
 oceanicus chilensis, 625
Oceanitidae, 625
ochracea, *Troglodytes*, 105, 106
ochraceiceps, *Hylophilus*, 234
 Pachysylvia, 234, 235
ochrogynae, *Sporophila angolensis*, 577
ocularis, *Chrysothlypis chrysomelas*, 489
odius, *Thryothorus nigricapillus*, 87
oedica, *Hylocichla ustulata*, 147
oedicus, *Catharus ustulatus*, 147
olivacea, *Chlorothraupis*, 461
 Emberiza, 559
 Muscicapa, 216
 Piranga, 453
 Tangara, 453
 Tiaris, 559
olivaceus, *Orthogonys*, 461
 Vireo, 215
 Vireo olivaceus, 216
olivascens, *Neocrex erythroptus*, 628

- ophthalmicus, Arremon, 490
 Chlorospingus, 490, 495, 496
 Oporornis agilis, 290
 formosus, 289
 philadelphia, 291, 293, 294
 tolmiei, 293
 tolmiei tolmiei, 293
 Oreomanes frazeri, 498
 oresbia, Tangara icterocephala, 416
 oressinoma, Euphonia xanthogaster, 395
 oresteria, Zonotrichia capensis, 611
 Oriole, Black-cowled, 367
 Northern, 367, 375, 436
 Orange-crowned, 368
 Orchard, 365
 Yellow-backed, 373
 Yellow-tailed, 369
 Oriolus oryzivorus, 355
 spurius, 365
 ornata, Cyanocitta, 51
 Hemithraupis flavicollis, 486
 ornatus, Cyanocorax, 51
 Hemithraupis, 486
 Oropendola, Black, 339
 Chestnut-headed, 341, 422
 Crested, 344
 Montezuma, 336
 Orthogonys olivaceus, 461
 oryzivora, Cassidix, 355
 Fringilla, 381
 Scaphidura, 339, 344, 349, 355
 oryzivorus, Dolichonyx, 381
 Oriolus, 355
 Psomocolax, 355
 Oryzoborus crassirostris, 578
 crassirostris loftini, 578
 salvini, 576
 Ostinops decumanus, 344
 decumanus melanterus, 344
 guatimozinus, 339
 Ovenbird, 284

Pájaro gato, 127
 perico, 198
 Pachyrhynchus aglaiae, 637
 Pachysylvia minor, 230
 minor darienensis, 230

 Pachysylvia—*Continued.*
 ochraceiceps, 234, 235
 ochraceiceps brevipennis, 235
 ochraceiceps nelsoni, 235
 ochraceiceps pallidipectus, 234
 pacificus, Cacicus uropygialis, 352
 pallescens, Hylophilus viridiflavus, 238
 pallidior, Passerina ciris, 556
 pallidipectus, Hylophilus ochraceiceps, 234
 Pachysylvia ochraceiceps, 234
 pallidirostris, Ramphocelus dimidiatus, 442
 palmarum, Dendroica, 256, 283
 Dendroica palmarum, 283
 Motacilla, 283
 Thraupis, 436, 439
 palmeri, Calospiza, 422
 Tangara, 422
Paloma negruzca, 633
 panamensis, Ateleodacnis leucogenys, 408
 Heleodytes zonatus, 64
 Tachyphonus luctuosus, 473
 Parakeet, Painted, 635
Paralauta de agua, 57
Parao coliamarillo, 369
 coroninaranja, 368
 de huertos, 365
 encapuchado, 367
 grande pasajero, 375
Pardela de Mann, 624
 de Wilson, 625
 negra, 624
 parkinsoni, Procellaria, 624
 Parula americana, 256
 pitiaiyumi, 256
 pitiaiyumi cirrha, 258
 pitiaiyumi nana, 259
 pitiaiyumi speciosa, 257
 Parula, Northern, 256
 Tropical, 256
 Parulidae, 242
 Parus americanus, 256
 parvus, Anthus, 190
 Anthus lutescens, 190
 Passer domesticus, 196
 Passerina caerulea, 552
 caerulea caerulea, 552

Passerina—*Continued.*

- ciris, 554
- ciris ciris, 556
- ciris pallidior, 556
- cyanella, 553, 576
- cyanooides, 548
- cyanooides cyanooides, 551
- cyanooides toddi, 549
- pratensis, 607
- passerina, Chaemepelia, 634
 - Columbina, 634
- passerinii, Ramphocelus, 444
 - Ramphocelus passerinii, 446
- patagonica, Hirundo, 34
 - Notiochelidon cyanoileuca, 34
- pelagitis, Geothlypis trichas, 295
- Pelecanus occidentalis, 268
- Pelican, Brown, 268
- Penguin, Galapagos, 623
- penicillata, Eucometis, 478
 - Tanagra, 478
- pennsylvanica, Dendroica, 278
 - Motacilla, 278
- Peppershrike, Rufous-browed, 198
- Perdiz del chocó*, 623
- peregrina, Sylvia, 252
 - Vermivora, 252
- Perico cabecirrosado*, 635
- Peristera auriculata, 634
- perrygoi, Cyclarhis gujanensis, 201
- perstriatus, Saltator albicollis, 541
- peruvianus, Quiscalus, 362
 - Quiscalus mexicanus, 362
- petechia, Dendroica, 259
 - Motacilla, 259
- Petrel, Parkinson's Black, 624
 - Wilson's Storm, 625
- Petrochelidon albilinea, 8
 - albifrons, 17
 - albifrons aphyata, 17
 - albifrons hypopolia, 17
 - albifrons minima, 17
 - fulva, 18
 - lunifrons, 17
 - lunifrons tachina, 17
 - pyrrhonota, 14
 - pyrrhonota hypopolia, 17
 - pyrrhonota melanogaster, 18
 - pyrrhonota pyrrhonota, 16
 - pyrrhonota tachina, 17
- Pezopetes capitalis, 585
- Phaenicothraupis vinacea, 462
- phaeocephalus, Cyphorhinus, 118
- Phaeoprogne, 29
- Phaeothlypis, 325
- Phaetusa simplex, 632
- Phainopepla nitens, 177
- Phainoptila melanocephala, 175
 - melanocephala minor, 175
- Phainoptila, Black-and-yellow, 175
- Pheucticus chrysopleurus, 546
 - chrysopleurus tibialis, 546
 - ludovicianus, 547
- Pheugopedius spadix, 95
 - spadix xerampelinus, 95
- philadelphia, Larus, 632
 - Oporornis, 291, 293, 294
 - Sylvia, 291
 - Sterna, 632
 - Vireosylva, 223
- philadelphicus, Vireo, 223
- Philomachus pugnax, 630
- philomela, Microcerculus, 122
- Phlogothraupis sanguinolenta, 450
 - sanguinolenta aprica, 450
- Phoenicothera carmioli, 458
 - fuscicauda, 465
- Phonasca gnatho, 409
 - humilis, 399
 - luteicapilla, 401
- Phyllomanes barbatulus, 222
- Pía-pía*, 42
- picta, Pyrrhura, 635
- Pigeon, Dusky, 633
- pileatus, Chlorospingus, 497
- pileolata, Motacilla, 304
 - Wilsonia pusilla, 304
- Pinaroloxias inornata, 558
- Pingüino de las Galápagos*, 623
- pinus, Certhia, 251
 - Vermivora, 251
- Pinzón amarillo*, 584
 - apizarrado, 581
 - azafranado, 583
 - carisucio, 597
 - dorado espadinegro, 619
 - patiamarillo, 586
 - patigrande, 585
 - piquiagudo, 582
 - rastrero cabecicastaño, 594

Pinzón—Continued.

- rastrero cabecirayado*, 591
- rastrero gargantiamarillo*, 588
- ventriamarillo*, 618
- verdiamarillo*, 588
- yerberero colicuñado*, 616
- Pipilopsis cristata*, 480
- Pipit*, Yellowish, 190
- Pipra candei*, 637
 - elegantissima*, 393
- Pipridae*, 637
- Piquigordo*, 408
- Piquigrueso amarillo*, 546
 - apizarrado*, 544
 - azulado*, 552
 - negrizul*, 548
 - pechirroso*, 547
 - verdiamarillo*, 541
- Piranga bidentata*, 455
 - bidentata citrea*, 455
 - flava*, 451
 - flava testacea*, 451
 - leucoptera*, 457
 - leucoptera latifasciata*, 457
 - ludoviciana*, 454
 - olivacea*, 453
 - rubra*, 452
 - rubra rubra*, 452
 - testacea*, 451
- pitiayumi*, *Compsothlypis*, 257
 - Parula*, 256
 - Sylvia*, 256
- pittieri*, *Henicorhina*, 111
 - Henicorhina leucosticta*, 111
- Pitylus grossus*, 544
 - grossus saturatus*, 544
 - poliogaster*, 542
 - poliogaster scapularis*, 542
- Planesticus grayi*, 137
- Plataleidae*, 62
- platensis*, *Cistothorus*, 66
- Platypsaris aglaiae*, 637
- plebejus*, *Turdus*, 140
 - Turdus plebejus*, 140
- Ploceidae*, 196
- plumbea*, *Diglossa*, 505
 - Diglossa baritula*, 505
 - Polioptila*, 178
- plumbeus*, *Todus*, 178
 - poliocephala*, *Chamaethlypis*, 299
 - Geothlypis*, 299
 - poliogaster*, *Pitylus*, 542
 - Polioptila caerulea*, 178, 181
 - melanura*, 181
 - plumbea*, 178
 - plumbea superciliaris*, 180
 - plumbea cinerica*, 181
 - schistaceigula*, 182, 487
 - superciliaris*, 180
 - Polla pico rojo*, 628
 - polyglottos*, *Mimus*, 125, 126
 - polyglottus*, *Cistothorus*, 66
 - Poospiza*, 498
 - praecox*, *Icterus dominicensis*, 367
 - Icterus prothemelas*, 367
 - praetermisssa*, *Euphonia gouldi*, 404
 - Tanagra gouldi*, 404
 - pratensis*, *Ammodramus savannarum*, 607
 - Passerina*, 607
 - Procellaria oceanica*, 625
 - parkinsoni*, 624
 - puffinus*, 624
 - Procellariidae*, 624
 - Procnias occidentalis*, 388
 - Progne chalybea*, 19
 - chalybea chalybea*, 19
 - chalybea domestica*, 21, 22
 - elegans*, 25
 - modesta*, 26
 - murphyi*, 26
 - subis*, 22
 - subis arboricola*, 23, 24
 - subis hesperia*, 25
 - subis subis*, 24
 - tapera*, 27
 - tapera fusca*, 27
 - tapera tapera*, 29
 - prostheleuca*, *Henicorhina*, 111
 - prothemelas*, *Icterus*, 367
 - Icterus dominicensis*, 368
 - Protonotaria citrea*, 248
 - psaltria*, *Carduelis*, 619
 - Spinus*, 619
 - psammochroa*, *Stelgidopteryx ruficollis*, 38
 - psammochrous*, *Stelgidopteryx ruficollis*, 38

- Psarocolius aeneus*, 358
 decumanus, 344
 decumanus insularis, 346
 decumanus melanterus, 344
 guatimozinus, 339
 mesomelas, 369
 montezuma, 336
 wagleri, 341, 422
Pselliophorus luteoviridis, 588
 tibialis, 586
Psilorhinus cyanogenys, 42
 mexicanus, 42
 mexicanus captus, 42
 morio, 42, 174
 morio cyanogenys, 42
 morio morio, 45
 morio vociferus, 44
 Psittacidae, 635
Psomocolax oryzivorus, 355
 oryzivorus impacificus, 355
Pteroglossus torquatus, 635
 torquatus torquatus, 635
 sanguineus, 635
Ptilonotidae, 165
Ptilonotus caudatus, 171
 cinereus, 177
Puffinus puffinus, 624
puffinus, *Procellaria*, 624
 Puffinus, 624
pugnax, *Philomachus*, 630
 Tringa, 630
pulchellus, *Smaragdolanus*, 204
 Vireolanus, 204
pumilus, *Coccyzus*, 636
punctulatus, *Chlorospingus*, 493
 Chlorospingus ophthalmicus, 493, 496
pusilla, *Muscicapa*, 305
 Tiaris olivacea, 561
 Wilsonia, 303
 Wilsonia pusilla, 305
pusillus, *Hylophilus*, 229
 Tiaris, 561
pyrrhonota, *Hirundo*, 16
 Petrochelidon, 14
 Petrochelidon pyrrhonota, 16
Pyrrhula nigricollis, 571
Pyrrhura picta, 635
Quiscalus mexicanus, 362
 mexicanus peruvianus, 362
 peruvianus, 362
 Rallidae, 627
ralloides, *Myadestes*, 170, 171
Ramphastidae, 635
Ramphastos torquatus, 635
Ramphocaenus cinereiventris, 187
 semitorquatus, 187
Ramphocelus costaricensis, 447
 dimidiatus, 440
 dimidiatus albirostris, 442
 dimidiatus arestus, 444
 dimidiatus dimidiatus, 442
 dimidiatus isthmicus, 442
 dimidiatus limatus, 443
 dimidiatus molochinus, 441
 dimidiatus pallidirostris, 442
 flammigerus, 448
 flammigerus icteronotus, 448
 flammigerus varians, 449
 icteronotus, 448
 limatus, 443
 passerinii, 444
 passerinii costaricensis, 447
 passerinii passerinii, 446
 sanguinolentus, 450
 sanguinolentus apricus, 450
Rascon colombiano, 627
rava, *Tangara inornata*, 424
ravida, *Tiaris olivacea*, 562
reditus, *Thryophilus nigricapillus*, 91
 Thryothorus nigricapillus, 91
Redstart, *American*, 306
 Collared, 311
 Slate-throated, 308
regionalis, *Chlorospingus*, 491
 Chlorospingus ophthalmicus, 491
Reinita aliazul, 251
 alidorada, 250
 altigrada, 271
 arriera, 301
 arrollera del norte, 286
 arrollera de Louisiana, 288
 azulosa, 271
 cabecicastaña, 321
 cabecigris, 254

Reinita—Continued.

- carisucia*, 318
- cerulea*, 275
- coronada*, 275
- coroniamarilla*, 271
- coronidorada*, 316
- coroninegra*, 282
- de Canada*, 305
- de Connecticut*, 290
- de la pradera*, 284
- de lados castaños*, 278
- de rabadilla anteadá*, 325
- de Townsend*, 273
- de tupidero*, 293
- de Wilson*, 303
- del palmar*, 283
- encapuchada*, 302
- encopetada*, 291
- gargantiamarilla*, 278
- garantiamarilla carbonera*, 299
- garantiamarilla chiricana*, 296
- gargantiamarilla común*, 294
- gargantiamarilla coronioliva*, 298
- gargantianaranjada*, 276
- gargantirroja*, 254
- gusanera*, 249
- hermosa*, 289
- mangletera*, 259
- mariquita*, 256
- norteña*, 256
- pechicastaña*, 280
- pechirrayada*, 269
- peregrina*, 252
- protonotaria*, 248
- suelera*, 284
- trepedora*, 246
- verdosa*, 274
- relictus*, *Amaurospiza concolor*, 580
- remotus*, *Troglodytes ochraceus*, 106
- Rhamphocaenus melanurus*, 183
 - melanurus rufiventris*, 183
 - melanurus sanctaemarthae*, 186
- rhizophorae*, *Tachycineta albilinea*, 11
- Rhodinocichla rosea*, 483
 - rosea eximia*, 483
- richmondi*, *Arremonops*, 603, 604
- ridgwayi*, *Chamaethlypis poliocephala*, 299
 - Geothlypis poliocephala*, 299

ridgwayi—Continued.

- Zarhynchus wagleri*, 341
- Riparia riparia*, 5
 - riparia riparia*, 5
- riparia*, *Hirundo*, 5
 - Riparia*, 5
 - Riparia riparia*, 5
- ripleyi*, *Neocrex colombianus*, 627
 - Neocrex columbianus*, 627
- rivularis*, *Basileuterus*, 325, 327
- rixosus*, *Machetornis*, 637
 - Tyrannus*, 637
- Robin*, *Clay-colored*, 137
 - Mountain*, 140
 - Pale-vented*, 135
 - Sooty*, 142
 - White-throated*, 130
- roscoe*, *Geothlypis trichas*, 296
 - Sylvia*, 296
- rosea*, *Rhodinocichla*, 483
- ruber*, *Eudocimus*, 626
- rubica*, *Habia*, 462
- rubiginosa*, *Dendroica petechia*, 263
 - Motacilla*, 263
- rubra*, *Fringilla*, 452
 - Piranga*, 452
 - Piranga rubra*, 452
 - Scolopax*, 626
- rubrifrons*, *Heterospingus xanthopygius*, 476
 - Tachyphonus*, 476
- rufa*, *Tangara*, 469
- rufalbus*, *Thryophilus*, 78
 - Thryothorus*, 78
- rufescens*, *Ardea*, 625
 - Egretta*, 625
- ruficapilla*, *Sylvia*, 254
 - Vermivora*, 253, 254
- ruficollis*, *Hirundo*, 36
 - Stelgidopteryx*, 36
- rufidorsalis*, *Arremon*, 601
 - Arremon aurantiostris*, 601
- rufifrons*, *Basileuterus*, 321
 - Setophaga*, 321
- rufiventris*, *Rhamphocaenus melanurus*, 183
 - Scolopacinus*, 183
- rufivertex*, *Euphonia*, 398
 - Euphonia anneae*, 398

- rufociliatus, Troglodytes, 106
 rufus, Tachyphonus, 469
Ruiseñor del monte, 99
 russatus, Catharus aurantiirostris, 161
 Catharus griseiceps, 161
 rustica, Haplospiza, 581
 Hirundo, 13
 Hirundo erythrogaster, 13
 ruticilla, Motacilla, 306
 Setophaga, 306
 rutilus, Thryothorus, 99
- Sabrewing, Violet, 507
 salicicola, Catharus fuscescens, 152
 Hylocichla fuscescens, 152
Saltador cabecinegro, 530
 gargantianteado, 532
 pechirayado, 536
Saltapared de ciénaga, 66
Saltarin cuelliblanco, 637
 Saltator albicollis, 536
 albicollis furax, 537
 albicollis isthmicus, 537
 albicollis melicus, 539
 albicollis perstriatus, 541
 albicollis scotinus, 538
 albicollis speratus, 540
 albicollis striatipictus, 540
 atriceps, 530
 atriceps lacertosus, 530
 intermedius, 534
 isthmicus, 537
 lacertosus, 530
 magnoides, 534
 maximus, 532
 maximus intermedius, 534
 maximus iungens, 535
 maximus magnoides, 534
 striatipictus, 537, 540
 striatipictus furax, 537
 striatipictus speratus, 540
 Saltator, Black-headed, 530
 Buff-throated, 532
 Streaked, 536
 salvini, Oryzoborus, 576
 Sporophila angolensis, 576
 salvinii, Icterus, 371
 Icterus mesomelas, 371
- sanctaemarthae, Rhamphocaenus me-
 lanurus, 186
 sandvicensis, Thalasseus, 633
 sandwichensis, Ammodramus, 606
 Emberiza, 606
Sangretoro común, 440
 negro, 444
 sanguineus, Pteroglossus, 635
 sanguinolenta, Phlogothraupis, 450
 sanguinolentus, Ramphocelus, 450
 saturatus, Pitylus grossus, 544
 savannarum, Ammodramus, 606
 Fringilla, 606
 Scaphidura oryzivora, 339, 344, 349, 353
 scapularis, Caryothraustes canadensis,
 542
 Pitylus poliogaster, 542
 schistacea, Sporophila, 563
 Sporophila schistacea, 563
 schistaceigula, Polioptila, 182, 487
 schottii, Thryophilus, 90
 Thryothorus nigricapillus, 90
 sclateri, Thryothorus, 101
 Scolopacidae, 629
 Scolopacinus rufiventris, 183
 Scolopax incana, 629
 rubra, 626
 scotinus, Saltator albicollis, 538
 Seed-finch, Great-billed, 578
 Lesser, 575
 Seedeater, Blue, 579
 Ruddy-breasted, 573
 Slate-colored, 563
 Variable, 566
 White-collared, 564
 Yellow-bellied, 571
 Seiurus aurocapillus, 284
 aurocapillus aurocapillus, 285
 aurocapillus canivirens, 285
 aurocapillus furvior, 286
 motacilla, 288
 noveboracensis, 270, 286
 semibadius, Thryothorus, 92
 semicervinus, Basileuterus, 329
 Basileuterus fulvicauda, 329
 semicollaris, Sporophila, 570
 semiflava, Geothlypis, 298
Semillero azulado, 533
 pintado, 554

- semitorquatus, *Microbates cinereiventris*, 187
 Ramphocaenus, 187
 serripennis, *Hirundo*, 37
 Stelgidopteryx ruficollis, 37
 Setophaga aurantiaca, 309
 miniata, 308
 rufifrons, 321
 ruticilla, 306
 torquata, 311
 Shearwater, Manx, 624
 Shrike-vireo, Green, 204
 Yellow-browed, 208
 Sicalis flaveola, 583
 flaveola flaveola, 583
 luteola, 584, 609
 luteola eisenmanni, 584, 609
 Silky-flycatcher, Long-tailed, 171
 simplex, *Phaetusa*, 632
 Sterna, 632
 simulans, *Carothraustes canadensis*, 543
Sinsonte del caribe, 124
 Siskin, Yellow-bellied, 618
 Smaragdolanus eximius, 208
 pulchellus, 204
 pulchellus verticalis, 205
 pulchellus viridiceps, 207
 Solitaire, Black-faced, 167
 Varied, 169
 solitaria, *Muscicapa*, 214
Solitario carinegro, 167
 variado, 169
 solitarius, *Vireo*, 214
 solstitialis, *Troglodytes*, 105
 sonorana, *Dendroica petechia*, 264, 265
 spadix, *Pheugopedius*, 95
 Thryothorus, 95
 Sparrow, Black-striped, 603
 Grasshopper, 606
 House, 196
 Lincoln's, 615
 Orange-billed, 599
 Rufous-collared, 611
 Savannah, 606
 White-crowned, 615
 speciosa, *Compsothlypis pitiayumi*, 257
 Parula pitiayumi, 257
 speratus, *Saltator albicollis*, 540
 Saltator striatipictus, 540
 Spermophila aurita, 569, 570
 Spermophila—*Continued.*
 aurita chocoana, 569
 badiiventris, 568
 collaris, 569
 corvina, 568
 fortipes, 570
 hicksii, 569
 morelleti, 564
 schistacea, 563
 semicollaris, 570
 torqueola, 564
 Spheniscidae, 623
 Spheniscus mendiculus, 623
 Spinus psaltria, 619
 psaltria columbianus, 620
 psaltria crocea, 619
 Spiza, 2, 333
 americana, 332, 334, 360
 spiza, *Chlorophanes*, 516
 splendens, *Fringilla*, 557
 Geospiza jacarina, 557
 Spodiornis barrilesensis, 581
 spodocephala, *Eucometis*, 479
 Sporophila americana, 566
 americana aurita, 570
 americana corvina, 568
 americana hicksii, 569
 americana hoffmanni, 569
 angolensis, 575
 angolensis ochrogyne, 577
 angolensis salvini, 576
 crissalis, 563
 hoffmanni, 569
 maximiliani, 578
 maximiliani loftini, 578
 maximiliani nuttingi, 579
 minuta, 573
 minuta centralis, 573
 minuta minuta, 574
 nigricollis, 571
 nigricollis nigricollis, 571
 schistacea, 563
 schistacea schistacea, 563
 torqueola morelleti, 564
 spurius, *Icterus*, 365, 376
 Icterus spurius, 365
 Oriolus, 365
 squamulatus, *Microcerculus*, 123
 Starling, Common, 196
 Stelgidopteryx ruficollis, 36

Stelgidopteryx—Continued.

- ruficollis aequalis, 41
- ruficollis decolor, 39
- ruficollis psammochroa, 38
- ruficollis psammochrous, 38
- ruficollis serripennis, 37
- ruficollis uropygialis, 39
- Sterna elegans*, 633
- philadelphia, 632
- simplex, 632
- superciliaris, 633
- stictothorax, *Eucometis penicillata*, 479
- Eucometis spodocephala*, 479
- stolzmanni, *Hirundo*, 11
- Tachycineta*, 11
- striata, *Dendroica*, 282
- Muscicapa*, 282
- striaticeps, *Arremonops conirostris*, 604
- Embernagra*, 604
- striatipectus, *Saltator albicollis*, 540
- striatipictus, *Saltator*, 537, 540
- strictocollaris, *Arremon aurantirostris*, 602
- Sturnella magna*, 379
- magna subulata, 379
- neglecta, 380
- Sturnidae*, 196
- Sturnus holosericeus*, 353
- vulgaris, 196
- subflavescens, *Cyclarhis gujanensis*, 200
- Cyclorhis*, 200
- subis, *Hirundo*, 24
- Progne*, 22
- Progne subis*, 24
- subpallidus, *Catharus fuscescens*, 150
- subulata, *Sturnella magna*, 379
- sulcirostris, *Crotophaga*, 360
- superciliaris, *Polioptila*, 180
- Polioptila plumbea*, 180
- Sterna*, 633
- swainsoni, *Catharus ustulatus*, 147
- Turdus*, 147
- Gampsonyx*, 626
- Swallow, *Bank*, 5
- Barn, 13
- Blue-and-white, 32
- Cave, 18
- Cliff, 14
- Mangrove, 8
- Rough-winged, 36

Swallow—Continued.

- Tree, 7
- Violet-green, 11
- White-thighed, 29
- Swallow-tanager, 388
- Sylvia agilis*, 290
- castanea, 280
- cerulea, 275
- discolor, 284
- formosa, 289
- magnolia, 269
- occidentalis, 275
- peregrina, 252
- philadelphia, 291
- pitiayumi, 256
- roscoe, 296
- ruficapilla, 254
- tolmiei, 293
- townsendi, 273
- Sylvicola decurtata*, 229
- Sylviidae*, 177
- tacarcunae, *Atlapetes torquatus*, 593
- Basileuterus*, 315
- Basileuterus tristriatus*, 315
- Buarremon atricapillus*, 593
- Chlorospingus*, 494
- tachina, *Petrochelidon lunifrons*, 17
- Petrochelidon pyrrhonota*, 17
- Tachycineta albilinea*, 8
- albilinea rhizophorae, 11
- bicolor, 7
- lepida, 11
- stolzmanni, 11
- thalassina, 11
- thalassina lepida, 11
- Tachyphonus cassinii*, 482
- chrysomelas, 489
- delatrii, 458, 473
- luctuosus, 470
- luctuosus axillaris, 472
- luctuosus nitidissimus, 471
- luctuosus panamensis, 473
- nitidissimus, 471
- rubrifrons, 476
- rufus, 469
- tibialis, 586
- xanthopygius, 477
- Tanager, Bay-headed, 426

Tanager—*Continued.*

- Black-and-yellow, 487
 - Blue-and-gold, 434
 - Blue-gray, 435
 - Carmiol's, 458
 - Common Bush-, 490
 - Crimson-backed, 440
 - Crimson-collared, 450
 - Dusky-faced, 481
 - Emerald, 411
 - Flame-colored, 455
 - Golden-hooded, 417
 - Gray-and-gold, 422
 - Gray-headed, 478
 - Hepatic, 451
 - Lemon-browed, 461
 - Palm, 439
 - Pirre Bush-, 495
 - Plain-colored, 423
 - Red-crowned Ant-, 462
 - Red-throated Ant-, 463, 464
 - Rosy Thrush-, 483
 - Rufous-winged, 429
 - Scarlet-rumped, 444
 - Scarlet, 453
 - Silver-throated, 414
 - Sooty-capped Bush-, 497
 - Spangle-cheeked, 431
 - Speckled, 412
 - Sulphur-rumped, 474
 - Summer, 452
 - Swallow-, 388
 - Tacarcuna Bush-, 494
 - Tawny-crested, 473
 - Western, 454
 - White-lined, 469
 - White-shouldered, 470
 - White-throated, 467
 - White-winged, 457
 - Yellow-rumped, 448
 - Yellow-backed, 486
 - Yellow-throated Bush-, 496
- Tanagra albirostris*, 442
- caerulescens*, 549
 - cana dilucida*, 437
 - cvanea*, 553
 - diaconus*, 437
 - diminuta*, 399
 - episcopus*, 435
 - gouldi*, 404

Tanagra—*Continued.*

- gouldi praetermissa*, 404
 - gujanensis*, 198
 - imitans*, 405
 - ludoviciana*, 454
 - maxima*, 532
 - penicillata*, 478
- Tanagra capuchiazul*, 393
- cejidorada*, 391
 - copetileonada*, 397
 - coronimanchada*, 405
 - espaldioliva*, 404
 - gargantiamarilla*, 409
 - ventriamarillosa*, 402
 - ventrinaranja*, 395
- Tangara cana*, 437
- dowii*, 431
 - dowii dowii*, 432
 - dowii fucosa*, 433
 - florida*, 411
 - florida auriceps*, 411
 - fucosus*, 433
 - guttata*, 412
 - guttata eusticta*, 412
 - gyrola*, 426
 - gyrola bangsi*, 427
 - gyrola delecticia*, 428
 - icterocephala*, 414
 - icterocephala frantzii*, 415
 - icterocephala icterocephala*, 417
 - icterocephala oresbia*, 416
 - inornata*, 423
 - inornata languens*, 425
 - inornata rava*, 424
 - larvata*, 417
 - larvata centralis*, 419
 - larvata fanny*, 421
 - larvata francescae*, 419, 420
 - larvata franciscae*, 419, 420
 - lavinia*, 429
 - lavinia cara*, 430
 - lavinia dalmasi*, 430
 - lavinia lavinia*, 431
 - nigrocincta*, 418
 - olivacea*, 453
 - palmeri*, 422
 - rufa*, 469
- Tangara alirrojo*, 429
- azulejo*, 435
 - azulejo alinegro*, 439

Tangaro—Continued.

- cabeciamarillo*, 414
- cabecibayo*, 426
- capuchidorado*, 417
- carirrayado*, 431
- esmeraldino*, 41 1
- inadornado*, 423
- oriazul*, 434
- origris*, 422
- salpicado*, 412
- Tangavius, 360
- Tapera naevia, 77, 79
 - naevia excellens, 77, 79
- tapera, Progne, 27
 - Progne tapera, 29
- Tattler, Wandering, 629
- Tern, Elegant, 633
 - Large-billed, 632
 - Royal, 633
 - Sandwich, 633
 - Yellow-billed, 633
- Tersina viridis, 388
 - viridis occidentalis, 388
- testacea, Piranga, 451
 - Piranga flava, 451
- Thalasseus elegans, 633
 - maximus, 633
 - sandvicensis, 633
- thalassina, Tachycineta, 11
- thoracicus, Thryothorus, 81, 84
- Thraupidae, 2, 382
- Thraupis episcopus, 435
 - episcopus cana, 435, 437
 - episcopus caesita, 438
 - episcopus cumatilis, 438
 - episcopus diaconus, 435
 - palmarum, 436, 439
 - palmarum atripennis, 439
 - palmarum melanoptera, 440
 - virens, 438
 - virens caesita, 438
 - virens cumatilis, 438
- Thrush, Black-billed Nightingale-, 163
 - Black-headed Nightingale-, 152
 - Gray-cheeked, 148
 - Orange-billed Nightingale-, 160
 - Ruddy-capped Nightingale-, 158
 - Slaty-backed Nightingale-, 154
 - Swainson's, 144
 - Wood, 143
- Thrush-tanager, Rosy, 483
- Thryophilus castaneus, 87
 - costaricensis, 86
 - galbraithi, 71
 - galbraithi conditus, 71
 - leucopogon, 83
 - leucopogon griseus, 83
 - modestus, 75
 - modestus elutus, 75
 - nigricapillus, 90, 91
 - nigricapillus connectens, 90
 - nigricapillus relictus, 91
 - rufalbus, 78
 - rufalbus castanonotus, 78
 - schottii, 90
 - zeledoni, 73
- Thryorchilus, 109
- Thryothorus atrogularis, 94, 96
 - castaneus, 88
 - fasciatoventris, 96
 - fasciatoventris albigularis, 98
 - fasciatoventris melanogaster, 97
 - galbraithii, 69
 - hyperythrus, 99
 - leucotis, 68
 - leucotis conditus, 71
 - leucotis galbraithii, 69
 - leucopogon, 83
 - leucopogon griseus, 83
 - maculipictus, 101
 - melanogaster, 97
 - modestus, 72
 - modestus elutus, 75
 - modestus zeledoni, 73
 - nigricapillus, 85, 94
 - nigricapillus castaneus, 88
 - nigricapillus costaricensis, 86
 - nigricapillus odicus, 87
 - nigricapillus relictus, 91
 - nigricapillus schottii, 90
 - rufalbus, 78
 - rufalbus castanonotus, 78
 - rutilus, 99
 - rutilus hyperythrus, 99
 - sclateri, 101
 - semibadius, 92
 - spadix, 95
 - thoracicus, 81, 84
- Tiaris olivacea, 559
 - olivacea dissita, 561

Tiaris—*Continued.*

- olivacea pusilla, 561
- olivacea ravidia, 562
- pusillus, 561

tibialis, Neochelidon, 29

tibialis, Pheucticus chrysopheplus, 546

Pselliophorus, 586

Tachyphonus, 586

tigrina, Dendroica, 271

Motacilla, 271

Tinamidae, 623

Tinamou, Chocó, 623

titanota, Chrysothlypis chrysomelas, 489

Tórtola torcaza, 634

toddi, Basileuterus fulvicauda, 328

Passerina cyanoides, 549

Todus plumbeus, 178

tolimensis, Mimus gilvus, 124

tolmiei, Oporornis, 293

Oporornis tolmiei, 293

Sylvia, 293

torquata, Embernagra, 591

Setophaga, 311

torquatus, Atlapetes, 591

Myioborus, 311

Pteroglossus, 635

Pteroglossus torquatus, 635

Ramphastos, 635

torqueola, Sporophila, 564

Tortolita grisácea, 634

Toucanet, Blue-throated, 174

townsendi, Sylvia, 273

Dendroica, 273

Trichas brachidactylus, 295

trichas, Geothlypis, 294, 299

Turdus, 294

Triglyphidia callophrys, 391

Tringa pugnax, 630

tristriatus, Basileuterus, 313

Myiodiotes, 313

Troglodytes aedon, 101

aedon carychrous, 104

aedon inquietus, 102

aedon intermedius, 103, 104

browni, 108

browni browni, 108

inquietus, 102

leucophrys, 116

musculus, 102

Troglodytes—*Continued.*

ochracea, 105, 106

ochraceus remotus, 106

rufociliatus, 106

solstitialis, 105

solstitialis festinus, 107

solstitialis ligea, 106

Troglodytidae, 2, 55

tropaea, Henicorhina prosthaleuca, 111

Turdidae, 128

turdinus, Campylorhynchus, 60

Turdus albicollis, 130

albicollis cnephus, 131

albicollis coibensis, 133

albicollis daguae, 134

assimilis, 133

assimilis coibensis, 133

aurantiirrostris, 160

daguae, 134

fumigatus, 135, 136

fumigatus obsoletus, 135

fuscescens, 150

grayi, 137

grayi casius, 137

hauxwelli, 136

migratorius, 128, 131, 138

minimus, 148

motacilla, 288

mustelinus, 143

nigrescens, 142

obsoletus, 135, 136

plebejus, 140

plebejus plebejus, 140

swainsoni, 147

trichas, 294

ustulatus, 146

virens, 301

wilsonii, 147

typhicola, Geothlypis trichas, 296

Tyrannidae, 637

Tyrannus rixosus, 637

Tyrant, Cattle, 637

ultramarina, Dacnis, 520

Dacnis cayana, 518, 520

uropygialis, Cacicus, 349

Cacicus uropygialis, 350

Cassicus, 349

Cotyle, 39

uropygialis—*Continued.*

Stelgidopteryx ruficollis, 39
Urraca corona azul, 50
 garganta de plata, 48
 ustulata, Hylocichla, 145
 ustulatus, Catharus, 144
 Catharus ustulatus, 146
 Turdus, 146

Vaquero brillante, 361
 bronceado, 358
 gigante, 355
 varia, Mniotilta, 246
 Motacilla, 246
 varians, Ramphocelus flammigerus, 449
 Veery, 149
 venezuelanus, Chlorospingus ophthalmicus, 491
 venusta, Dacnis, 522
 Dacnis venusta, 524
 veraguensis, Basileuterus leucopygius, 328
 Diglossa plumbea, 505, 506
Verdecillo coronileonado, 234
 frontidorado, 231
 menor, 228
 rastrojero, 237
 Vermivora chrysoptera, 250
 gutturialis, 254
 peregrina, 252
 pinus, 251
 ruficapilla, 253, 254
 vermivora, Motacilla, 249
 vermivorus, Helmitheros, 249
 verticalis, Smaragdolanus pulchellus, 205
 Vireolanus pulchellus, 205
 viguieri, Dacnis, frontispiece, 521
 vinacea, Habia rubica, 462
 Phaenicothraupis, 462
 vincens, Euphonia musica, 394
 violacea, Euphonia, 409
 violea, Cassidix oryzivora, 355
 virens, Dendroica, 274
 Icteria, 301
 Icteria virens, 301
 Motacilla, 274
 Thraupis, 438
 Turdus, 301

Vireo altiloquus, 221
 altiloquus altiloquus, 223
 altiloquus barbatulus, 222
 carmioli, 211
 chivi, 219
 flavifrons, 213
 flavoviridis, 217
 flavoviridis flavoviridis, 217
 flavoviridis forreri, 219, 220
 flavoviridis insulanus, 219, 220
 gilvus, 225
 gilvus chiriquensis, 226
 gilvus disjunctus, 228
 gilvus dissors, 227
 griseus, 210
 griseus noveboracensis, 210
 insulanus, 217
 leucophrys, 225
 olivaceus, 215
 olivaceus caniviridis, 217
 olivaceus olivaceus, 216
 philadelphicus, 223
 solitarius, 214
Vireo aliamarillo, 211
 barbinegro, 221
 de capucha chocolate, 225
 de Filadélfia, 223
 gargantiamarillo, 213
 ojiblanco, 210
 ojirrojo, 215
 solitario, 214
 verdiamarillo, 217
 Vireo, Black-whiskered, 221
 Green Shrike-, 204
 Philadelphia, 223
 Red-eyed, 215
 Solitary, 214
 Warbling, 225
 White-eyed, 210
 Yellow-browed Shrike-, 208
 Yellow-green, 217
 Yellow-throated, 213
 Yellow-winged, 211
 Vireolaniidae, 2, 196
 Vireolanus eximius, 208
 eximius mutabilis, 208
 pulchellus, 204
 pulchellus verticalis, 205
 pulchellus viridiceps, 207
 Vireonidae, 2, 196

- Vireosylva flavoviridis*, 217
 josephae, 226
 josephae chiriquensis, 226
 philadelphica, 223
viridicata, *Arremonops conirostris*, 605
viridicatus, *Arremonops conirostris*, 605
viridiceps, *Smaragdolanus pulchellus*, 207
 Vireolanus pulchellus, 207
viridiflavus, *Hylophilus*, 238
 Hylophilus flavipes, 238
viridis, *Tersina*, 388
vitellinus, *Cacicus*, 346
 Cacicus cela, 346
vociferus, *Psilorhinus morio*, 44
Volatinia, 557, 558
vulcani, *Junco*, 609
 Zonotrichia, 609
vulgaris, *Sturnus*, 196

wagleri, *Cacicus*, 341
 Psarocolius, 341, 422
 Zarhynchus, 341
Warbler, Bay-breasted, 280
 Black-and-white, 246
 Black-cheeked, 318
 Black-throated Blue, 271
 Black-throated Green, 274
 Blackburnian, 276
 Blackpoll, 282
 Blue-winged, 251
 Brewster's, 252
 Buff-rumped, 325
 Canada, 305
 Cape May, 271
 Cerulean, 275
 Chestnut-sided, 278
 Connecticut, 290
 Flame-throated, 254
 Golden-winged, 250
 Golden-crowned, 316
 Hermit, 275
 Hooded, 302
 Kentucky, 289
 Macgillivray's, 293
 Magnolia, 269
 Mourning, 291
 Warbler—Continued.
 Nashville, 254
 Palm, 283
 Prairie, 284
 Prothonotary, 248
 Rufous-capped, 321
 Tennessee, 252
 Three-striped, 313
 Townsend's, 273
 Wilson's, 303
 Worm-eating, 249
 Yellow, 259
 Yellow-rumped, 271
 Yellow-throated, 278
Waterthrush, Louisiana, 288
 Northern, 286
Waxwing, Cedar, 193
wetmorei, *Catharus frantzii*, 158
willisi, *Habia fuscicauda*, 465
Wilsonia canadensis, 305
 citrina, 302
 pusilla, 303
 pusilla chryseola, 304
 pusilla pileolata, 304
 pusilla pusilla, 305
wilsonii, *Merula*, 147
 Turdus, 147
Wood-wren, Gray-breasted, 114
 White-breasted, 110
Wren, Band-backed, 64
 Bay, 85
 Black-bellied, 96
 Black-throated, 94
 Buff-breasted, 68
 Gray-breasted Wood-, 114
 House, 101
 Mountain, 105
 Plain, 72
 Riverside, 92
 Rufous-and-white, 78
 Rufous-breasted, 99
 Sedge, 66
 Song, 117
 Sooty-headed, 95
 Stripe-breasted, 81
 Stripe-throated, 83
 Timberline, 108
 Whistler, 121
 White-breasted Wood-, 110
 White-headed, 60

- Xanthocephalus xanthocephalus*, 377
xanthocephalus, *Xanthocephalus*, 377
 Icterus, 377
xanthogaster, *Euphonia*, 395
xanthogastra, *Carduelis*, 618
 Carduelis xanthogastra, 618
 Chrysomitris, 618
xanthopygius, *Heterospingus*, 474
 Heterospingus xanthopygius, 477
 Tachyphonus, 477
xerampelinus, *Pheugopedius spadix*, 95
xuthus, *Hylophilus flavipes*, 241
- Yellow-finch, Grassland 584
Yellow-throat, Common, 294
 Gray-crowned, 299
 Masked, 296
 Olive-crowned, 298
- Zacatero mixto*, 615
Zarapito piquilargo, 630
Zarhynchus wagleri, 341
 wagleri ridgwayi, 341
zeledoni, *Cyanocorax affinis*, 45
 Thryophilus, 73
 Thryothorus modestus, 73
- Zeledonia*, 330
Zeledonia, 330
Zeledonia coronata, 330
Zeledoniidae, 2, 330
Zenaida auriculata, 634
 macroura, 609
zonatus, *Campylorhynchus*, 64
 Heleodytes, 64
Zonotrichia capensis, 611
 capensis costaricensis, 611
 capensis oresteria, 611
 leucophrys, 615
 lincolnii, 615
 lincolnii lincolnii, 615
 vulcani, 609
Zorzal cabecinegro, 152
 cabecirrojo, 158
 carigris, 148
 de Swainson, 144
 lomo oscuro, 149
 pechimanchado, 143
 pico anaranjado, 160
 piquinegro, 163
 pizarreño, 154

3 9088 00008 4913
SMITHSONIAN INSTITUTION LIBRARIES

ISBN 0-87474-956-5