New Records of Fishes from the Western Caribbean

Ray S. Birdsong and Alan R. Emery

Increasing interest in the inadequately studied Central American marine fish fauna warrants the documentation of certain of the new range records that have accumulated in the Institute of Marine Sciences, University of Miami, fish collection during the past several years. The material reported here is derived from two expeditions to the area, one by Walter A. Starck II in 1961 and the other by the senior author in 1966. Starck's collections include 28 stations in Yucatan and British Honduras and the senior author's include 10 stations from Courtown and Albuquerque Cays near Nicaragua. These collections are comprised of about 209 species in 860 lots. New records have been reported only for species for which recent authoritative ranges are available. The list of species probably contains new records of which we are unaware.

The catalog numbers given below are all from the Institute of Marine Sciences, University of Miami (=UMML) and are followed by the number of specimens and the range of standard lengths in parentheses. Material examined is given only for new records, but all the species listed are cataloged in the museum at the Institute of Marine Sciences, University of Miami.

Collection Areas

Collections were made in a variety of habitats but primarily on patch reefs and reef top areas. Most of the collections were made with rotenone derivations and small multibarb spears. Those made at Courtown and Alburquerque Cays were made in tidepools, on patch reefs within the atoll lagoons and on the inner edge of the barrier reefs in depths to eight meters. The ecology of these reefs is discussed by Milliman et al., in press. Collections in Yucatan were made at Cozumel Island and Banco Chinchorro. At Cozumel, stations were made on coral reefs to 25 meters, on patch reefs, beaches, in a salt pond, and a cave. At Banco Chinchorro, poison stations were made on patch reefs and beds of *Thalassia*. In one case a small trawl and cast net were also used. Collections in

British Honduras were made at Belize, Turneffe Island, and Lighthouse Reef. These included stations in mangrove habitats, but most were made on rocky shores, patch reefs, and beds of *Thalassia* in shallow water. Collection areas are shown in Fig. 1.

LIST OF NEW RECORDS

The following list of species includes those which are new distributional records. For each, the material examined is noted and the previously reported range recorded.

LABRIDAE

Halichoeres garnoti (Valenciennes). Nicaragua: Albuquerque Cays, UMML 23096 (9 specimens, 43.6 mm—101 mm SL). British Honduras: Turneffe Island, 10312 (1, 15.0), 9842 (1, 21.5); Lighthouse Reef, 9277 (4, 28.2—48.2), 9473 (1, 51.7). Yucatan: Cozumel Island, 9515 (2, 36.0—54.5); Banco Chinchorro, 9636 (4, 24.3—35.5). Reported previously from Bermuda, Florida. Bahamas, Greater and Lesser Antilles, Venezuela to Brazil (Randall and Böhlke, 1965, p. 252; Cervigón, 1966, p. 606).

Halichoeres maculipinna (Müller and Troschel). Nicaragua: Albuquerque Cays, 23082 (1, 53.8), 23080 (2, 50.0, 63.5); Courtown Cays, 23078 (24, 25.0—97.7), 23079 (11, 32.9—74.5), 23083 (1, 33.3), 23081 (1, 31.5); Yucatan: Cozumel Island, 9205 (1, 43.3), 9712 (1, 18.5); Banco Chinchorro, 9307 (2, 23.9—25.8), 9394 (3, 16.2—28.8), 9750 (1, 23.1). Recorded from North Carolina to Florida, Bermuda, Bahamas, Greater and Lesser Antilles, Venezuela to Brazil (Randall and Böhlke, 1965, p. 241; Cervigón, 1966, p. 605).

Halichoeres poeyi (Steindachner). British Honduras: Lighthouse Reef, 11457 (1, 35.9). Reported from Florida, the Bahamas, Greater and Lesser Antilles, and Brazil (Randall and Böhlke, 1965, p. 250).

GOBIIDAE

Lythrypnus elasson Böhlke and Robins. Yucatan: Cozumel Island, 9524 (7, 10.5—12.5). Previously reported only from the Bahamas (Böhlke and Robins, 1960, p. 79).

Quisquilius hipoliti (Metzelaar). Nicaragua: Albuquerque Cays, 23094 (1, 18.0), 23093 (1, 13.2), 23095 (4, 13—19); British Honduras: Turneffe Island, 9572 (1, 18.5), 9802 (4, 11.1—19.3), Lighthouse Reef, 9419 (1, 10.3), 9463 (4, 9.4—14.0); Yucatan: Cozumel Island, 9218 (2, 9—12), 9706 (4, 9.8—18.3), 9519 (9, 10—19.5), Banco Chinchorro, 9620 (6, 9.0—15.5), 9369 (1, 13.0). Reported from Florida, the Bahamas, Puerto Rico, Lesser Antilles, and Venezuela (Böhlke and Robins, 1960, p. 88; Cervigón, 1966, p. 748).

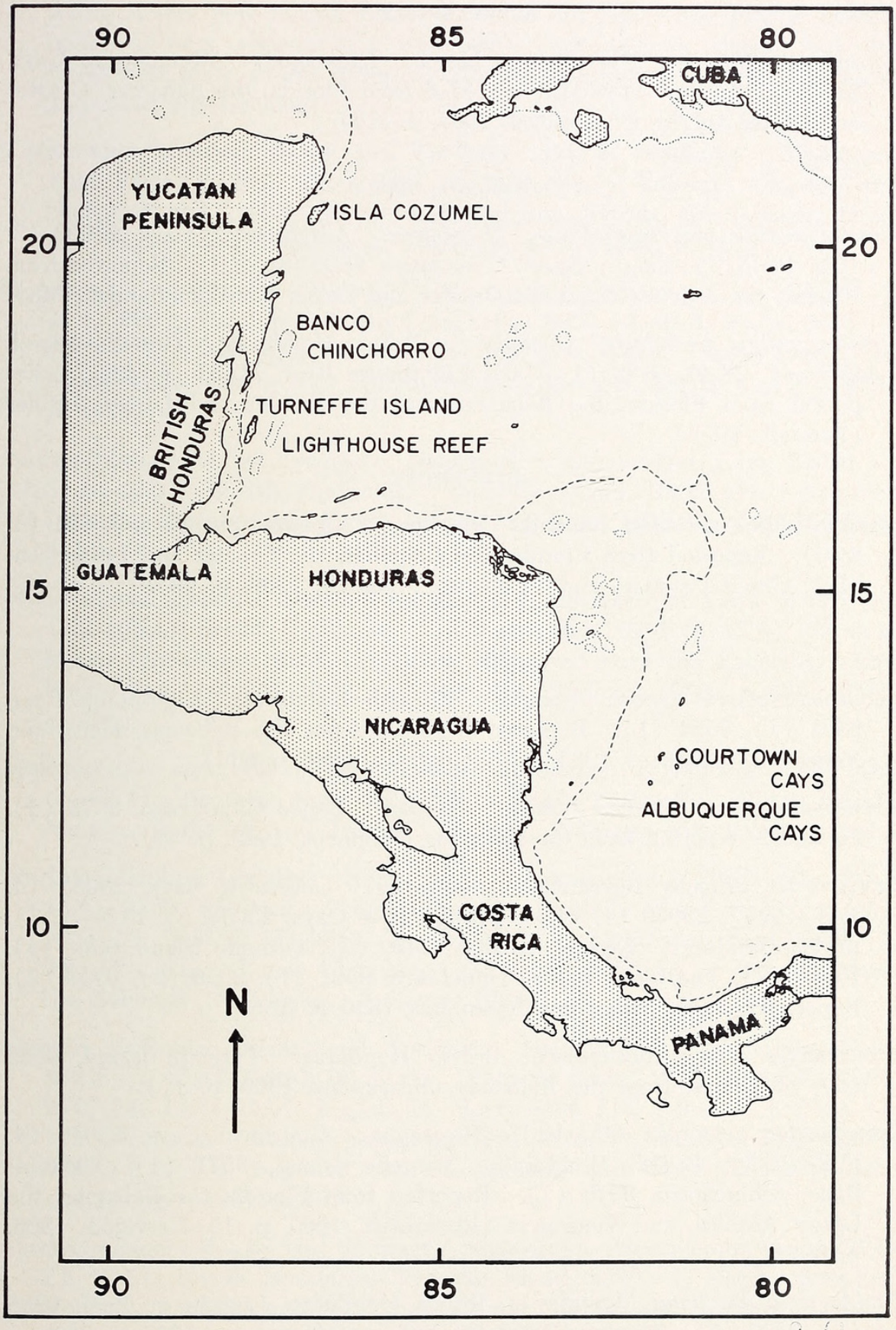

Fig. 1. Map of collection area. Nicaragua (Albuquerque and Courtown Cays) 10 collections; British Honduras (Turneffe Island, Belize, Lighthouse Reef) 13 collections; Yucatan (Cozumel Island and Banco Chinchorro) 15 collections.

SCORPAENIDAE

Scorpaena albifimbria Evermann & Marsh. Nicaragua: Albuquerque Cays, 23062 (1. 36.0). Previously recorded from Florida, the Bahamas, Greater and Lesser Antilles (Eschmeyer, 1965, p. 118).

OPISTHOGNATHIDAE

Opisthognathus maxillosus Poey. Nicaragua: Albuquerque Cays, 23092 (2, 75.0, 103.5); Yucatan: Banco Chinchorro, 9300 (1, 28.6). Reported from Florida, the Bahamas, and the Greater and Lesser Antilles (Randall, MS).

Opisthognathus whitehursti (Longley). British Honduras: Turneffe Island, 9860 (1, 28.4), 9839 (1, 33.6), Lighthouse Reef, 11463 (1, 42.2). Reported from Florida, the Bahamas, and the Greater and Lesser Antilles (Randall, MS).

BLENNIIDAE

Hypleurochilus springeri Randall. Nicargua: Albuquerque Cays, 23091 (1, 21.6). Reported from Florida, the Bahamas, the Greater and Lesser Antilles, Grand Cayman, and Venezuela (Randall, 1966, p. 66).

CLINIDAE

Acanthemblemaria aspera (Longley). British Honduras: Lighthouse Reef, 9481 (1), 9554 (1). Reported from Tortugas, the Bahamas, Haiti, and Venezuela (Stephens, 1963, p. 35; Cervigón, 1966, p. 689).

Acanthemblemaria chaplini Böhlke. Yucatan: Banco Chinchorro, 9375 (1). Previously reported from the Bahamas (Stephens, 1963, p. 34).

Enneanectes altivelis Rosenblatt. Nicaragua: Courtown Cays, 23055 (4, 11.5—24.7), 23059 (1, 21.0), Albuquerque Cays, 23058 (3, 13.5—17.7); British Honduras: Lighthouse Reef, 9490 (3), Turneffe Island, 9566 (4), 10306 (2); Yucatan: Banco Chinchorro, 9361 (1), 9626 (2), 9795 (2). Reported from the Bahamas (Rosenblatt, 1960, p. 21).

Enneanectes atrorus Rosenblatt. British Honduras: Turneffe Island, 9852 (2). Reported from the Bahamas (Rosenblatt, 1960, p. 11).

Enneanectes pectoralis (Fowler). Nicaragua: Courtown Cays, 23049 (4, 11.2—16.5); British Honduras: Turneffe Island, 9571 (1); Yucatan: Banco Chinchorro, 9370 (1). Reported from Florida, the Bahamas, the Lesser Antilles, and Venezuela (Rosenblatt, 1960, p. 15; Cervigón, 1966, p. 681).

Emblemaria diaphana (Longley). British Honduras: Lighthouse Reef, 9285 (1), 9499 (1). Reported from the Bahamas (Stephens, 1963, p. 94).

Emblemaria bahamensis (Stephens). Nicaragua: Albuquerque Cays, 23051 (1, 16.0). Reported from the Bahamas (Stephens, 1963, p. 94). The

status of one new record included here is not clear: *Emblemaria bahamensis* may be a synonym of *E. diaphana* (Stephens, pers. comm.), but both forms were taken in this series of collections, previously having been known only from the Bahamas.

Labrisomus haitiensis Beebe and Tee-Van. British Honduras: Lighthouse Reef, 9492 (2, 34.0, 35.6), 9412 (3, 29.0—38.5); Yucatan: Banco Chinchorro, 9646 (3, 32.6—37.0). Reported from Florida, the Bahamas, Haiti, and Virgin Islands (Springer, 1959a, p. 430; 1959b, p. 291).

Labrisomus nigricinctus (Rivero). Nicaragua: Courtown Cays, 23052 (2, 41.1, 45.6); Yucatan: Banco Chinchorro, 9350 (2, 41.3, 44.2), 9298 (1, 40.8). Reported from Florida, the Bahamas, Cuba, Virgin Islands, Jamaica, Haiti, Puerto Rico, and Barbados (Springer, 1959a, p. 439; 1959b, p. 291).

Malacoctenus boehlkei Springer. Nicaragua: Albuquerque Cays, 23050 (3, 31.1—45.3); British Honduras: Turneffe Island, 9865 (1). Reported from the Bahamas and Virgin Islands (Springer, 1959a, p. 444; 1959b, p. 291).

Malacoctenus erdmani Smith. Nicaragua: Albuquerque Cays, 23087 (3, 17.3—25.4); British Honduras: Lighthouse Reef, 9467 (1, 17.0); Yucatan: Banco Chinchorro, 9366 (1, 10.5). Reported from the Bahamas, Cuba, Puerto Rico, Jamaica, Haiti, and Barbados (Springer, 1959a, p. 448; 1959b, p. 291).

Malacoctenus versicolor (Poey). British Honduras: Lighthouse Reef, 9996 (1, 62.4). Reported from the Bahamas, Cuba, Puerto Rico, Virgin Islands, Jamaica, Barbados, and Tobago (Springer, 1959a, p. 456; 1959b, p. 271).

Starksia atlantica Longley. Nicaragua: Courtown Cays, 23061 (9, 12.0—18.4), 23060 (1, 16.9); British Honduras: Turneffe Island, 10300 (1, 9.6), 9854 (6, 9.9—15.7), 9558 (7, 11.6—16.0), Lighthouse Reef, 9497 (1, 9.8); Yucatan: Banco Chinchorro, 9760 (2, 15.5, 16.2). Reported from the Bahamas (Böhlke and Springer, 1961, p. 34).

Starksia lepicoelia Böhlke and Springer. Nicaragua: Albuquerque Cays, 23048 (1, 17.6); British Honduras: Turneffe Island, 9837 (4, 14.9—26.6), 9546 (4, 16.3—22.9), Lighthouse Reef, 9474 (14, 9.9—24.1), 9411 (1, 16.4); Yucatan: Banco Chinchorro, 9340 (1, 14.7), 9629 (9, 14.0—22.7), 9755 (1, 17.6). Reported from the Bahamas and Virgin Islands (Böhlke and Springer, 1961, p. 40).

Starksia nanodes Böhlke and Springer. Nicaragua: Albuquerque Cays, 23046 (1, 10.5); British Honduras: Turneffe Island, 9576 (1, 19.0). Reported from the Bahamas and the Virgin Islands (Böhlke and Springer, 1961, p. 44).

Starksia y-lineata Gilbert. Nicaragua: Courtown Cays, 23057 (1, 13.8). Reported from Grand Cayman Island (Gilbert, 1961, p. 1).

LIST OF SPECIES COLLECTED

The following list compiles all the species collected on the two expeditions. Some 209 species are listed; those listed as unidentified are referable to an undescribed species. A code follows each species name indicating the locations from which it was taken. Collections from Albuquerque and Courtown Cays off Nicaragua, are designated "A"; collections from Turneffe Island, Lighthouse Reef and Belize, British Honduras, are designated "B"; collections from Banco Chinchorro and Cozumel Island, Yucatan, are designated "C". Identifications of Yucatan and British Honduras material were largely made by C. R. Robins in 1961.

Abulidae; *Albula vulpes* (C). Moringuidae; *Moringua edwardsi* (A, B, C). Xenocongridae; *Chilorhinus suensoni* (A, C), *Kaupichthys atlanticus* (A, B). Muraenidae;*Echidna catenata* (B), *Enchelycore sp.* (A), *E. nigricans* (A), *Gymnothorax moringa* (A, B), *G. vicinus* (A, B), *Uropterygius diopus* (C). Congridae; *Ariosoma impressa* (C). Ophichthidae; *Ahlia egmontis* (A, B), *Myrichthys acuminatus* (A, B, C), *Myrophis punctatus* (B, C). Clupeidae; *Harengula humeralis* (A). Synodontidae; *Synodus synodus* (A, B, C). Myctophidae; *Diaphus dumerili* (A), *D. elucens* (A).

Batrachoididae; *Opsanus astrifer* (B). Gobiesocidae; *Acyrtops beryllinus* (B), *Acyrtus artius* (B, C), *Gobiesox punctulatus* (B), *Tomicodon fasciatus* (B). Antennariidae; *Antennarius scaber* (B). Ophidiidae; *Otophidium dormitator* (C), *Ogilbia* sp. (A, B, C), *Petrotyx sanguineus* (B, C). Belonidae; *Platybelone argalus* (A), *Strongylura notata* (B), *S. timucu* (B). Cyprinodontidae; *Cyprinodon veriegatus* (C), *Floridichthys carpio* (C), *Garmanella pulchra* (C). Poeciliidae; *Poecilia sphenops* (B). Atherinidae; *Allanetta harringtonensis* (C), *Atherinomorus stipes* (A, B). Holocentridae; *Holocentrus ascensionis* (A), *H. coruscus* (B, C), *H. marianus* (A). *H. rufus* (A, B,C), *H. vexillarius* (A, B, C), *Myripristis jacobus* (A, C), *Plectrypops retrospinis* (A, B, C). Aulostomidae; *Aulostomus maculatus* (A, B, C). Syngnathidae; *Corythoichthys brachycephalus* (B, C), *Syngnathus floridae* (C).

Scorpaenidae; *Scorpaena albifimbria* (A), *S. brasiliensis* (C), *S. calcarata* (B), *S. inermis* (C), *S. plumieri* (A), *Scorpaenodes caribbaeus* (A, B, C). Dactylopteridae; *Dactylopterus volitans* (C). Serranidae; *Alphestes afer* (A), *Cephalopholis fulva* (A, C), *Liopropoma rubre* (C), *Epinephalus adscensionis* (A), *E. guttatus* (A), *petrometopon cruentatum* (A, B, C), *Serranus tabacarius* (C), *S. tigrinus* (B, C). Grammistidae; *Pseudogrammus gregoryi* (A, B, C), *Rypticus brachyrhinus* (B), *R. saponaceus* (A), *R. subbifrenatus* (B, C). Grammidae; *Gramma loreto* (A, B, C), *G. melacara* (B). Priacanthidae; *Priacanthus cruentatus* (A). Apogonidae; *Apogon alutus* (C), *A. binotatus* (A, B), *A. conklini* (A, B, C), *A. lachneri* (A, B,C), *A. maculatus* (A, B, C), *A. pigmentarius* (A, B, C), *A. planifrons* (A, C), *A.* sp. (A, B), *A. quadrisquamatus* (A, C), *A. townsendi* (A, B, C). Carangidae; *Caranx bartholomaei* (A), *C. ruber*

(A). Lutjanidae; *Lutjanus apodus* (A, B, C), *L. griseus* (B), *L. mahogoni* (A). Gerreidae; *Eucinostomus argenteus* (B, C), *E. havana* (C), *Gerres cinereus* (B). Pomadasyidae; *Haemulon carbonarium* (A), *H. chrysargaereum* (A), *H. flavolineatum* (A, B, C), *H, parrai* (A, B), *H. plumieri* (A), *H. sciurus* (A). Sparidae; *Archosargus rhomboidalis* (B). Sciaenidae; *Bairdiella ronchus* (B), *Equetus lanceolatus* (B), *E. punctatus* (A, B, C). Mullidae; *Mulloidichthys martinicus* (A), *Pseudupeneus maculatus* (A, B, C). Chaetodontidae; *Chaetodon capistratus* (B, C), *C. striatus* (A), *Holocanthus ciliaris* (A), *H. tricolor* (C), *Pomacanthus arcuatus* (A). Pomacentridae; *Abudefduf saxatilis* (A, B, C), *Chromis multilineata* (B, C), *C. cyanea* (A, B, C), *Eupomacentrus* sp. (A, B, C), *E. fuscus* (A, B, C), *E. leucostictus* (A, B, C), *E. partitus* (A, B, C), *E. planifrons* (A, B, C), *E. variabilis* (B, C), *Microspathodon chrysurus* (A, B, C). Cirrhitidae; *Amblycirrhitus pinos* (B, C). Mugilidae; *Mugil trichodon* (B). Sphyraenidae; *Sphyraena barracuda* (C). Labridae; *Bodianus pulchellus* (A), *B. rufus* (C), *Clepticus parrai* (C), *Doratonotus megalepis.* (B), *Halichoeres bivittatus* (A, B, C), *H. garnotti* (A, B, C), *H. maculipinna* (A, B, C), *H. pictus* (B, C), *H. poeyi* (B), *H. radiatus* (A, C), *Hemipteronotus splendens* (A), *Thalassoma bifasciatum* (A, B, C). Scaridae; *Nicholsina usta* (C), *Scarus coeruleus* (B), *S. croicensis* (A, B, C), *S. guacamaia* (C), *S. taeniopterus* (A), *S. vetula* (C), *Sparisoma aurofrenatum* (A, B, C), *S. radians* (A), *S. rubripinne* (A, B, C), *S. viride* (A, B, C). Opisthognathidae; *Opisthognathus maxillosus* (A, C), *O. whitehursti* (B). Dactyloscopidae; *Dactyloscopus tridigitatus* (B, C), *Heteristius rubrocinctus* (A, B, C). Uranoscopidae; *Astroscopus y-graecum* (B). Blenniidae; *Entomacrodus nigricans* (A, B, C), *Hypleurochilus springeri* (A), *Ophioblennius atlanticus* (A, B, C). *Clinidae; Acanthemblemaria aspera* (B), *A. chaplini* (C), *A. spinosa* (A), *Emblemaria bahamensis* (A), *E. diaphana* (B), *Enneanectes altivelis* (A, B, C), *E. atrorus* (B), *E. boehlkei* (A, B, C), *E. pectoralis* (A, B, C), *Labrisomus albigenys* (B), *L. bucciferus* (A, B, C), *L. gobio* (A, B, C), *L. guppyi* (A, B, C), *L. haitiensis* (A, B, C), *L. kalisherae* (A), *L. nigricinctus* (A, C), *L. nuchipinnis* (B), *Malacoctenus aurolineatus* (C), *M. boehlkei* (A, B), *M. delalandei* (B), *M. erdmani* (A, B, C), *M. gilli* (A, B, C), *M. macropus* (A, B, C), *M. triangulatus* (A, B, C), *M. versicolor* (A, B), *Paraclinus fasciatus* (B), *P. nigripinnis* (A, B), *Starksia atlantica* (A, B, C), *S. lepicoelia* (A, B, C), *S. nanodes* (A, B), *S. sluiteri* (A, C), *S. y-lineata* (A), *Stathmonotus stahli* (B, C). Gobiidae; *Bathygobius mystacium* (A), *B. soporator* (B), *Coryphopterus dicrus* (B), *C. glaucofraenum* (A, B, C), *C. hyalinus* (B, C), *Gobionellus boleosoma* (B), *G. fasciatus* (C), *Gobiosoma* (Elacatinus) sp. (A, B, C), *G. Tigrigobius dilepis* (A, B), *G. Tigrigobius gemmatum* (B), *G. Tigrigobius pallens* (A, B), *Gnatholepis thompsoni* (A, B, C), *Lophogobius cyprinoides* (B), *Lythrypnus elasson* (A, C), *L. heterochromis* (A, B), *Quisquilius hipoliti* (A, B, C). Eleotridae; *Erotelis smaragdus* (B). Acanthuridae; *Acanthurus bahianus* (A, B, C). *A. chirurgus* (A), *A. coeruleus* (A, B, C). Bothidae; *Bothus lunatus* (C), *B. maculiferus* (C), *B. ocellatus* (A, B, C); Balistidae; *Balistes vetula* (B), *Xanthichthys ringens* (C). Monocanthidae; *Cantherines pullus* (A), *Monocanthus ciliatus* (C), *M. tuckeri* (A, C), Tetraodontidae; *Canthigaster rostrata* (A, B, C).

DISCUSSION

The Caribbean coast of Central America has been visited by several expeditions which collected fishes, but until recently no concentrated effort has been made to study the area ichthyologically, and its fish fauna is poorly known. Shore and trawl collections have been made by the Bureau of Commercial Fisheries (Bullis and Thompson, 1965), but few collections have been made in coral reef areas. Meek and Hildebrand (1923-1928), Fowler (1944), Caldwell, Ogren, and Giovannoli (1959), Caldwell and Caldwell (1964) and Caldwell (1963) all contain valuable discussions of the fishes in the area, but no general work has recently summarized the information since Fowler (1944).

Considering the small number of collections (38) included here, all taken in readily accessible areas, it is significant to find at least 25 new distributional records. Some of these considerably enlarge the known ranges of the species. The wrasses, one goby (*Quisquilius hipoliti*), the scorpaenid, and the opisthognathids were known to occur widely in Florida, the Bahamas, and the Antillean regions. Others, such as the clinids in the genera *Acanthemblemaria, Enneanectes, Emblemaria, Malacoctenus,* and particularly *Starksia* were known only from the Bahamas or restricted areas nearby.

The discovery of these forms in the British Honduras and Nicaragua area indicates a more general distribution of these groups throughout the Caribbean. Many of these species are small and are probably transported over uninhabitable areas as larvae. It is likely that many more coral reef species will be found to be widely distributed over this region. The only factor restricting the distribution of a given species may well be the lack of a suitable habitat rather than the lack of means of dispersal.

ACKNOWLEDGMENTS

We thank the following: C. Richard Robins, Institute of Marine Sciences, University of Miami, for identification of specimens and review of the manuscript; James E. Böhlke, Academy of Natural Sciences of Philadelphia, John E. Randall, Bernice P. Bishop Museum, Honolulu, and John S. Stephens, Jr., Occidental College, Los Angeles, for identification of specimens; Frederick H. Berry, Bureau

of Commercial Fisheries, Tropical Atlantic Biological Laboratory, Miami, for review of the manuscript.

This study was supported in part by NSF contract GB-1450, C. R. Robins, principal investigator, and NSF contract G-5012, C. Emiliani principal investigator.

LITERATURE CITED

BOHLKE, JAMES E., AND C. RICHARD ROBINS. 1960. Western Atlantic gobioid fishes of the genus *Lythrypnus*, with notes on *Quisquilius hipoliti* and *Garmannia pallens*. Proc. Acad. Nat. Sci. Philadelphia, vol. 112, no. 4, pp. 73-101, 2 figs., 3 pls.

BOHLKE, JAMES E., AND VICTOR G. SPRINGER. 1961. A review of the Atlantic species of the clinid fish genus *Starksia*. Proc. Acad. Nat. Sci. Philadelphia, vol. 113, no. 3, pp. 29-60, 15 figs.

BULLIS, HARVEY R., AND JOHN R. THOMPSON. 1965. Collections by the exploratory fishing vessels *Oregon*, *Silver Bay*, *Combat*, and *Pelican* made during 1956-1960 in the southwestern North Atlantic. Special Scientific Rep. Fisheries, no. 510, pp. 1-130.

CALDWELL, DAVID K. 1963. Marine shore fishes from near Puerto Limón, Caribbean Costa Rica. Contrib. in Sci. Los Angeles Co. Mus., vol. 67, pp. 1-11, 2 figs.

CALDWELL, DAVID K., AND MELBA C. CALDWELL. 1964. Fishes from the southern Caribbean collected by Velero III in 1939. Allan Hancock Atlantic Expedition Rept. vol. 10, pp. 1-61, 2 pls.

CALDWELL, DAVID K., LARRY H. OGREN, AND LEONARD GIOVANNOLI. 1959. Systematic and ecological notes on some fishes collected in the vicinity of Tortuguero, Caribbean Coast of Costa Rica. Rev. Biol. Trop. vol. no. 1, pp. 7-33, 2 figs.

CERVIGÓN, FERNANDO M. 1966. Los peces marinos de Venezuela. Estación de Investigaciones Marinas de Margarita, Fundación La Salle de Ciencias Naturales, Monogr. no. 11, pp. 1-951, 385 figs, 1 map, 2 vols.

ESCHMEYER, WILLIAM N. 1965. Western Atlantic scorpionfishes of the genus *Scorpaena*, including four new species. Bull. Mar. Sci., vol. 15, no. 1, pp. 84-164, 12 figs.

FOWLER, HENRY W. 1944. Results of the fifth George Vanderbilt Expedition (1941) (Bahamas, Caribbean Sea, Panama, Galapagos, Archipelago, and Mexican Pacific Islands). Monographs Acad. Nat. Sci. Philadelphia, no. 6, pp. vi + 1-583, 265 figs., 20 pls.

GILBERT, CARTER R. 1965. *Starksia y-lineata*, a new clinid fish from Grand Cayman Island, British West Indies. Notulae Naturae. vol. 379, pp. 1-6, 1 fig.

MEEK, SETH E., AND SAMUEL F. HILDEBRAND. 1923-1928. The marine fishes of Panama. Field Mus. Nat. Hist., Zool. Ser., vol. 15, pts. 1-3.

MILLIMAN, JOHN D., CONRAD V. W. MAHNKEN, DONALD R. MOORE, AND JOHN A. JONES. In press. The ecology and productivity of two southwestern Caribbean atolls, Courtown Cays and Albuquerque Cays.

RANDALL, JOHN E. 1966. The West-Indian blennid fishes of the genus *Hypleurochilus*, with the description of a new species. Proc. Biol. Soc. Washington vol. 79, pp. 57-71, 1 fig.

RANDALL, JOHN E., AND JAMES E. BOHLKE. 1965. Review of the Atlantic labrid fishes of the genus *Halichoeres*. Proc. Acad. Nat. Sci. Philadelphia, vol. 117. no. 7, pp. 235-259, 11 figs.

ROBINS, C. RICHARD, AND JAMES E. BOHLKE. 1964. Two new Bahama gobiid fishes of the genera *Lythrypnus* and *Garmannia*. Notulae Naturae 364: 1-6, 2 figs.

ROSENBLATT, RICHARD H. 1960. The Atlantic species of the blennioid fish genus *Enneanectes*. Proc. Acad. Nat. Sci. Philadelphia, vol. 112, no. 1, pp. 1-23, 4 figs.

SPRINGER, VICTOR G. 1959a. Systematics and zoogeography of the clinid fishes of the subtribe Labrisomini Hubbs. Univ. Texas, Inst. Mar. Sci. Publ., vol. 5, pp. 417-492, 4 figs, 7 pls.

———. 1959b. A new species of *Labrisomus* from the Caribbean Sea, with notes on other fishes of the subtribe Labrisomini. Copeia, 1959, no. 4, pp. 289-292, 1 fig.

STEPHENS, JOHN S., JR. 1963. A revised classification of the blennioid fishes of the American family Chaenopsidae. Univ. California, Publ. Zool., vol. 68, iv + 165 pp., 11 figs., 15 pls.

Institute of Marine Sciences, University of Miami, Rickenbacker Causeway, Miami, Florida 33149. Contribution No. 956.

Quart. Jour. Florida Acad. Sci. 30(3) 1967 (1968)