

# THE AVIFAUNA OF SEMAU ISLAND, LESSER SUNDAS, INDONESIA: ECOLOGY, TAXONOMY AND CONSERVATION

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## ABSTRACT

The avifauna of Semaui, a small island (261 km<sup>2</sup>) near southwest Timor in the Nusa Tenggara region of Indonesia, is reviewed, based on a series of visits comprising some 18 days between October 1989 and May 1991 and a further two days in August 2012. The birdlife present is a species poor subset of that on Timor (30720 km<sup>2</sup>), with all resident breeding landbird species except the Orange-footed Scrubfowl *Megapodius reinwardt* occurring on that island. One of the shared species is, however, represented by an endemic taxon, the White-bellied Bushchat *Saxicola gutturalis luctuosa*, which constitutes the only record of island endemism. The observations obtained and the specimens collected are compared with the last major, comprehensive review of the Wallacean Region, that of White and Bruce (1986). Some 56 additional species were recorded, comprising 17 resident landbirds and many migratory northern hemisphere and seabird taxa, but also including some drought refuge waterbirds from Australia. The taxonomy of collected material and, where possible, the birds observed are reviewed with reference to both White and Bruce (1986) and more recent studies. Where these results indicate that Semaui is located within an intergrade zone, for instance between the two taxa *indica* and *longirostris* of the Emerald Dove/Green-winged Pigeon *Chalcophaps indica*, we refer to adjacent islands. Despite the impoverished avifauna, some 13 species of restricted-range birds (including the endangered Timor Green Pigeon *Treron*

*psittaceus*) have been recorded. We also cite previous ornithological surveys, and assess species turnover. There has been two introduced passerines, and some recent apparent declines, principally of forest species, as a result of habitat destruction and/or capture for the bird trade.

## INTRODUCTION

*'After a few walks in the neighbourhood of the town [Kupang], I found such a poverty of insects and birds that I determined to go to the island of Semaou [Semaui], at the western extremity of Timor, where I heard that there was forest country with birds not found in Coupang. ...I found the country pretty well wooded but covered with shrubs and thorny bushes rather than forest-trees, and everywhere excessively parched and dried up by the continued dry season. I staid at Oeassa four days, when, not finding any insects and very few new birds, I returned to Coupang to await the next mail-steamer'* [Wallace 1861a].

*'The absence of Megapodius from Timor – a fact already noticed by the Dutch naturalists, and which all my inquiries tend to confirm – is a very singular one, because the genus exists in every other island of the Australian region, and even in the little island of Semaou'* [Wallace 1861b]

*'We may therefore, I think, fairly look upon the fauna of Timor as almost entirely derived by immigration from the surrounding countries, and*

*subsequently modified by the reciprocal action of the species on each other and by the influence of a new vegetation. In accordance with this view we find the external relations of the genera and species of which it is composed varying in degree with the varying distances of the surrounding lands, and the probability of the reception of immigrants from them'* [Wallace 1861b]

Between 1989 and 1991, a series of joint surveys between the Western Australian Museum (WAM) and the Museum Zoologicum (MZ: Cibinong, Java, Indonesia) to the major islands of Nusa Tenggara (Lesser Sundas) and southern Moluccas of Indonesia were carried out. Their purpose was to record the distribution and examine the taxonomy of the terrestrial vertebrates throughout the region. In this context an extensive series of observations were made and specimens collected across this zone of complex speciation and taxonomy. Island checklists have been prepared and new taxa described (Johnstone 1994, Johnstone and Sudaryanti 1995, Johnstone and Jepson 1996, Johnstone *et al.* 1996, Johnstone and Darnell 1997ab, Johnstone and van Balen 2013).



Four surveys of Semau were carried out in October 1989, May and October 1990 and May 1991, amounting to some 18 days total by R.E. Johnstone (REJ). The ensuing paper detailing the findings was almost complete when communication with Colin R. Trainor (CRT) and Oki Hidayat (OH) was established. They had recently returned from a two day trip to Semau in August 2012 principally in conjunction with CRT's ongoing interest in avian biogeography and taxonomy (e.g. Trainor *et al.* 2009, Sangster *et al.* 2013), mostly in the Lesser Sundas. The decision was then made to combine the findings/results obtained from all surveys into a single paper.

## METHODS AND MATERIALS

### Survey details and Itinerary

REJ visited Semau from Kupang on 22 October 1989 as a reconnaissance for future WAM/MZ surveys around Uiasa (10°10'S, 123°28'E) on the northern end of the island and returned to that location from 28–30 May and again from 20–25 October 1990 carrying out terrestrial vertebrate studies (principally ornithological) ranging over the north-eastern section of the island (See Figure 1). A day visit, by REJ to Kera Island (a.k.a. Monkey Island – the name refers to clams, or other bivalves, “Kerang”, rather than the Indonesian word for Macaque's) located between Kupang and

Semau, was made on 7 April 1991. Surveys to the south-western parts of Semau based at Onansila (10°13'S, 123°30'E) were carried out between 2 and 5 May 1991; some small offshore islets including that of Pulau Gambing on 8 May 1991, a visit was made to Usalin (10°17'S, 123°23'E) located near the south-eastern end of the island, this trip also taking in some small offshore islets, including Merah Island. At all locations specimens were collected for subsequent taxonomic study purposes.

After landing on the north-east of Semau on 11 May 2012, CRT and OH travelled to the central region of the island, visiting the two major sites of Otan (10°10'50"S, 123°23'06"E) a rural village with sandy and rocky beaches and tropical dry forest, and Silain (10°12'30"S, 123°25'00"E) with mangal backed mudflat, agricultural land and savannah woodland about 5 km to the east. The visit ended approximately at 14:00 hrs on 12 May 2012.

Sound recordings were made with an Olympus LS-10 recorder and ME-66 Sennheiser microphone. A selection of sound recordings was uploaded to the Xeno-Canto website ([www.xeno-canto.org](http://www.xeno-canto.org)) with accession numbers labelled as 'XC000000'.

Semau (10°13'S, 123°22'E), known locally as Pusmau, is located 2.7 km off southwest Timor in the Nusa Tenggara (Lesser Sunda) Province of Indonesia (Figure 1). Compared to Timor (30,720 km<sup>2</sup>) it is a small island (261 km<sup>2</sup>)

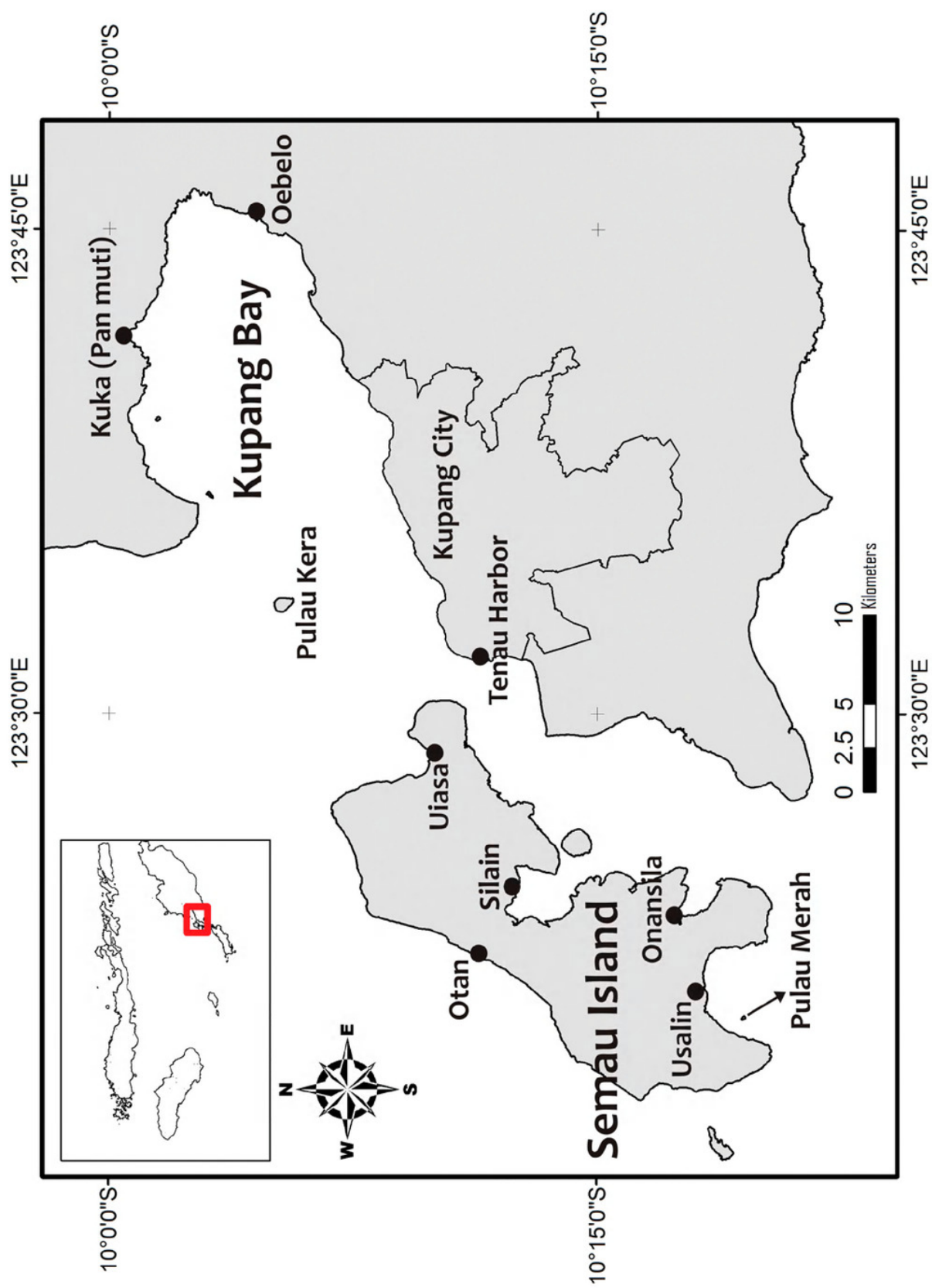


Figure 1. Regional map of Lesser Sundas, Semau Island and Kupang Bay



weakly isolated by a narrow (only 2.7 km minimum) shallow (36 m maximum depth) strait from south western Timor. This isolation from the major island is of relatively recent origin estimated as being 10–12,000 years BP (Voris 2000). It is a low limestone island, rising only some 190 m above sea level. It has a tropical monsoon type climate, characterised by moderate stable temperatures and high relative humidity. The wet season (north-west monsoon) begins in November and may continue until March. From April to November (dry season) the winds are predominantly from the south-east and typically bring little rainfall. The average annual temperature in nearby Kupang is 24.4° C and the average annual rainfall is 1,493 mm, the driest months are July, August, September with no rain most years and the wettest is January, with an average of 391 mm.

Seven major habitats were recognised on Semau.

1. Marine. This includes coastal seas, straits between islands, and gulfs (Figure 2).
2. Mangal. Semau Island has many shallow bays and inlets which contain small stands of mangroves totalling approximately 60–100 ha. Most blocks consist of a pioneer or seaward zone of *Rhizophora*, *Avicennia*, *Sonneratia* and *Bruguiera* and a landward zone of *Avicennia* and *Ceriops*. This habitat also includes small creeks running into mangal and sandy, muddy and rocky coasts (Figure 3).
3. Cultivated areas. These include village gardens, rice fields, palm groves (coconut and lontar), degraded pastures with Castor Oil Plant and *Lantana* and

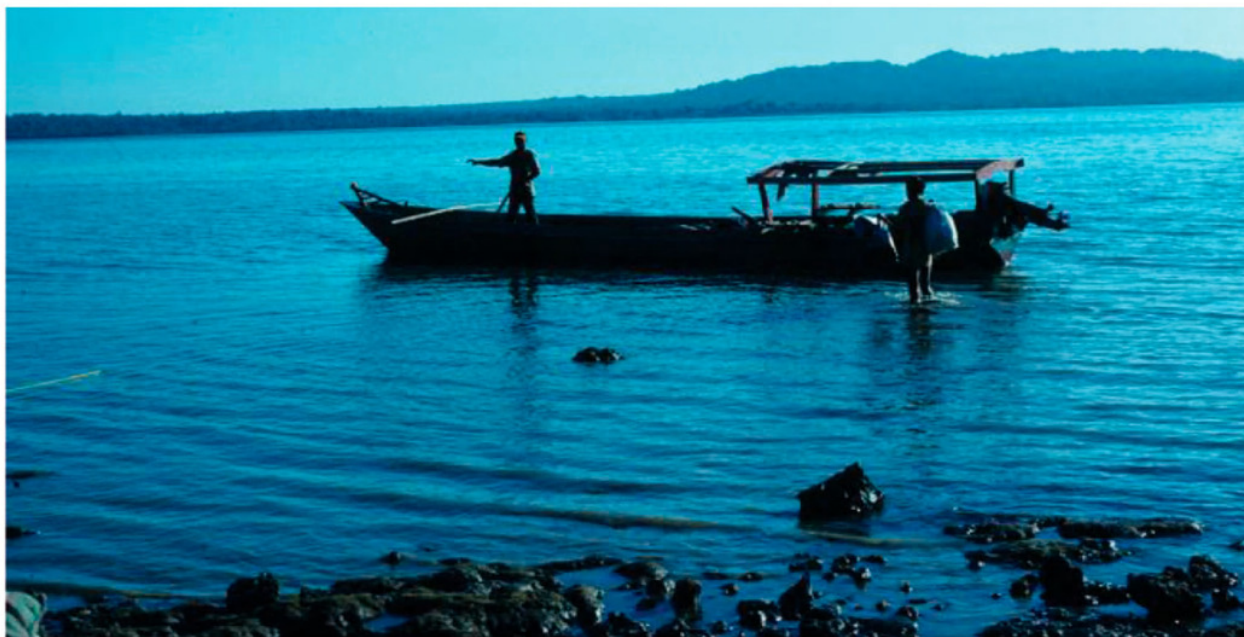


Figure 2. Marine habitat – Onansila Bay, Semau Island



- swidden (areas slashed and burnt for agriculture).
4. Tropical dry forest, thicket and scrub. Small pockets of tropical vine forest occur along watercourses, in gullies and on slopes and bases of

low cliffs. Many areas are regularly burnt and cut for firewood. Trees and shrubs include *Ficus* spp., *Pterocarpus*, *Albizia*, *Melia*, *Randia*, *Zizyphus*, *Garuga* and *Erythrina* (Figure 4).



Figure 3. Mangal habitat (and fish traps) – Onansila, Semaui Island



Figure 4. Tropical dry forest, thicket and scrub – Silain, Semaui Island





**Figure 5.** Open woodland (dry woodland with grass understorey) – Otan, Semaau Island

5. Open woodland. Dry open woodlands with an understorey of grass cover much of the island (Figure 5).
6. Grassland. Areas of rank grassland occur throughout the island.
7. Offshore islands and stacks. There are a number of small

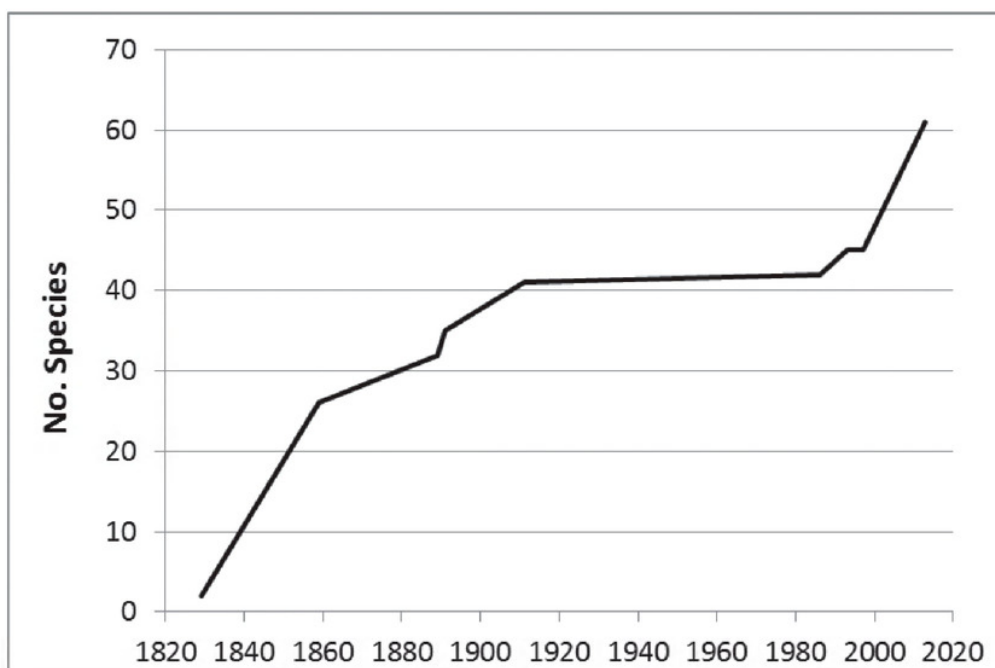
flat limestone islands including Monkey Island, Pulau Merah and Pulau Gambing. These are vegetated mainly with grasses and low shrubs (Figure 6).

Although no detail concerning historical changes of the islands vegetation cover is available,



**Figure 6.** Offshore islands and stacks – Monkey Island, off Kupang, Timor.





**Figure 7.** Accumulation of native resident landbird species on Semaui from 1828–2012

several of the early European visitors indicate that it has long been used as a source of firewood for Kupang. As such, deforestation has been underway for many years.

### Historical Reviews

There have been few attempts to document the avifauna of Semaui, and knowledge has accumulated slowly (Figure 7). The monograph by Hellmayr (1914) briefly notes collections of past workers on the island. Early collectors included S. Müller and H. C. Macklot in 1828–1829 (at least 4 birds collected); A.R. Wallace recorded at least 24 bird species in May 1859 (Wallace 1861a, Figure 8); L. Loria collected 25 specimens (18 bird species) during 20–22 April 1889 (Salvadori 1890); H. ten Kate collected 10 bird species in July 1891 (Büettikofer 1892); and C.B.

Haniel collected specimens of 19 bird species in 1911 (Hellmayr 1914). Although some of these early Semaui records were overlooked by White and Bruce (1986), most were noted or acknowledged in a subsequent update (Bruce 1987). Since this date there have been no further published accounts of the avifauna of Semaui. The late Derek Holmes, did however, prepare a manuscript (dated November 1993) following his short visit there on the morning of 25 July 1993 and although this was intended for *Kukila—Journal of Indonesian Ornithology*, it was not published. The results are however included here.

### RESULTS

Over the 18 day period of the joint WAM/MZ survey of Semaui, more than 4,000 observations of



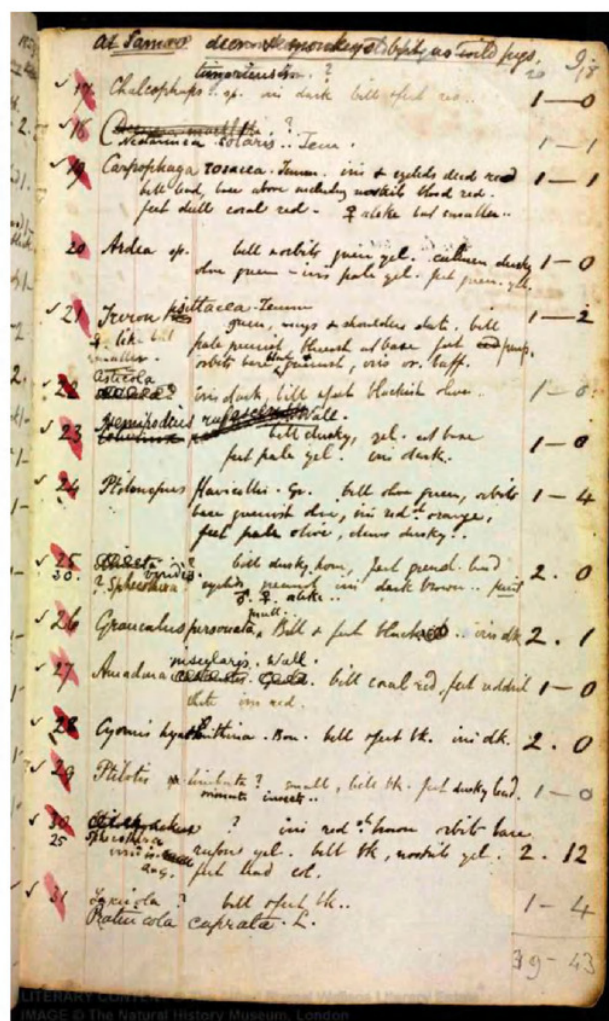


Figure 8. A. R. Wallace handwritten notes covering bird specimens collected on Semau. Writing on covers reads "Register Birds. 1858" and "Register Insects. 1858" pages are dated from 1858 to 1866. ©A. R. Wallace Literary Estate (Source: <http://www.nhm.ac.uk>.)

birds were logged and 148 specimens of 36 species were collected. The sightings have been analysed in terms of determining relative abundance, distribution, habitat preferences etc. and where possible further comment on breeding, food and movements for each of the species is recorded. The collected material, shared between the two institutions, is in the form of spirit specimens or prepared study skins. This reference material forms the basis of the taxonomic studies/comments

given in the manuscript. Its review involves comparison with material collected on other joint (WAM/MZ) expeditions to adjacent islands, and with the extensive reference collections held by other institutions (principally MZ, but also BM and AMNH). To this data set were added the observations and sound recording information obtained during the two day visit (August 2012) by CRT and OH; the latter being reviewed in the context of its possibly detecting unsuspected



island endemism e.g. variation of calls between the Semaui and Timor populations of what is currently noted as being a single avian taxon, which cannot otherwise be distinguished by plumage or by morphology.

Avian taxonomy is under constant review. Since the last major taxonomic study of the Wallacean Region (White and Bruce 1986), Sibley and Monroe (1990) have applied DNA analysis as a taxonomic tool. The studies flowing from its introduction are legion and, inevitably these are not always in agreement, neither are they, in some instances, universally accepted. As a consequence, not all of the current checklists whether international or regional in scope, are in agreement. Basically we have accepted that of the IOC 3.3 publication, but have retained some of the usages of others, and

accepted some of the arguments of White and Bruce (1986) for suppression of a taxon if our reference material agrees with that decision. The results are presented in the form of an annotated species list (checklist).

The annotated checklist given includes all species recorded from Semaui (including its associated islets and adjacent seas), complete with the validated (historical) records of earlier collectors/naturalists, regardless of whether such species were recorded by us. Where appropriate we compare the status and distribution of bird species with published and unpublished data from Timor, Roti, the Lesser Sundas, Wallacea and Australia. A total of 112 bird species (110 native) has been recorded from Semaui, with some 56 of these presented here as new island records (see Table 1).

**Table 1.** Summary of avian composition, residence status and number of new island records on Semaui. New island records are given in parentheses. Data source: WB (White and Bruce 1986, Bruce 1987; summarising historical records); DH (Holmes 1993); this study.

Avian sub-group	W&B (Pre-1986)	DH (1993)	This study	Island Total
No. resident landbirds [No. forest birds]	42 [20]	15 (3) 5 (0)	52(17) 22(7)	61 27]
No. waterbirds	3	1(0)	30(28)	30
No. seabirds	1	0	4(3)	6
No. migrant/visiting landbirds	1	1(0)	8(7)	9
No. introduced	0	0	2(2)	2
[Unconfirmed	0	1	4]	4
Total birds	47	18(3)	96(56)	112



## Key.

Square brackets indicate that the species-level identification remains unconfirmed, or that the bird was not recorded during the present study.

An asterisk denotes new island records not documented in White and Bruce (1986) or Coates and Bishop (1997).

## ANNOTATED SPECIES LIST

### Phasianidae

*Coturnix ypsilophora cervina* cf.  
"raaltenii" "pallidior" Brown Quail\*  
Recorded at Uiasa and Onansila. Locally common to moderately common, mainly in cultivated areas including rice crops in groups up to nine but one group

of 20 in low dead grass at Uiasa. Four specimens. Occurs widely in the Lesser Sundas where locally common in open grassland.

Taxonomy. Two adult males from Semau match the description of the subspecies *raaltenii* (given range, Flores east to Timor and Luang including Semau and Roti). Being dorsally reddish brown mixed with lavender grey (Figure 9). They also match in size and coloration red-morph specimens from Kimberley, Western Australia. On the other hand a juvenile-immature (A24552) from Semau was much darker dorsally with extensive black markings and white shaft streaks and more pronounced blackish V-shaped marks on flanks. This specimen matches well with an adult from



Figure 9. Red morph Brown Quails. Top A34752 from West Kimberley, and bottom A23636 from Uiasa, Semau Island.





**Figure 10.** Dark morph Brown Quails. Top to bottom, A13099 from west Kimberley, Western Australia, A23564 from Roti Island, and A24552 juvenile-immature from Semau Island.

Roti Island (A23564) that is also extensively black dorsally with white shaft streaks and has extensive black V marks on breast and flanks (Figure 10). On coloration these latter two specimens are more like the description of *C.a. pallidior* (Hartert 1897, 1898) of Sumba and Sabu.

Also of significance is the fact that these dark birds are again very similar in size and colour with dark morph specimens from west Kimberley (i.e. Mitchell Plateau, Prince Regent River and Stuart River, Kimbolton). The northern Australian subspecies *C.y. cervina* Gould, 1865, named from a

specimen collected in the neighbourhood of Port Essington, Northern Territory is also (based on the description) darker dorsally with extensive black bands and white shaft streaks and with very pronounced blackish V marks on flanks (i.e. like *C.y. pallidior*). Mayr (1944) described *castaneus* from Alor but Mees (1975) was unable to see any clear difference between birds from Timor, Roti, Flores and by inference Alor. Likewise we are unable to see any clear difference between birds from Semau, Roti, Timor and north-western Australia and as a group they are clearly different from the subspecies *C.y. australis* from south-



ern and eastern Australia. Based on the few specimens available it appears that populations in the eastern Lesser Sunda islands are closer to north-western Australian populations than previously recognised and the status of *raaltenii* and *pallidior* in the Lesser Sundas and indeed *cervina* in northern Australia requires further investigation.

*Gallus gallus* Red Junglefowl\*

Two calling from dense vine scrub at Uiasa on 22 October 1989. Introduced historically in the Lesser Sundas where now known from Lombok, Roti, Timor and Wetar (Coates and Bishop 1997).

**Anatidae**

*Dendrocygna arcuata*  
Wandering Whistling Duck\*

A flock of 42 on a lake near Onansila on 3 May 1991. Flocks of up to 1,000 birds on Roti (Trainor 2005a). In East Timor it is resident; flocks of up to 300 birds from Loes River estuary, and at least three sets of pulli recorded in February and May (Trainor 2005b, 2011).

The species comprises three taxa; the nominate ranging from the Greater Sundas, Philippines, Sulawesi to Lesser Sundas; *D.a. australis* extending from Australia to New Guinea and *D.a. pygmaea* restricted to New Britain (and New Caledonia). The birds on Semau could have been either *D.a. arcuata* or *D.a. australis*, however, of these we consider

them most likely to be *australis*. This taxon is highly nomadic within Australia, particularly so in response and during periods of extensive and excessive drought; such movements often involve thousands of birds, 1990–91 was just such a period of extensive drought across much of Australia.

It is also noteworthy that such displaced birds are frequently recorded to breed in their refuge areas and, in this context, we would comment that although White and Bruce (1986) accepted Mees (1975) identification (based on geographic grounds) of a juvenile and three pulli from Roti as being of the nominate taxon this may not be the case; some breeding records in this area may be attributable to *australis* rather than *arcuata*.

*Anas gibberifrons* Sunda Teal\*

Two birds observed on Pulau Merah on 8 May 1991 had the distinctive bulbous forehead and darkish cap of Sunda Teal (described and drawn in notebook). This is a common duck of saline lakes and mudflats on Timor and Roti with flocks of up to 300 birds recorded (Trainor 2005b, 2011).

*Anas gracilis* Grey Teal\*

Uncommon and overlooked vagrant/visitor from Australia. A flock of 20 on a small lake near Onansila on 3 May 1991. This species is highly nomadic and recent records from Cocos-Keeling Islands demonstrate that



this Australian species is well able to carry out extensive over sea flights. The fact that this and the Wandering Whistling Duck were recorded over the same period (May 1991) may suggest Australian origin. The first Lesser Sunda record was of five birds observed by K.D. Bishop on a pool of water behind beach on Komodo Island in June (Verhoeve and Holmes 1999). There were no supporting notes, and the record was therefore queried by Mees (2006). Recent unpublished records of Grey Teal by James Eaton (pers. comm. 2013), supported by photographs, were of a small group of birds on coastal saltpans at Kupang Bay, West Timor, on 4 August 2010, with two recorded here again in July 2011.

### Podicipedidae

*Tachybaptus ruficollis vulcanorum*  
Red-throated Little Grebe\*

Moderately common resident. A group of 20 including some fledged young and 3 nests with eggs and several pairs building on a lake near Onansila on 3 May 1991.

Two nests contained 5 eggs and the other two eggs. The nests were floating structures made from water weed and measured 400 mm diameter with a central egg cavity 65 mm wide and protruded 65–70 mm above the water line. The species is locally common to abundant on fresh, brackish and even saline habitats, but breeds only in fresh-

water ones (Trainor 2005ab, 2011). The breeding period is, across the local region, extensive, with records also of eggs and juveniles in April on East Timor and eggs in February on Flores Island (Verhoeve and Holmes 1999).

**Taxonomy.** The taxonomic status of *ruficollis* remains unclear. Mayr (1944) accepted the taxon *vulcanorum* described by Rensch (1931) (type locality Lombok), as separate from *tricolor*, and defined its range as being Java to Kai Islands; *tricolor* consequently then restricted to Sulawesi, Moluccas and Irian Jaya. Both taxa were still included with *ruficollis*.

White and Bruce (1986) dismissed *vulcanorum*, reuniting all Wallacean records into *tricolor*, which they retained as a subspecies of *ruficollis*. Since this date authorities have generally accepted *vulcanorum*, but differ on whether the Wallacean forms should be retained within *T. ruficollis* or elevated to full specific status *T. tricolor* (Tricolored Grebe) of which *vulcanorum* is a subspecies.

Confusion/ambiguity as to the ranges of *tricolor* and *vulcanorum* also prevails. In "Handbook of Birds of the World, Vol. 1" (del Hoyo *et al.* 1992) the range of *tricolor* given is that of the two taxa combined, whilst that of *vulcanorum* (although truly given) overlying part of it (i.e. inferring that both subspecies inhabit some islands in Lesser Sundas, but transpose them.



We accept (here) the taxon *vulcanorum*, with the range as that defined by Mayr (1944) and retain both it and *tricolor* as subspecies of *ruficollis*.

*Anhinga novaehollandiae*  
Australasian Darter\*

Five females loafing on mangal-backed mudflat at Silain in August 2012 were characterised by all whitish face and foreneck (mid-brown speckled whitish in *melanogaster*) and the breast and belly are whitish, whereas in *melanogaster* the female is blackish like the male (cf. Schodde *et al.* 2013). Birds in Roti and East Timor have also been identified as *A. novaehollandiae*. About 10 birds were recorded on Roti, and up to 200 individuals have been recorded at Lake Modo Mahut (East Timor), and they appear to be breeding residents at Lake Iralalaro in East Timor with local villagers stating that they breed during episodic floods (Trainor 2005a,b, 2011). *A. novaehollandiae* is distributed throughout Australia, with the New Guinea population recognised as a subspecies *A.n. papua*, but the subspecific identity of *A. novaehollandiae* in Wallacea has yet to be established (Schodde *et al.* 2013).

**Ardeidae**

*Ardea garzetta* Little Egret\*

Uncommon, probably only a visitor or vagrant. Four in mangal in bay on SE end of Semaui and three (all with black legs and yellow feet) on a small

rock stack near Usalin just off the SE end of Semaui Island on 8 May 1991. Present year round on wetlands in East Timor with up to 67 birds present at saline lakes (Trainor 2005b).

**Taxonomy.** The three birds recorded as having yellow feet were no doubt the nominate subspecies *A.g. garzetta*. It was assumed that this subspecies only occurred in northern Wallacea (see White and Bruce 1986) in Sulawesi and Ambon, with all other records from Wallacea been ascribed to "*nigripes*". There are recent records of the nominate form occurring in Australia.

*Ardea sacra* Eastern Reef Heron\*

Resident and moderately common. Usually in ones and twos, mainly rocky shores and mangal. Recorded at Onansila, Usalin and Pulau Merah. Only dark phase birds recorded. Nine stick nests probably of this species in low trees on Pulau Merah. A single dark phase bird was observed on beach at Otan in 2012. Eastern Reef Heron occurs widely in low numbers in coastal habitats of Timor, Roti (Trainor 2005a,b) and most of Wallacea (White and Bruce 1986).

*Ardea ibis coromandus* Cattle Egret\*

Two on an open flat with palms and acacia near Usalin on 8 May 1991. Generally uncommon in Timor and Roti (Verheijen 1976), but up to 300 birds have been recorded on Lake Iralalaro (Trainor 2005b).



**Taxonomy.** The taxon *coromandus* is sometimes treated as a full species.

*Ixobrychus flavicollis australis* Black Bittern\*

One collected from wet gardens and forest at Uiasa (NW end of Semau) on 23 October 1990. Poorly known in Nusa Tenggara. A female was collected at Noilmina (West Timor) by Georg Stein in 1931 (Mayr 1944). One observed out of study region, flushed from irrigated ricefields at Lasiana Beach, near Kupang, on 13 August 2012. Verheijen (1976) had a likely sight record on Roti and Doo (an islet of Roti). In East Timor, Black Bittern have been regularly recorded about Lake Iralalaro (Trainor 2005b, 2011).

**Taxonomy.** White and Bruce (1986) reluctantly accepted both *australis* and *gouldi* as taxa occurring in Wallacea, but suggested that these may be synonymised in which case *australis* (Lesson, 1831) would have priority, its range now extending from the Nusa Tenggara and Moluccan regions of Wallacea to Australia, New Guinea and the Bismarck Archipelago. Given this revision to the taxonomy, the old White and Bruce records (from Timor, Roti and Doo) would all fall within *australis*. The single specimen is a breeding female with an enlarged ovary 25 x 12 mm and convoluted oviduct (i.e. recently laid an egg), total length 600 mm, weight 180 g, wing 208 mm, bill 99 mm. It matches well in

size and colouration with a female specimen from Kimbolton, west Kimberley, Western Australia (total length 590 mm, weight 350 g, wing 209 mm, bill 94 mm). Based on this specimen it appears there is a resident breeding population on Semau (that matches north-west Australian specimens) and as such we would include this island within the breeding range of *australis*.

In East Timor a dark brown juvenile bird was observed at Lake Be Malae on 17 December 2003, and a streak-chested juvenile was observed at the Irasequiro River, Lake Iralalaro, on 15 October 2004 and also 25 September 2013, confirming that this taxon also breeds on Timor (Trainor 2005b).

*Butorides striatus javanicus* Striated Heron

Resident and moderately common usually single. Recorded at Onansila, Silain, islet of Usalin and on Pulau Merah. Mangal, mudflats and dense *Ficus* at edge of lake. Breeding in May 1991, adult on nest with one egg, 3 m up in low tree on small islet off Usalin. Three specimens collected one from Uiasa and two from Pulau Merah. Also one collected by A.R. Wallace on Semau (Hellmayr 1914). In Wallacea a common resident of less disturbed coastal habitats, particularly mangroves and edge of lakes and other wetlands.

**Taxonomy.** The subspecies *javanicus* is widespread in Asia including Wallacea.



## Fregatidae

*Fregata minor* Great Frigatebird

A single male observed just outside the range of this paper in Kupang Harbour on 21 November 1989. An adult female was collected by C.B. Haniel on the north coast of Semau (Hellmayr 1914). In East Timor during 2003–2006 there were 23 records of 1–60 birds in February to May, with a single October record. Great Frigatebird breed on Gunung Api in the Banda Sea (van Bemmelen and Hoogerwerf 1940).

White and Bruce (1986) did not ascribe Wallacean records to any subspecies. This species has recently colonised islands off northern Western Australia.

*Fregata ariel ariel* Lesser Frigatebird\*

Loose aggregation of 25 feeding on a school of fish at sea between Kupang and Semau Island on 22 October 1989, one recorded between Kupang and Semau on 20 October 1990 and two birds overhead during sea crossing in 2012. In East Timor during 2003–2006 there were 23 records of 1–60 birds (mean 5 birds) in January to May, with a single December record.

Taxonomy. White and Bruce (1986) attribute all records to the nominate form and this is geographically by far the most likely and is accepted here.

## Accipitridae

*Haliaeetus leucogaster* White-bellied Sea-Eagle\*

Scarce or uncommon. One observed near Uiasa on 30 May 1990. This eagle was also observed by R. O. Rowe on Semau (Holmes 1993). Regularly observed on Roti (Trainor 2005a) but generally uncommon on Timor where sometimes captured as a cage bird.

[*Accipiter fasciatus hellmayri* Brown Goshawk

Collected by Müller in 1829 (Hellmayr 1914). Generally uncommon on Timor (CRT unpubl. data.)]

## Falconidae

*Falco moluccensis microbalia* Spotted Kestrel\*

Uncommon. Two in coconuts at Uiasa on 29 May 1990 and one over a small bay with mangal near Usalin on 8 May 1991. Generally uncommon in East Timor with 52 records during 2002–2010 (CRT unpubl. data) and uncommon on Roti (Johnstone and Jepson 1996).

[*Falco cenchroides* Australian Kestrel

Collected by C.B. Haniel (Hellmayr 1914). An uncommon visitor from Australia, with records during the austral winter, April to September.]

## Megapodiidae

[*Megapodius reinwardt* Orange-footed Scrubfowl

Six specimens collected by C.B. Haniel on Semau in 1911 (Hellmayr 1914). In 2012 local villagers at Otan indicated that



the Orange-footed Scrubfowl is present in the area, but none were recorded. A.R. Wallace considered the Orange-footed Scrubfowl to be absent from Timor, but it is recorded for that island in White and Bruce (1986) and it is noticed that birds occasionally visit the East Timor mainland from the weakly isolated islet of Jaco, but apparently it does not breed on Timor.]

### Turnicidae

*Turnix maculosa maculosa* Red-backed Buttonquail

One in grass on 20 October 1990 and four in village gardens and vine scrub at Uiasa on 29 May 1990, and two singles observed on tracks in August 2012. Collected on Semaui by A.R. Wallace (Hellmayr 1914). Generally uncommon in the Lesser Sundas preferring dense grassland and road verges.

### Scolopacidae

*Limosa lapponica* Bar-tailed Godwit **Near threatened\***

Four resting on rocks on Palau Merah on 8 May 1991. An uncommon to rare passage migrant and winter visitor to Wallacea from northern hemisphere (White 1975, Johnstone 1994, Coates and Bishop 1997, Trainor 2005b). There was a record of seven birds on Roti (Trainor 2005a) on 20 December 2004, and up to 188 birds on 30 September 1985 at Kupang Bay (Andrew 1986) which may be an important site for this species.

Taxonomy. The subspecies not determined but most likely *baueri* the most common taxon visiting Australia but *menzbieri* is also possible.

*Numenius madagascariensis* Far Eastern Curlew **Vulnerable\***

Five birds on mangal-backed mudflat at Silain on 12 August 2012. A passage migrant and winter visitor to Wallacea from northern hemisphere. Generally uncommon in the Lesser Sundas, with 79 records of up to 28 birds in East Timor during 2002–2008 (Trainor 2005b, 2011).

*Numenius phaeopus variegatus* Whimbrel\*

Uncommon. Two at Onansila, Semaui on 5 May 1991, one on rocks on Pulau Kera on 7 April 1991, and one bird on beach at Otan in 2012. A Palearctic passage migrant and winter visitor to Wallacea (*N.p. variegatus*) particularly along the coast, aquaculture ponds and mudflats (White 1975, Johnstone 1994, Coates and Bishop 1997, Trainor 2005b).

*Tringa nebularia* Common Greenshank\*

Uncommon to rare. Single bird on mudflat at Silain on 12 August 2012. A regular Palearctic passage migrant and winter visitor from the northern hemisphere to Wallacea and Timor region (White 1975, Johnstone 1994, Coates and Bishop 1997, Trainor 2005b).



*Tringa hypoleucos* Common Sandpiper

Uncommon. Recorded at Uiasa in October 1990 and Onansila in May 1991 as singles and one group of three, and two on rocks on Pulau Kera on 7 April 1991. One specimen collected. At least six birds on beach at Otan on 11 August 2012. A common Palearctic passage migrant and winter visitor to Wallacea from the Palearctic mostly associated with coastal habitats and inland rivers (White 1975, Johnstone 1994, Coates and Bishop 1997, Trainor 2005b).

*Tringa brevipes* Grey-tailed Tattler\*

Uncommon. One at edge of a lake near Onansila on 3 May 1991, and two at mangal-backed mudflat at Silain on 12 August 2012. A common Palearctic passage migrant and winter visitor to Wallacea, from the Palearctic region, especially about mangal-backed wetlands (White 1975, Johnstone 1994, Coates and Bishop 1997, Trainor 2005b).

*Arenaria interpres interpres* Ruddy Turnstone\*

Uncommon. Three on reef at Pulau Kera on 7 April 1991, and a single bird observed along rocky shoreline at Otan on 11 August 2012. An uncommon passage migrant and winter visitor to Wallacea in low numbers (<10 birds per flock), usually associated with coastal or fringing reef habitats (White 1975, White and Bruce 1986, Johnstone 1994,

Trainor 2005b). All records would refer to the nominate subspecies.

*Calidris ruficollis* Red-necked Stint\*

Uncommon. One on a weed bank on Pulau Kera on 7 April 1991. Single bird on beach at Otan on 11 August 2012. A common passage migrant and winter visitor to Wallacea from northern hemisphere, mostly associated with mudflats but also freshwater and saline lakes (White 1975, Johnstone 1994, Coates and Bishop 1997, Trainor 2005a,b). Occurs in relatively large flocks at Kupang Bay with at least 457 birds on 12 June 2004 (Trainor 2005b), perhaps first year birds over-summering, and more than 250 birds were counted on 20 December 2004 on Roti (Trainor 2005a).

**Burhinidae**

*Esacus neglectus* Beach Stone-curlew **Near threatened\***

An uncommon to rare resident of beach and coastal habitats in Wallacea, with a preference for small islands. Four on Pulau Merah on 8 May 1991. Also three birds were seen at Bipolo-Kuka beach on 10 June 2004, these beyond the study area (but less than 20 km from Pulau Merah). In addition a pair was seen on 12 June 2004 and a single on 15 December 2004 (all in Kupang Bay area West Timor). Five recorded on Ndana islet off Roti (Johnstone and Jepson 1996).



## Charadriidae

### *Pluvialis fulva* Pacific Golden Plover\*

Three birds along coast at Otan on 11 August 2012. A common Palearctic passage migrant and winter visitor to Wallacea (White and Bruce 1986, Johnstone 1994, Trainor 2005b).

### *Pluvialis squatarola* Grey Plover\*

Four on reef at Pulau Kera on 7 April 1991. A regular Palearctic passage migrant and winter visitor to Wallacea, generally confined to beach and mudflats in low numbers (White and Bruce 1986, Johnstone 1994, Trainor 2005b). An estimated 350 birds were present at a high tide roost at Kupang Bay West Timor on 6 January 2005.

### *Charadrius peronii* Malaysian Plover **Near threatened**

Two pairs on a sandy beach on Pulau Kera on 7 April 1991, and 5 birds were observed as singles and pairs along a 1 km section of beach and rocky shore at Otan in 2012. Two collected by Müller on Semau in 1829 are syntypes of the species (Schlegel 1865, Mees 1976). Few regional records, with a pair on beach at Kupang Bay (CRT unpubl data) and a male collected on Doo (Mees 1975). Mostly confined to linear beach and coastal habitats throughout insular SE Asia, Malaysia and Vietnam (Hayman *et al.* 1986) with coastal development threatening many populations.

### *Charadrius ruficapillus* Red-capped Plover\*

Resident. Two birds on a sandy beach at Uiasa on 30 May 1990, and three birds observed on mudflat at Silain on 12 August 2012. Regionally this essentially Australian plover has long been considered as a visitor/vagrant to the Lesser Sundas and Java. George Stein collected five specimens in Dili (as *Charadrius alexandrinus ruficapilla*), East Timor, in April 1932, which were interpreted as 'probably only a winter visitor from Australia' (Mayr 1944). This residence status has been repeated by authorities since (White and Bruce 1986, Johnstone 1994, Coates and Bishop 1997).

More recent observations in East Timor have shown that it is now an established resident with breeding occurring throughout the year (Olsen and Trainor 2005). At least two sites have large populations: 250 individual birds were counted in part of the Kupang Bay mudflats and aquaculture ponds (Trainor 2005b) on 12 June 2004, but numbers fluctuate at Lake Tasitolu from about 40 birds to 300 individual birds (31 December 2003), perhaps suggesting that resident birds are augmented by Australian visitors. A single bird with orange flag on right upper tibia was noted at Tasitolu on 7 May 2006 undoubtedly captured in south eastern Australia. At wetlands on the northern peninsula of Roti at least 73 birds, including many males in breeding plumage, were observed (Trainor 2005a).



*Charadrius javanicus* Javan Plover  
**Near threatened\***

Resident? Four individuals were observed and photographed on mudflat at Silain on 11 August 2012. White and Bruce (1986) did not attribute any Wallacean records to this taxon, and in fact it was only accepted as an allospecies of *C. alexandrinus* following Roselaar (1983) in an addendum. Clearly in that addendum they accepted *C. javanicus* and suggested that breeding records (Java east to Flores) in Snow (1978) could refer to this taxon. Breeding records attributed to Kentish Plover *C. alexandrinus* at Sape, Sumbawa (Coates and Bishop 1997), clearly refer to Javan Plover, this confirmed by observations at the same location in the early 1990s (David Milton *in litt.*). Recent Lesser Sundas records include Gilo Meno (off Lombok), Sumba (breeding), Labuanbadjo (Flores) and Tibar (East Timor). This substantial range extension is presumably the result of greater field effort and improved criteria for identification rather than recent colonisation (Trainor 2011, Iqbal *et al.* 2013).

Taxonomy. White and Bruce (1986) only appeared to accept Javan Plover *C. javanicus* as a full species as a late addendum. It had been widely considered as a subspecies of variously, Kentish, Red-capped and Malaysian Plovers by different authorities and in this combined state several records may well have been wrongly ascribed (including

unfortunately the decisions given in White and Bruce 1986) which have since been widely quoted as definitive. For example White and Bruce quote Hoogerwerf (1946 and 1967) as accepting 'Red-capped Dotterel' records from East Java, this may be correct, but that location is the centre of Javan Plover distribution which he did not recognise as a species. It appears that the historical specimens from Java are not Red-capped Plover, but there is at least one reliable observation from East Java (B. van Balen *in litt.*).

*Charadrius leschenaultii leschenaultii*  
Greater Sand Plover\*

One on sandy beach Pulau Kera on 7 April 1991. A regular Palearctic passage migrant and winter visitor to Wallacea (White and Bruce 1986, Johnstone 1994, Coates and Bishop 1997, Trainor 2005b). All Wallacean regional records attributable to nominate subspecies.

*Charadrius mongolus* Mongolian  
Plover\*

Five birds on beach at Otan on 11 August 2012. A regular Palearctic passage migrant and winter visitor to Wallacea (White and Bruce 1986, Johnstone 1994, Coates and Bishop 1997, Trainor 2005b). All Wallacean records attributed to nominate subspecies although the form 'stegmanni' could also occur.

*Phalaropus lobatus* Red-necked  
Phalarope\*

Up to 120 birds off northeast



Semau observed by R.O. Rowe on 6 November 1993 (Holmes 1993). Out of the study area, 30 birds were observed off northwest Roti on 23 December 2004 (Trainor 2005a). The Lesser Sundas are an important wintering ground for Red-necked Phalarope, with some straits between islands producing at the turbulent upwellings extremely rich feeding conditions. Highest counts of 5,000–10,000 birds between Pantar and Alor on 29 April (Johnstone 1994).

### Laridae

[*Stercorarius parasiticus* Arctic Skua – Parasitic Jaeger

A single bird probably this species observed at sea near Palau Kera between Kupang and Semau Island on 7 April 1991. This northern hemisphere migratory species was not listed by White and Bruce (1986), it has however proven to be recorded regularly from regions immediately south of Semau (e.g. Ashmore Reef) as has the Pomarine Skua *Stercorarius pomarinus*.]

[*Sterna bengalensis* Lesser Crested Tern

One possibly this species observed at sea between Kupang and Semau Island on 22 October 1989 and four on Pulau Kera on 7 April 1991.]

*Sterna bergii cristata* Crested Tern\*

Common in ones, twos and flocks up to 20 on Semau and small islets including Pulau

Merah and rock stacks. Also two resting on a floating log between Semau and Kupang on 5 May 1991. One bird observed along the beach at Otan on 11 August 2012. The most common coastal tern in the Timor region (Trainor 2005b).

*Sterna sumatrana* Black-naped Tern

Common breeding resident. Recorded on Semau, Pulau Merah and other small satellite islets, and at sea between Kupang and Semau. Mainly in ones, twos and flocks (up to 60). Over 60 breeding on tallus slopes of Pulau Merah on 8 May 1991; seven nest scrapes contained a single egg and six nests had two eggs (also a number of empty scrapes). Apparently villagers from Lifuleo (on south end of Timor) regularly collect tern eggs on these islands for food. A common resident in Lesser Sundas. Two specimens.

*Sterna hirundo longipennis* Common Tern\*

One bird possibly this species observed on Pulau Merah on 8 May 1991. In East Timor (2003–2008) there were only six records along the coast of 1–3 birds from 22 October to 11 March (Trainor 2005b, CRT unpubl. data). Although there are few local records this species is, in general, a regular and common passage migrant through the region and summer visitor (late August – late April) to NW Australia (Johnstone *et al.* 2013).



*Sterna hybrida javanica* Whiskered Tern

About 10–20 birds along coast near harbour as we departed Semau on 12 August 2012. Regular in Timor region, with >100 records in East Timor during 2002–2004 in beach, estuary, freshwater and saline wetlands (Trainor 2005b).

*Sterna albifrons* ?*sinensis* Little Tern\*

Small flock of eight in breeding plumage and displaying (both aerial and ground displays) on Palau Merah on 8 May 1991. One egg found on rocky shale and one specimen collected. Single bird observed along coast at Otan, and about six birds observed, photographed and sound-recorded (XC108724–108725) about mudflats at Silain in 2012. The behaviour of these birds (mobbing an intruder) suggests that these latter birds may also have been breeding. This bird is apparently an uncommon breeding visitor to Timor and the Lesser Sundas. In West and East Timor during 2003–2009 a total of 38 records (May–November) of 1–25 birds were documented, with breeding records from July to November (Trainor 2011, CRT unpubl. data). Like several other tropical terns this species has recently colonised north-west Australia and is expanding its range southwards in the Kimberley and Pilbara.

*Sterna anaethetus* Bridled Tern\*

Moderately common visitor,

birds moving through the area south to breeding quarters in Australia in October and north to winter quarters (Philippines region) in April–May. Flock of six just off Semau on 28 May 1990; small groups of 8–10 and a flock of 20 between Kupang and Semau on 20 October 1990; one near Kupang Harbour on 30 April 1991; one on a floating log between Semau and Kupang Harbour on 5 May 1991; and a loose aggregation of 50 (in ones and twos) observed between Lifuleo (south end Timor) and small islets including Pulau Merah off south end of Semau on 8 May 1991. Banding data has established that birds breeding in Western Australia leave their breeding grounds (April/May) to winter in seas off Philippines returning in October. The records from Semau (where it is a moderately common passage migrant) adhere to this migratory pattern suggesting the records refer to birds breeding in Western Australia.

There are still major differences in tern taxonomy. Based on behaviour, morphology and some molecular studies we retain this species in the genus *Sterna* rather than *Onychoprion* and believe that the latter is best treated as a subgenus.

*Sterna fuscata* Sooty Tern\*

A flock of 40 feeding in passage between Kupang and Semau on 22 October 1989. Possibly visitors from west Kimberley (Australia) and Ashmore Reef where large



breeding colonies are present (Johnstone and Storr 1998).

### Columbidae

*Streptopelia chinensis tigrina*  
Spotted Dove

Common to moderately common resident. Commonly recorded, mainly in ones and twos in beachside scrub, vine forest and open savanna at Uiasa and common at edges of tracks in cultivated areas and in open grassland at Onansila. Recently fledged chicks observed at Uiasa on 20 October 1990. Common to abundant in tropical dry forest and savanna woodland in 2012 suggesting that hunting intensity may be low on the island. Calls were sound recorded (XC116499). Usually common in savanna woodland and agricultural land throughout the Lesser Sundas with numbers often reduced by hunting near villages. Eight specimens.

*Chalcophaps indica* Emerald Dove

Moderately common to common. Usually single birds but occasionally small groups (up to 5) at food rich sites. Recorded in vine and dry forest, cultivated areas and mangal at Uiasa, Onansila, Usalin and Otan. Frequently flushed from tropical dry forest in August 2012. Collected on Semau by A.R. Wallace and C.B. Haniel (Hellmayr 1914). This species is widespread and generally common throughout much of Wallacea in savanna woodlands, forest edge and forest. Ten specimens.

**Taxonomy.** This species is generally considered as having two distinct taxa within Wallacea; their ranges abut. Nominate *indica*, in which males have a white forehead and supercilium and grey crown ranges from Kashmir through south and south-east Asia, Philippines, Greater and western Lesser Sundas, the Moluccas, some Western Papuan Islands (Gebe, Kofiau etc.), and islands in Geelvink Bay (Numfor, Biak, Meos and Num) (Johnstone 1981). The second taxon, *C.i. longirostris* (NB: this is sometimes treated, following Rasmussen and Anderton (2005), as a full species, *C. longirostris*, Pacific Emerald Dove) is slightly larger and the males have a vinous brown forehead and crown and lacks a supercilium. This form (*C.i. longirostris*) occurs in the eastern Lesser Sunda and southern Moluccan islands, eastern New Guinea, some Torres Strait islands and northern and eastern Australia. The two forms are not known to co-inhabit, but where their ranges meet intermediate/intergrade forms occur. Semau is one such area.

Specimens from this intergrade zone have been examined and primarily on plumage differences, various taxa have been described, e.g. *C. indica timorensis* Bonaparte 1856 (T.L. Timor). Our material from Semau and Timor consistently differs from birds from north-west Australia, Kimberley and Northern Territory (= *longirostris*) in being



slightly smaller and in having the nape, centre of mantle and upper back tinged with bluish grey (Johnstone 1981). On the nearby island of Roti, however, the birds are very similar to the Kimberley birds having little or no trace of grey. Birds from the more westerly island of Sabu vary considerably, with some having the crown and mantle very distinctly grey, whereas on others these areas have only a weak greyish tinge. The populations from still further west and to the north (Sumba, Alor and Lembata) are more like the nominate form, having the forehead whitish and grey on crown and centre of mantle, but they are still intermediate in a

number of characters (Figure 11). There is, therefore a broad intergrade zone between the two Wallacean taxa. Furthermore, contrary to Rasmussen and Anderton (2005) we noted very little difference between the calls of birds from either northern Australia or any population across the Lesser Sundas.

A detailed study of the variant, island based, intergrade forms, including their long-term stability etc. is needed in order to clarify their taxonomic status. The material held in the Western Australian Museum clearly indicates an intergrade zone between the taxa *C.i.indica* and *C.i.longirostris* and we would treat the two forms as conspecific.



**Figure 11.** Emerald Doves, left to right, A21526 from west Kimberley, A22924 from West Timor and A23309 from Semau Island.



*Geopelia striata maugei* Zebra Dove  
Common resident. Mainly in ones and twos. Open scrub, open woodland, grasslands and cultivated areas. Occasional in village gardens and tropical dry forest in August 2012. Nine specimens. Collected on Semau by A.R. Wallace and C.B. Haniel (Hellmayr 1914). *G.s. maugei* is sometimes treated as a full species *G. maugei* Barred Dove (White and Bruce 1986, Coates and Bishop 1997, Gill and Donsker 2013) however, based on morphology, calls and behaviour we retain it within *striata*.

*Treron psittaceus* Timor Green Pigeon **Endangered**

One record. A bird hit and went through a mist net set near a *Ficus* thicket at Onansila on 3 May 1991 (feathers collected). A specimen was collected on Semau by A.R. Wallace (Hellmayr 1914). Timor Green Pigeon is endemic to Timor, Semau and Roti but has declined throughout its range because of tropical forest loss and conversion and hunting. There are few recent records from West Timor (Noske and Saleh 1996, Coates and Bishop 1997) but it is more frequent in East Timor with one flock of *ca* 129 recorded on 20 October 2005 at a fruiting fig in Wairoke village. Timor Green Pigeon is well-known to hunters in East Timor who regard it as 'tule' or deaf: when one bird is shot in a tree, the remaining flock members freeze perch without flushing increasing the

possibility that a large proportion of a flock can continue to be harvested by hunters.

*Ptilinopus regina flavicollis* Rose-crowned Fruit Dove

Moderately common to common. In ones, twos and small groups (up to 6) at Uiasa, mainly in vine forest and *Ficus* thickets. In 2012 approximately four single birds observed and several others heard calling. Collected on Semau by A.R. Wallace (Hellmayr 1914). This taxon is common in tropical forest and woodland on Roti (Trainor 2005a), West Timor (Noske and Saleh 1996) and extending into East Timor at least to Suai on the south coast. One specimen.

Taxonomy. White and Bruce (1986) list three subspecies for the Lesser Sundas namely, *P.r. flavicollis* (which has a strong yellow green suffusion on the neck and breast) ranging from Flores, Roti, Sawu, Semau and West Timor, *P.r. roseipileum* (differing in its rosy crown) recorded from East Timor, Wetar, Romang, Moa, Kisar and Leti, and *P.r. xanthogaster* but this latter form ranges on islands east of Timor. The type locality of *flavicollis* is West Timor. Birds from West Timor and Semau are very similar in colouration and match well with *P.r. ewingii* of northern Australia (i.e. with pale pink or reddish pink crown) and as a series are darker on the neck and throat than specimens from both Roti and Sawu islands with the birds from these islands



being very similar to one another. Johnstone (1981) placed *flavicollis* and *roseipileum* into *ewingii* and concluded that *roseipileum* was intermediate between *xanthogaster* of the Moluccas and *flavicollis* (= *ewingii*) with this form including the Roti and Sabu birds of the Timor region and north-western Australia. Recent specimens from the region and further material from Kimberley confirms this treatment.

*Ptilinopus cinctus cinctus* Black-banded Fruit Dove

A bird possibly this species making a typical soft “woo-woo...” call in rugged limestone fissures and vine thicket at Uiasa on 30 May 1990. Generally common in the Lesser Sundas especially in mid-elevation evergreen forest, but uncommon or absent from tropical dry forest.

*Ducula rosacea* Pink-headed Imperial Pigeon **Near threatened**  
Scarce or rare. One on a nest 18 m up in a *Garuga* tree in vine forest near Onansila on 3 May 1991. Nest constructed of small sticks, empty but bird sitting. One specimen A24708, a chick collected on 24 October 1990. An adult male was collected by C.B. Haniel on the north coast of Semaui (Hellmayr 1914). A nest was found on Wetar at 11 m above ground in *Schleichera oleosa* on 16 October 2008 (Trainor *et al.* 2009). This forest pigeon is endemic to the Lesser Sundas,

Flores Sea islands and Maluku. It is hunted through much of its range, intensely in West Timor (Noske and Saleh 1996), but large populations remain on Wetar Island and islands in the Banda Sea (Trainor *et al.* 2009, Trainor and Verbelen 2013).

*Ducula bicolor* Pied Imperial Pigeon\*

Vagrant or rare visitor. Two at edge of mangal near Onansila on 3 May 1991. A small island species that occurs sporadically in Nusa Tenggara. On Komodo and Flores, there have been about 10 records of 1–50 birds during July–November, January and March (Schellekens *et al.* 2009). The only other Nusa Tenggara records are on Gili Air (an islet off Lombok (Nash and Nash 1987)) in October, and undated records on Moyo (Johnstone *et al.* 1996). Local villagers have occasionally observed them about Com in East Timor (CRT unpubl. data). The rarity of records suggests that Pied Imperial Pigeon is probably not resident in Nusa Tenggara (except perhaps the Komodo-western Flores area) and it presumably arrives as a ‘fruit nomad’ tracking extensive stands of mangal.

Taxonomy. Gill and Donsker (2013) separate this form from the Torresian Imperial Pigeon *Ducula spilorrhoa* (G.R.Gray, 1858), but in the light of a record from Ashmore Reef it may be that *D. bicolor* is the species involved on Semaui.



## Psittacidae

*Cacatua sulphurea parvula*  
Yellow-crested Cockatoo

### Critically Endangered

Scarce. Two overhead at Uiasa on 30 May 1990 and two pairs observed by S. Behrens near a village called Onandengen and one pair near Amadoke in August 1994. The type specimen of *parvula* was collected on Semau by S. Müller in 1829 (Hellmayr 1914), 161 years before the only modern records. Heavily captured for cage bird trade since the 1980s in West Timor, with adult birds considered an agricultural pest about corn crops and often trapped and eaten or sold. Few remain in West Timor, with the only records of single birds during 2002–2012 at Bipolo. An estimated 200–600 birds remain in East Timor, with numbers possibly now increasing. Extirpated throughout most of its historical range (BirdLife International 2013).

[*Trichoglossus haematodus capistratus* Rainbow Lorikeet

The only record is the observation by A.R. Wallace in 1859: “but the beautiful *T. haematodus* seems rare, as I never saw a specimen, and with difficulty obtained two live ones in the town [Kupang]. I observed it in the island of Semao two years ago, but could not obtain an example” (Wallace 1861b). This record was overlooked by White and Bruce (1986), and Coates and Bishop (1997).]

Taxonomy. Birds from Timor (*T.h. capistratus*), Wetar and Romang (*T.h. flavotectus*) and Sumba (*T.h. fortis*) all of which have greenish or bluish face, yellowish green collar and the breast yellow or green without dark barring (some Sumba specimens have strong orange yellow breast and flanks) are sometimes separated as an allospecies *T. capistratus* the Marigold Lorikeet.

*Geoffroyus geoffroyi geoffroyi* Red-cheeked Parrot

Moderately common to common resident. Usually in ones, twos and small flocks (up to 10) occasionally in larger flocks (over 20). Recorded at Uiasa and Onansila, favouring canopy of vine forest and woodland. Moderately common in 2012 with at least six birds seen and sound-recorded (XC108718), and other groups were heard calling about vine forest. Common in tropical forest especially evergreen forest on Timor (Noske and Saleh 1996) but absent from Roti (Johnstone and Jepson 1996, Trainor 2005a).

[*Tanygnathus megalorhynchus hellmayri* Great-billed Parrot

Historical record only. Two males were collected by C.B. Haniel on the north coast and interior of Semau (Hellmayr 1914). One of the rarest and most poorly known resident landbirds in the Timor region, with few recent records.]



## Cuculidae

### *Cuculus saturatus optatus* Oriental Cuckoo \*

Palearctic migrant to the Wallacean Region, mostly on passage to and from Australia, but some possibly wintering. One collected from vine forest at Uiasa on 22 October 1990. One of the most common migrant non-passerine landbirds to Wallacea (White 1976) though probably often overlooked. Two records on Roti in December (Trainor 2005a) and 14 records in East Timor (2003–2006) from 16 October to 22 April (CRT unpubl. data).

**Taxonomy.** The taxonomy of the three *Cuculus* taxa *saturatus*, *optatus* and *lepidus* all of which occur in the Wallacean Region remains in dispute. White and Bruce (1986) who used the name *horsfieldii* in lieu of *optatus*, at that time differentiated solely on the basis of comparative wing length was ill-founded, suggesting that this variation was clinal in nature. As such they united both migratory, Palearctic forms into *saturatus*. They did however recognise *lepidus*, but treated it as a subspecies of *saturatus*.

Both King (2005) and Payne (2005), refuted these conclusions, commenting that in addition to the wing length character, there was evidence of variation in calls between the two Palearctic taxa, which they not only resurrected but elevated to specific rank; *lepidus* too was by similar arguments also raised to full specific status.

When Erritzoe *et al.* (2012) reviewed these taxa, further comparative studies by Lindholm and Linden (2007) had revealed that there were “only minor differences in vocalisation between them (*saturatus* and *optatus*) and these with some degree of overlap”. Their conclusion was to recognise both taxa, but to treat *optatus* as a subspecies of *saturatus*, and *lepidus* was maintained as having full specific rank.

Although various international checklists (e.g. Gill and Donsker 2013) maintain all three taxa at full specific rank, we here adopt the treatment of Erritzoe *et al.* (2012).

The specimen collected on Semau (A23620) an adult female, has a wing length of 192 mm. Payne (2005) gives the corresponding wing length as *saturatus* (163–190); *optatus* (Japan, Okinawa and Kurile Islands (185–204) as such it has been assigned to the taxon *optatus* although it is noted that its dimensions are only marginally outside/beyond the given range of *saturatus*. The above data, incidentally, illustrates the overlap between these two taxa.

### *Cacomantis variolosus* ?subspecies Brush Cuckoo\*

Uncommon. One calling from vine forest on 22 October 1989, on 20 and 21 October 1990 at Uiasa, and heard calling at distance once only at Otan in 2012.

**Taxonomy.** During his expe-



ditions to Timor (1828-1829) Müller collected a specimen which he considered to represent a distinct, resident, form of this species, and applied to it the name '*tymbonomus*'. A further series of seven birds was subsequently collected there by Stein (December 1931–May 1932). This latter series was examined by Mayr (1944) who found them to differ from the nominate form, citing the differences between the two as follows.

Adult: 1) Having narrow rufous edges to the greyish brown back, scapulars and lesser upper wing coverts; 2) The tail bars rufous not white, with only the tip of each feather white and undertail coverts barred rufous, not white; 3) Breast and flanks finely variegated with grey; and 4) Wing 121–131 mm. Immature: 1) More finely barred above and below than in corresponding plumages of the nominate subspecies; and 2) Tail bars more deeply rufous. Mayr accepted them as being of Müller's *tymbonomus*.

When Mees examined Müller's type specimen he concluded that it was merely an immature of the nominate form, thus invalidating the name *tymbonomus*.

White and Bruce (1986) accepted both Mees opinion on Müller's specimen and the comments of Mayr concerning Stein's material. They realised that by so doing it meant that Stein's series now represented a 'different', but now un-named taxon. To these Bruce in White and Bruce (1986) applied the name *whitei*.

Payne (2005) suppressed *whitei* into synonymy with the nominate form, a treatment followed by Gill and Donsker (2013), thereby assigning all of the Timor (and by implication Semaui) birds, whether migratory or resident, to the nominate form.

In northern Australia, breeding occurs from October to March so the October records would involve locally breeding birds, this being supported by calls/behaviour. It is noteworthy here that Stein's series was also collected within this period when Australian breeding (migratory) birds would not be present.

Stein's series has not been examined by us, but it is considered that Mayr's listed 'differences' would appear to be duplicated by varying stages of plumage of immature birds from the Kimberley region breeding population. Even the birds nominated by Mayr as adult (both male and female included here) appear to have characters consistent with later-stage immature plumage of the nominate form, in fact the series contained no birds whose plumage corresponded with, or even closely matched that of nominate form adult birds.

Whether, from this one can infer that the local breeding population retain features of immature plumage as shown by the nominate form (thereby providing a case for the retention of the taxon *whitei*), whether the term 'adult' was misapplied (by Mayr), or whether Stein's series truly



represented locally breeding birds, as distinct from 'stay-over' migratory nominate form birds, is not known.

Unfortunately no specimens were collected, or the birds even observed, and so the taxonomic status of this population is considered unsettled. It again, however, illustrates the close affinity between the populations of Timor and those of NW Australia.

Although HANZAB (1999) accepted that two subspecies of *C. variolosus* occurred within Australia, the northern form *dumetorum* was suppressed and reduced into synonymy with the nominate form by Payne (2005). He did however accept that the northern population of birds (i.e. those previously comprising *dumetorum*) were smaller. He provided separately, comparable measurements for the two Australian populations. Citing here only the wing dimensions of adult + immature male birds the details are as follows:

Population of eastern Australia, south of 22 S, wing 127-148 mm, populations of northern Australia (i.e. ex *dumetorum*) wing 125-131 mm.

Payne also gives, however, comparable measurements (i.e. adult + immature males) of birds collected on Timor, with these as follows:

Stein's collection (4 birds), 121-131 mm and additional material (other sources 3 birds), 117-125 mm. Although the series from

Timor is small it suggests significant morphological differences, there being barely any overlap at all from even the smaller northern populations from Australia.

In south-eastern Australia this species is a migrant, moving north in February-April and south in September-October and it is most likely that the migrants occurring in Wallacea originate from this region.

*Eudynamys cyanocephala/scolopacea*  
Australian Koel/Common Koel\*

Two observed in forest at Onansila on 3 May 1991 and calling at the same site on 4 May 1991. Australian Koel occurs as a resident on Timor and possibly other parts of Wallacea, and as a widespread winter migrant (presumably April-October), and the Common Koel is thought to be resident throughout much of Wallacea (Coates and Bishop 1997). The status of these species in Wallacea remains unclear because they are cryptic and rarely observed and probably only the female can be identified from field observations with certainty; the calls are similar, but have not yet been analysed in detail to allow species determination. Common Koel can disperse widely with records from Cocos-Keeling and Christmas Island confirming that the species cannot be ascribed to specific locations. On Timor, koels occur in a wide range of wooded habitats, particularly tropical evergreen forest. Of 130 predominantly vocal records in



East Timor (2003–2009), 116 (89%) were during September to December presumably associated with breeding (CRT unpubl. data). Five immature birds were collected at Camplong in January (Mayr 1944) suggesting egg-laying in November (Noske 2003). On Roti, koels were widespread and called frequently in December (Trainor 2005a).

*Centropus bengalensis sarasinorum*  
Lesser Coucal\*

Scarce or uncommon. One in low dead grass at Uiasa on 30 May 1990 and calling near caves at Onansila on 3 and 4 May 1991. Lesser Coucal is generally common in grassland, savanna woodland and tropical forest edge throughout its Lesser Sundas distribution (Coates and Bishop 1997).

Taxonomy. This species is polytypic with White and Bruce (1986), after lengthy consideration, combining all Wallacean forms as *C.b. javanensis* (of the Malay Peninsula and Greater Sundas), suggesting that there

was considerable clinal variation between this and *C.b. sarasinorum* (of the Lesser Sundas, Timor and Sulawesi). Recent workers including Payne (2005) have accepted *sarasinorum* as a valid subspecies and this would be the subspecies involved on Semaui.

## Strigidae

*Ninox novaeseelandiae fusca*  
Southern Boobook\*

Uncommon. An adult male collected in patch of vine forest at Uiasa on 22 October 1990. First record for Semaui.

Taxonomy. The subspecies *N.n. fusca* from Timor is described as being dark cold grey brown without any trace of warm brown or rufous. Timor specimens from Atapapu (Atapupu) and Tjamplong (Camplong) have the crown dull sepia brown, greyish brown or fuscous brown, the nape and hindneck mostly sepia brown or darker fuscous brown and the upper back generally plain sepia or fuscous brown sometimes



Figure 12. Adult male Southern Boobook *Ninox n. fusca* A23622 from Semaui Island.



with buff or whitish spots on the upper mantle. The legs are cinnamon buff or buff (Johnstone and Darnell 1997a). The single specimen from Semau matches well with Timor specimens in size and coloration, wing 221 mm, weight 180 g and total length 300 mm, and is substantially larger than the genetically and vocally distinctive subspecies *N.n. rotiensis* of Roti (Johnstone and Darnell 1997a, Verbelen 2010). It is dark greyish brown on upper head and nape grading to a fuscous brown or sepia brown on the upper back and wings. The throat, breast, belly and flanks dull white streaked with sepia brown or cinnamon brown and legs cinnamon buff giving as with Timor birds an overall warm chocolate brown appearance rather than dark cold grey brown (see Figure 12).

### Caprimulgidae

*Caprimulgus affinis* Savanna Nightjar\*

Uncommon. One over cultivated areas in evening at Uiasa on 23 October and two over the beach at night on 24 October 1990. Also a nest with two eggs on beach among debris at Usalin on 8 May 1991. Savanna Nightjar is common in lowland habitats on Timor, breeding and roosting in cities of Dili and Kupang, and throughout most of its Lesser Sundas distribution (Coates and Bishop 1997, CRT unpubl. data).

Taxonomy. White and Bruce (1986) were undecided about the

form "*timorensis*" (Mayr 1944) and left the birds of that area unallocated. Gill and Donsker (2013) have, however, accepted that taxon and almost certainly that is the form present in Semau.

### Apodidae

*Collocalia esculenta neglecta* Glossy Swiftlet

Common resident. Recorded at Uiasa and Onansila. Mainly small flocks and loose aggregations around coastal caves, buildings including a church and hawking over soaks. About 50 old nests and two new nests one with one egg and the other with two eggs in a limestone fissure at Uiasa on 30 May 1990 and hundreds of old nests on the ground and several new nests with eggs in small caves at Onansila on 3 May 1991. Seven specimens. Regularly seen in groups of up to 20 birds in village, dry forest and savanna in 2012. Generally common in the Timor region particularly in tropical forest (Coates and Bishop 1997).

Taxonomy. *C.e. neglecta* this given by White and Bruce.

*Apus nipalensis* House Swift\*

Two birds observed flying south over beach at Otan on 11 August 2012. In East Timor (2003–2006) a total of 22 records noted throughout the year with breeding colonies of 200 (16 March 2003) and 100–200 birds (6 December 2003) at two coastal cliff sites in far east, and birds observed nesting under Christ statue at Cristo Rei, Dili, on 16



April 2006 (CRT unpubl. data). Despite these cliff nesting colonies, House Swift is rarely observed and may be a breeding visitor. Appears to be colonising Wallacea (Coates and Bishop 1997).

### **Coraciidae**

*Eurystomus orientalis* Oriental Dollarbird\*

Uncommon. Probably mainly passage migrants from Australia in which case the taxon would be "*pacificus*". Ones and twos recorded at Uiasa in October 1990 (breeding occurs in north-western Australia from October–December). Uncommon in East Timor (2003–2006) with a total of 34 records during January to April (with a single record on 12 May) and 6 October to 22 November probably suggesting that this mostly involves the Asian subspecies *orientalis* (CRT unpubl. data). According to Mees (2006): 'As far as I can judge, *E. o. pacificus* has not yet been recorded from the Lesser Sunda Islands, although at least on the eastern islands of the chain it is to be expected as a winter visitor from Australia'.

### **Alcedinidae**

*Todiramphus chloris chloris* Collared Kingfisher

Moderately common resident. Recorded at Uiasa, Onansila and on Palau Merah. Mangal, vine thickets, cultivated areas, edges of lakes and rocky beaches. Five specimens. Two birds recorded at Otan beach and one in mangal at

Silain in 2012. Collected on Semaui by C.B. Haniel (Hellmayr 1914). Widespread and common in coastal habitats in the Lesser Sundas, and less common in inland habitats and mountains (Coates and Bishop 1997).

*Todiramphus sanctus sanctus* Sacred Kingfisher\*

Moderately common winter visitor from Australia. Recorded at Uiasa in October and Onansila in May. Mainly mangal and vine forest. Five specimens. One bird photographed in woodland at Otan on 12 August 2012.

*Alcedo atthis floresiana* Common Kingfisher\*

One bird seen twice along muddy tidal inlet at Silain on 11 and 12 August 2012. No descriptive notes were made, but based on date this bird was mostly likely *A.c. floresiana*, the resident Lesser Sundas subspecies. A migrant subspecies *A. c. bengalensis* visits northern Wallacea during summer (White 1976, Coates and Bishop 1997). The Common Kingfisher is locally common on Timor particularly along streams, occasionally the coast and lakes (CRT unpubl. data).

### **Meropidae**

*Merops ornatus* Rainbow Bee-eater  
Migrant from Australia. Several calling at Uiasa in October 1989; a group of four and a flock of ten at Uiasa in October 1990; small groups recorded at Onansila and Usalin in May 1991 and fre-



quently heard calling and occasionally seen at all locations in 2012. One of the most common and widespread Australian migrants to the Lesser Sundas where present in all months.

### **Pittidae**

[*Pitta elegans elegans* Elegant Pitta.

Rare or uncommon and status uncertain. One, probably this species, calling from dense lantana (*Lantana camara*) thicket near Onansila on 4 May 1991. Collected on Semaui by S. Müller in 1829 (Hellmayr 1914). The status of this subspecies is poorly known, but it appears to breed on Timor and Semaui (White and Bruce 1986), and perhaps Roti, and migrate northwards during the Nusa Tenggara dry season (?May–October) to islands off northern Sulawesi, north and central Maluku (White and Bruce 1986, Coates and Bishop 1996, Trainor 2005a, Tebb *et al.* 2008). Therefore likely to be present on Semaui during November–April/May. It was locally abundant with up to 10 birds calling simultaneously on Roti in December, possibly recently returned migrant birds (Trainor 2005a).]

### **Meliphagidae**

*Meliphaga reticulata* Streaky-breasted Honeyeater

Common to moderately common. Recorded at Uiasa and Onansila mainly in open forest and woodland, edges of vine thickets and village gardens.

Fledgling unable to fly probably about 1 week old at Uiasa on 22 October 1989, and a fledgling with a yellow throat was photographed at Otan on 12 August 2012. Collected by L. Loria on Semaui (Salvadori 1890). Fledglings have been recorded from May and November in West Timor, with breeding probably mostly timed for increased insect abundance in the wet season (Noske 2003). Some adult calls are very similar to those of Singing Honeyeater *Lichenostomus virescens* of Australia (e.g. XC107799). Several sound recordings were made (XC116500, XC116584). Ten specimens. On Timor it is a common town and village bird (e.g. Kupang and Dili) and is particularly abundant in savanna woodland.

*Philemon buceroides buceroides*  
Helmeted Friarbird

Uncommon to moderately common. Recorded at Uiasa, Onansila and Usalin. Mainly vine forest, mangal, palm groves and woodland edge of lake. Only a single bird was observed in dry forest in 2012, suggesting a probable change in abundance since the 1989–1991 surveys. Helmeted Friarbird continues to be a popular cagebird/songbird in Indonesia, which drives captures for trade. Little information is available on trade on Semaui or West Timor, but it has been a common bird in markets on Lombok, where the wild population has greatly diminished. Widespread and



common throughout most of its Nusa Tenggara range but uncommon on Roti (Trainor 2005a).  
Taxonomy. Nominate subspecies.

*Lichmera indistincta limbata* Brown  
Honeyeater, Indonesian  
Honeyeater

Common. Recorded at Uiasa and Onansila. Mainly village gardens and open woodland. One specimen. Common and frequently seen and heard in village gardens, dry forest and savanna in 2012 with one immature bird observed in Otan village on 12 August. Noteworthy is that birds from both Sumbawa, Lombok and Semaui reacted to REJ's playback calls of *L. indistincta* from Perth, Western Australia. Brown Honeyeater is sporadically distributed in Nusa Tenggara and is particularly patchy on Flores (Coates and Bishop 1997, Verhoeve and Holmes 1999). Occurs widely on Timor, including villages, and Wetar (Trainor *et al.* 2009).

Taxonomy. We treat *limbata* of Wallacea as conspecific with *indistincta* of Australia and New Guinea, based on morphology and calls.

### Acanthizidae

*Gerygone inornata* Plain Gerygone\*  
Uncommon. Recorded at Uiasa and Onansila. Usually single birds occasionally in twos. Mainly vine forest areas. Infrequently recorded in 2012, with a few birds heard singing and sound recorded (XC108716) in dry forest.

The Plain Gerygone is one of the most frequently heard landbirds on Timor, Atauro (Trainor and Soares 2004), Wetar (Trainor *et al.* 2009), but is also uncommon in similar environments on Roti with poorly developed dry forest (Trainor 2005a).

### Sylviidae

*Cisticola juncidis fuscicapilla* Zitting  
Cisticola

Uncommon to moderately common. Recorded at Onansila and Osalin and possibly Uiasa (unidentified Cisticola observed there). Usually in ones, twos and threes favouring rice and maize crops and open gardens. A few birds observed along roadside shrubs in 2012 and assumed to be this bird. Collected by Wallace (notebooks) and L. Loria on Semaui (Salvadori 1890, Bruce 1987). Zitting Cisticola occurs widely on Timor, and through Nusa Tenggara where it is abundant on floodplains, grasslands and invades forest edge following swidden (slash and burn) agriculture (CRT unpubl. data).

*Cisticola exilis* Golden-headed  
Cisticola\*

Status uncertain. An unidentified cisticola observed in maize crop near Uiasa on 22 October 1990. Brief harsh raspy calls typical of the song of Golden-headed Cisticola were recorded close to Otan village on 12 August 2012. Both Zitting and Golden-headed cisticolas have been recorded around Kupang.



## **Pachycephalidae**

### *Pachycephala pectoralis calliope*

#### Golden Whistler

Moderately common. Mainly singles or occasionally in pairs. Recorded at Uiasa and Onansila. Mainly vine forest and mangal but also cultivated areas, lantana scrubs and dense Castor Oil *Ricinus communis* bushes. Six specimens. One male bird was seen in dense dry forest, photographed and sound recorded while singing (XC108720) at Otan on 12 August 2012. A juvenile male was collected by L. Loria on 20 April 1889, and two immature males and an immature female were collected on Semaui by Haniel (Hellmayr 1914).

Taxonomy. White and Bruce did not split the Golden Whistler complex, listing all under *P. pectoralis*. Two males from Timor in WAM collection are slightly larger with wing 87 mm compared to a male and female from Semaui with wing 83–84 mm and three immature males and one female from Roti, wing 80–82 mm. The female from Semaui is also slightly darker more brownish on the upper-parts than the Roti female. This species was not listed for Roti by White and Bruce (1986) but listed as *P.p. calliope* by Johnstone and Jepson (1986), however the current taxonomic status of birds from both Roti and Semaui needs clarification.

[*Pachycephala orpheus* Fawn-breasted Whistler

Status? Listed for Semaui by

Coates and Bishop (1997) but not White and Bruce (1986). Occasionally heard from village and dry forest in 2012, with one bird photographed at Otan on 12 August 2012, which was subsequently identified as a female Golden Whistler. The first island record was by Holmes (1993) who reported Fawn-breasted Whistler without accompanying notes from Oeasa. This whistler is one of the most frequently heard resident landbirds on Timor and Wetar, generally occurring in a wider range of wooded habitats than Golden Whistler, such as savanna woodland. No specimens of Fawn-breasted Whistler have yet been collected from Semaui Island, but sight records have been claimed. The distinctions between adult female of the local subspecies of the Golden Whistler *Pachycephala pectoralis calliope* and adults (sexes similar) of Fawn-breasted Whistler (*P. orpheus*) are as follows. Fawn-breasted Whistler shows:

- 1) Paler whitish lores and supercilium (also often forehead) also warm reddish brown, ear coverts and a greyer ashy shade to crown although this less prominently so on adult female (some birds noted to have browner crown and less obvious supercilium etc. may be juvenile-immature females). All of these areas are darkish grey brown (of a rather rich shade) on adult female Golden Whistler (*calliope*).



- 2) The upperparts have a distinctly greenish (olive yellow) shade and the primaries and secondaries edged similar (whereas in *calliope* these areas are darkish warm brown).
- 3) The rump and upper tail coverts are dull yellow (in *calliope* these areas are only a slightly lighter shade of brown and they are only very slightly tinted yellowish olive).
- 4) Upper tail darkish brown, strongly washed with olive yellow (in adult female *calliope* this lacks the yellowish tones).
- 5) Underparts of the two are similar, but the yellow of undertail coverts tends to be more strongly present on Fawn-breasted Whistler.
- 6) Bill smaller (i.e. shorter), paler and less robust.]

### Laniidae

*Lanius schach bentet* Long-tailed Shrike\*

Uncommon. One bird observed at Onansila on 3 May 1991, and a single bird observed in swidden near Otan on 12 August 2012. The Long-tailed Shrike is generally a common bird of savanna woodland throughout its Lesser Sunda distribution, with a recent range extension to Sermata Island (Trainor and Verbelen 2013).

### Dicruridae

[*Symposiachrus trivirgatus*  
Spectacled Monarch

C.B. Haniel collected an adult female (Hellmayr 1914) on Semau which is the only record. Recorded frequently on the northern peninsula of Roti (Trainor 2005a), and generally moderately common mostly in tropical forest, including mangal on Timor (Coates and Bishop 1997).]

*Myiagra ruficollis ruficollis* Broad-billed Flycatcher

Uncommon. Single birds observed in mangal at Onansila on 3 and 4 May 1991. Occasionally heard, sound-recorded (XC108723) and seen in mangal and dry forest in ones and twos in 2012. A male was collected by A.R. Wallace on Semau. In Nusa Tenggara this bird is particularly common in mangal, and in woodland adjacent to wetlands and streams, but otherwise generally uncommon in dry tropical forest (CRT unpubl. data).

[*Monarcha cinerascens* Island Monarch

L. Loria collected a female (Salvadori 1890). A small island species. Locally common on Roti (Trainor 2005a) and despite historical collections from Kupang and Camplong, is generally absent on Timor (Mayr 1944). Although no recent records, this species has now been regularly recorded on Ashmore Reef and a record from Cassini Island, Kimberley region, Western Australia (Carter *et al.* 2011, and Ekins 2011).]



*Rhipidura dryas semicollaris* Arafura Fantail

Scarce or uncommon. Ones and twos observed in vine forest at Uiasa in October 1990. Not recorded in 2012. Found in the same habitats as Northern Fantail *R. rufiventris*, but typically occurs in mid- and lower-forest strata and with a stronger association with tropical forest. Generally one of the most common resident landbirds throughout its Lesser Sundas, Flores Sea and Molluccan distribution (Coates and Bishop 1997). White and Bruce (1986) did not distinguish between this and *R. rufiifrons* although they did accept the various subspecies with *semicollaris* being recorded from Semau.

*Rhipidura rufiventris rufiventris*  
Northern Fantail

Moderately common. Recorded at Uiasa and Onansila mainly vine forest and *Ficus* thickets and several observations of birds in roadside trees. Generally common in a wide range of wooded habitats including savanna throughout its east Lesser Sundas and Molluccan distribution.

Taxonomy. The two specimens from Semau are similar to the nominate form from Timor being dark grey dorsally, crown and face blackish, a white supercilium, and throat and chest white. Roti *tenkatei* differs markedly in having the throat and breast dark grey with broad white streaks.

*Dicrurus densus densus* Wallacean Drongo\*

Uncommon. Single birds observed at Uiasa during May and October visits and one collected at Usalin on 8 May 1991. Mainly vine forest with *Ficus*. The nominate subspecies of Wallacean Drongo is a common forest bird on Timor and Wetar, is uncommon on Roti (Trainor 2005a), frequent on Atauro (Trainor and Soares 2004), but was unrecorded on Sermata during a visit in 2010 (Trainor and Verbelen 2013). This taxon is larger and vocally distinctive compared to *D.d. bimaensis* of the Flores Island chain, and therefore should probably be considered distinctive at species-level.

**Campephagidae**

*Coracina personata personata*  
Wallacean Cuckoo-shrike

Uncommon. One in vine forest near Uiasa on 30 May 1990; three observed at Onansila on 3 May and two on 5 May 1991; and two on open flats near Usalin near SE end of Semau on 8 May 1991. Uncommonly recorded in 2012 with one bird observed in dry forest, and several heard calling with one briefly sound-recorded (XC116491). In Nusa Tenggara, the Wallacean Cuckoo-shrike is strongly associated with tropical forest, but is often common also in natural *Eucalyptus* woodlands especially in the mountains (CRT unpubl. data).



*Lalage sueurii sueurii* White-winged Triller

Uncommon in ones and twos. Recorded at Uiasa in October 1989; edge of cultivated areas at Onansila on 2 May 1991 and one was observed carrying food or nesting material near Usalin on 8 May 1991. In 2012 regularly heard singing (XC116494, XC116495) and observed in tropical dry forest and village. A common bird in the Timor region, particularly in savanna woodland.

Taxonomy. We treat *sueurii* of the Lesser Sundas as sub-specifically distinct from *tricolor* of Australia and New Guinea.

### **Pycnonotidae**

*Pycnonotus aurigaster aurigaster*  
Sooty-headed Bulbul\*

Introduced. Commonly heard calling about village in August 2012. First reported in West Timor at Kupang in November 1997, about 20 km south of Kupang in 2004 (Trainor *et al.* 2006) with more recent records up to about 80 km from Kupang (Craig Robson *in litt.* 2010). It appears to have established in East Timor after the conflict in 1999, presumably from cage-bird escapees, but is currently restricted to within about 10 km of Dili (CRT unpubl. data). On Sumbawa this bird was absent during observations in 1988–1995 (Johnstone *et al.* 1996), but occurred widely in 2000 (Trainor *et al.* 2006).

### **Oriolidae**

*Oriolus melanotis melanotis* Olive-brown Oriole, Timor Oriole

Moderately common to common at Uiasa in ones and twos and flocks (up to 10). Mainly in vine forest, *Ficus* thickets and open woodland. Five specimens collected including a fledgling (A23385). Breeding recorded in May. In 2012 it was occasional with about six birds heard in dry forest and scattered forest trees in savanna with a couple of birds sound recorded (XC108721). Two adult males collected on north-coast of Semau by Haniel (Hellmayr 1914). On Timor breeding appears to take place at the end of the dry season through the wet season (October to at least March: Noske 2003). The Olive-brown Oriole remains common in tropical forest on Timor (Noske and Saleh 1996, Trainor *et al.* 2008) and Wetar (Trainor *et al.* 2009), is common on Roti (Trainor 2005a) and locally common, particularly in evergreen forest, on Atauro (Trainor and Soares 2004).

Taxonomy. Not listed for Semau by White and Bruce (1986) and Roti and Timor birds are placed under nominate *melanotis*. Males from Semau have crown and mantle dark olive green, face and sides of throat slaty grey finely streaked with black and chin and throat grey. Females have head brown, the feathers with dark brown central streaks, whitish supercillium, and face



and side of throat blackish with centre of throat white. On colouration and size these birds match the nominate form from Roti and Timor.

[*Sphecotheres viridis* Timor Figbird

Noted by Schlegel for Semau (Hellmayr 1914); two adult males collected by C.B. Haniel (Hellmayr 1914) and listed in Bruce (1987), and Holmes (1993) without further comment.]

### **Artamidae**

*Artamus leucorhynchus albiventer*  
White-breasted Woodswallow\*

Uncommon. Two over Uiasa on 22 October 1989 and two in mangal at Onansila on 2 May 1991. About four birds observed in agricultural land in 2012. A widespread and generally common resident throughout most of Wallacea.

Taxonomy. White and Bruce (1986) list the subspecies *albiventer* for this region.

*Artamus cinereus perspicillatus*  
Black-faced Woodswallow

Uncommon. Two on open flats with Lontar palms and Acacias on 8 May 1991, and two birds perched on electrical wiring near Otan on 12 August 2012. One specimen was collected by H. ten Kate and two adult males were collected by C.B. Haniel (Büettikofer 1892, Hellmayr 1914). The Lesser Sundas endemic subspecies is generally uncommon throughout its restricted range of Timor, Jaco, Leti and Sermata (Coates and Bishop 1997).

Taxonomy. White and Bruce (1986) list local records as *perspicillatus*, however, judging from Etchécopar and Hüe (1977) and Ford (1978) the type locality of nominate *cinereus* is Timor.

### **Corvidae**

*Corvus macrorhynchus*  
*macrorhynchus* Large-billed Crow

Moderately common at Uiasa in ones and twos. Mainly around cultivated areas and in vine forest. None recorded in 2012, but generally a common and wide-ranging landbird throughout its Lesser Sundas range.

Taxonomy. Only the nominate form is recorded for all of Wallacea.

### **Hirundinidae**

*Hirundo tahitica javanica* Pacific Swallow\*

Uncommon resident. Single birds and small flocks (up to 6) recorded at Uiasa and near Usalin. Mainly over coastal areas. A widespread and common bird throughout most of Wallacea.

Taxonomy. White and Bruce (1986) list all Wallacean records under *javanica*.

*Hirundo nigricans nigricans* Tree Martin

Australian migrant. Two observed over a beach at Otan in August 2012. Tree Martins breed in East Timor with nesting observed along coastal cliffs and recently fledged birds observed about ricefields (CRT unpubl. data). This species occurs



throughout Australia and Tasmania and undergoes some geographic variation, e.g. north-south increase in body size but it is too mobile and continuously distributed to permit the evolution of subspecies. We treat all Australian and Timor populations under the nominate form *contra* Gill and Donsker (2013) and Turner and Rose (1989).

### Zosteropidae

*Zosterops citrinellus citrinellus* Ashy-bellied White-eye

Common in family groups and flocks of over 20 birds at Uiasa and Onansila. Cultivated areas village gardens, lantana and vine forest. The Ashy-bellied White-eye was surprisingly unrecorded in 2012, but this may be because of local movements associated with tracking food resources. This bird is typically common in adjacent Kupang city, but is sometimes absent (OH unpubl. data). Generally one of the most abundant resident landbirds throughout its Lesser Sundas range.

### Muscicapidae

*Saxicola caprata pyrrhonota* Pied Bushchat

Scarce. Recorded at Uiasa and Onansila. Mainly open areas including grassland. One specimen. The Pied Bushchat was frequently observed and heard singing (XC108722) in 2012 throughout village and woodland, typically in same habitat as White-bellied Bushchat, though

probably used more open areas (at edge of denser dry forest rather than interior).

*Saxicola gutturalis luctuosa* White-bellied Bushchat **Near threatened**

Uncommon to moderately common. Two recorded on open flats with palms and *Acacia* at south-east end of island in May 1991. More frequently recorded in 2012 with at least four birds seen in village and dry forest and several other birds heard while singing (XC116493; 116496; 108709–108712) constantly throughout the morning, often in close proximity to *S. caprata*. The White-bellied Bushchat has a complex song which appears to



**Figure 13.** White-bellied Bushchat *Saxicola gutturalis luctuosa*, an endemic of Semau Island.



vary by island ([www.xeno-canto.org](http://www.xeno-canto.org)). A.R. Wallace collected two adult males and one adult female, and C.B. Haniel collected an adult male (Hellmayr 1914). The endemic Semaui subspecies was described by Bonaparte in 1851 and differs from the nominate form of Timor and Roti by the extent of white in tail feathers: "the base of the four outer pairs of tail-feathers is white in this form, the white occupying one basal third in the outermost pair and increasing in extent on pairs, the two basal thirds of the fourth pair being white" (Büettikofer 1891). This bird is considered Near Threatened because of concern over loss of tropical forest habitat (BirdLife International 2013), however, it remains common on Timor, and its preferred habitat (scrubby savanna woodland and dry forest) is little threatened by forest conversion. Its habitat has probably expanded by widespread tropical forest conversion over the last few hundred years.

*Cyornis hyacinthinus hyacinthinus*  
Timor Blue Flycatcher

Uncommon to rare. A small flycatcher most probably a male of this species with bluish upperparts, whitish buff brow and chestnut breast and belly was observed in vine forest at Uiasa on 29 May 1990. Collected on Semaui by A.R. Wallace and an adult female was collected by H. ten Kate (Büettikofer 1892, Hellmayr 1914). Occurs on Timor, Roti and Wetar, where it usually

occurs at low population densities in tropical forest.

**Sturnidae**

*Aplonis minor* Short-tailed Starling\*

One record, two birds at the edge of vine forest at Uiasa on 21 October 1990. The Short-tailed Starling prefers evergreen forest, though occurs at forest edge and sometimes in agricultural land. They appear to track fruit through the landscape and have been described as sometimes present in large flocks at a site, but absent at the same location at other times (Noske and Saleh 1996). Probably not resident on Semaui, but visits from adjacent Timor. Similarly on Roti, this bird is known only from a single specimen (Johnstone and Jepson 1996).

**Turdidae**

*Zoothera peronii peronii* Orange-sided Thrush **Near threatened\***

Uncommon to locally moderately common. Only observed at Uiasa. One in vine forest on 22 October 1989 and one collected from fairly open vine forest with *Ficus* on 29 May 1990. More frequently recorded in 2012 with at least three individuals observed in village and tropical forest and at least five other birds heard in tropical forest during one morning.

The eastern subspecies *audacis* of this Timor group endemic remains common and under no threat of extinction in East



Timor, Atauro, Wetar, Romang, Damar and Babar (Trainor and Soares 2004, Trainor *et al.* 2008, 2009, CRT unpubl. data) but in West Timor, Roti and possibly Semau harvesting (chicks collected from nets, adults captured with mist-nets) for the cage bird trade, and particularly songbird competitions is intensive (OH unpubl. data). It appears to be at least locally common on Semau.

### Dicaeidae

*Dicaeum maugei maugei* Red-chested Flowerpecker

Moderately common in vine forest areas at Uiasa in October 1990 (three specimens), and frequently seen and heard in village, dry forest and savanna in 2012. One of the most widespread and common restricted-range birds on Timor, Roti, Atauro and Wetar occurring also in towns and villages including Kupang and Dili (CRT unpubl. data).

### Nectariniidae

*Nectarinia solaris solaris* Flame-breasted Sunbird

Uncommon to moderately common. Recorded at Uiasa and Onansila mainly in village gardens including flowering *Lantana* and *Cassia*, and frequently seen and heard in village, dry forest and savanna in 2012. A common restricted-range bird that occurs in most wooded habitats including village, but is uncommon or absent from evergreen forest (CRT unpubl. data). One specimen.

Taxonomy. White and Bruce (1986) recognise the Wetar Island population as being no more than clinal, but IOC and others accept it as a distinct subspecies *exquisitus*. Gill and Donsker (2013) list the range (*contra* White and Bruce) of nominate to Wetar, but this is incorrect. The type locality of *solaris* is Timor and *exquisitus* is limited to Wetar.

### Passeridae

*Passer montanus* Eurasian Tree Sparrow\*

Introduced. Absent in 1989–1991, but common in villages in 2012. In Timor was first noted as present in 1974, and has continued to spread throughout East Timor since 2002 (CRT unpubl. data); was introduced to Atauro Island in *ca* 2003 (Trainor and Soares 2004), and has colonised Wetar (Trainor *et al.* 2009) and Lembata relatively recently (Schellekens *et al.* 2011). Now occurs widely in the Lesser Sundas and throughout most of Wallacea (Coates and Bishop 1997).

Taxonomy. Almost certainly these are of the subspecies *malaccensis* the form found throughout the wider region.

### Estrilididae

*Taeniopygia guttata guttata* Zebra Finch

Very common in small groups and flocks of up to 40 individuals at Uiasa, Onansila and Usalin in cultivated areas, village gardens, grassland and attracted



to small pools. At Onansila in May 1991 children caught finches using guitar glue on perches near water. Twelve specimens. In 2012 the Zebra Finch was abundant in grassy areas about villages, along roads and savanna. Usually common in dry degraded lowlands on Timor and throughout Nusa Tenggara, and often common in towns (e.g. Kupang, Dili and Maumere).

**Taxonomy.** Differs from the widespread Australian form *castanotis* in having the throat and breast barring absent or greatly reduced and having slightly darker upperparts.

*Lonchura punctulata blassi* Scaly-breasted Munia

Uncommon. A flock of six at Uiasa on 30 May 1990 and a small flock at Onansila on 4 May 1991 (two specimens collected). Open areas near water. A common finch on Timor and throughout Nusa Tenggara, particularly in degraded shrubby and grassy lowland areas and cultivation including ricefields (Coates and Bishop 1997).

*Lonchura molucca* Black-faced Munia\*

A small flock drinking at pool near Uiasa on 22 October 1989. A common finch on Timor and throughout much of Wallacea, mostly in grassy and shrubby lowlands (Coates and Bishop 1997).

*Lonchura quincolor* Five-coloured Munia\*

Flock of eight in *Lantana* bushes

at Onansila on 3 May 1991. Typically the least commonly recorded finch on Timor and the Lesser Sundas, in small groups of 2–15 birds, often associated with ricefields and grassland, but with a stronger affinity than other munias to savanna woodland and tropical forest edge. The largest recorded flock on Timor was 70 birds at a freshwater marsh, where they were apparently breeding in *Typha* bullrush (CRT unpubl. data).

[*Lonchura fuscata* Timor Sparrow

Two adult males collected by L. Loria on Semau, and also collected by A.R. Wallace (Salvadori 1890, Hellmayr 1914); no recent records, though suitable habitat is widespread on Semau. Endemic to Semau, Timor, Roti (Coates and Bishop 1997) and Jaco (CRT unpubl. data). Populations are probably under pressure at least locally from capture for the cage bird trade in West Timor, particularly about ricefields (using glue on lines to trap birds).]

## Motacillidae

*Anthus rufulus* Paddyfield Pipit

Moderately common. One on grassy flat edge of beach at Usalin on 8 May 1991. A few birds were observed on roads and in short grass, photographed and sound-recorded (XC116492) in 2012. A common bird of short grass, fallow ricefields and agricultural land in Nusa Tenggara (Coates and Bishop 1997).

**Taxonomy.** Listed under



Common Pipit (*Anthus novaeseelandiae*) by White and Bruce (1986), who referred the local/regional records to *medius*. Under the revision of the *novaeseelandiae* group this taxon is now included in the SE Asian *Anthus rufulus* group.

## DISCUSSION

A total of 110 native bird species (63 non-passerine and 47 passerine) and two introduced passerines have been recorded from Semau Island and adjacent seas. Only one subspecies, that of the White-bellied Bushchat, is endemic to the island. More than half of the avifauna is represented by new island records. Unsurprisingly, Semau's avifauna is a subset derived from Timor, with a few small-island species (e.g. Orange-footed Scrubfowl and Pied Imperial Pigeon) that are mostly absent from Timor. These two islands would have been connected at least as recently as 10,000 years ago.

A great deal still remains to be done on the alpha taxonomy of Wallacean birds. Judging from information presented in this paper, the status of many species and subspecies is still yet to be resolved. Furthermore the precise distributions of many await definition, as do their migrations and other movements and abundance in given habitats. We have, where appropriate, discussed the validity of certain taxa, including for example Brown Quail, Red-throated Little

Grebe, Black Bittern, Emerald Dove, Zebra Dove, Brush Cuckoo, Golden Whistler, Olive Brown Oriole and Flame-breasted Sunbird. More recent collections in the region that highlight hybrid zones e.g. in Emerald Dove that help explain important stages of population differentiation are essential to clarify and reflect subtleties in geographic variation. Further work especially using molecular techniques will no doubt help resolve some of the species level treatments.

Our field observations and review substantially improve knowledge of the avifauna of Semau. Most notably we have added 17 resident landbirds. Thirteen restricted-range birds have been recorded from the island. The observation of Timor Green Pigeon (Endangered) is the first on the island in 132 years (since Wallace), and is one of the few modern regional records including West Timor (Noske and Saleh 1996) and Roti (Trainor 2005a). Other notable records include: Bar-tailed Godwit (Near threatened), Far Eastern Curlew (Vulnerable), Beach Stone-curlew (Near threatened), Malaysian Plover (Near threatened), Javan Plover (Near threatened), Pink-headed Imperial Pigeon (Near threatened), Black Bittern, Grey Teal, Black-naped Tern, Pied Imperial Pigeon and Southern Boobook. We did not record nine putative resident landbirds known on Semau by historical records (Orange-footed Scrubfowl, Brown Goshawk, Rainbow



Lorikeet, Great-billed Parrot, Elegant Pitta, Timor Figbird, Spectacled Monarch, Island Monarch and Timor Sparrow). Semau lacks many of Timor's resident landbirds because of its more limited land extent, but the low abundance of raptors in general was striking. The absence of the typically regionally ubiquitous Brahminy Kite *Haliastur indus* is unexpected, and no raptors at all were observed during 2012.

Semau has low levels of endemism associated with its weak isolation (a 2.7 km sea gap with seas less than 50 m deep) from Timor. The endemic subspecies of White-bellied Bushchat shows limited morphological variation, but there is interesting variability in the song of the three island taxa. The Southern Boobook on Roti appears to be a distinctive species (Johnstone and Darnell 1997a, Verbelen 2010) associated with relatively limited isolation but the connectedness of Semau to Timor has obviously been a constraint to avian divergence.

We added a large number of waterbirds, shorebirds and seabirds to the island list. These were evidently overlooked or avoided by historical collectors. Most would be expected on Semau, though the presence of the Javan Plover is notable. Records of globally threatened (and other) migrant shorebirds on Semau and Pulau Kera indicate that important habitat (beach, mudflat) for these birds is

present, and forms part of an important interconnected wetland complex for these birds including Kupang Bay, Roti and Ashmore Reef (Andrew 1986, Trainor 2005a,b, 2011, Milton 2005). Migrants and vagrants to the island include the Wandering Whistling Duck, Grey Teal and possibly the Australian Darter that were probably drought refugees from Australia. The year 1991 was a particularly dry year in central and south-eastern Australia and these may have been species seeking refuge from drought. Passage migrants and winter visitors from the northern hemisphere include the Bar-tailed Godwit, Whimbrel, Ruddy Turnstone and Grey Plover. The Sacred Kingfisher and Rainbow Bee-eater are examples of regular migrants from Australia. Other vagrants and rare visitors include the Arctic Skua and Pied Imperial Pigeon.

### Biogeography

The islands of eastern Indonesia occupy a major zone of contact between the respective floras and faunas of the Asian and Australian-New Guinea (Austro-Papuan) Regions. Although the concept of biological replacement and intergradation between these biogeographic regions had been previously recognised, it was not until the now famous Alfred Wallace travelled and collected extensively throughout the area in the 1850s and early 1860s that a definition of their respective



limits was determined. Analysis of this data led him to propose the boundary between these two, now known as the Wallace Line as that roughly corresponding to the continental limit of the Sunda Shelf. This "boundary" delineates the limit of the geographical range of many, basically Asian, species/genera, but not for all. Some do, however, extend farther east, although many of these peter out before they reach the Australo-Papuan Region proper. Lydekker (1896) instead considered where the corresponding major loss of species from the Australo-Papuan Region occurred, resulting in the recognition of the Lydekker Line. This lies further east than the Wallace Line, roughly corresponding to the continental limit of the Sahul Shelf. The zone between these two biographical "Lines" is now known as Wallacea, which represents the transition zone between the two major faunas.

Most of the currently inundated Sahul Shelf existed above sea level during the Pleistocene periods, and extended west from New Guinea to include the Aru Islands. The distance between Australia and Timor was then only about 90 km. Judging from a number of species occurring in both northern Australia and Wallacea, the close proximity of Australia and the Timor Region (Roti, Semau and Sabu etc.) has led to high levels of intergradation/exchange between populations. This appears to be

particularly evident between north-west Australia (Kimberley Region) and Timor Region with the zoogeographic affinities of a number of species (including Brown Quail, Emerald Dove, Rose-crowned Fruit Dove, Zebra Dove, Brown Honeyeater, White-winged Triller and Zebra Finch for example) showing strong species level and subspecific affinities, origins and in some cases hybridisation with populations further north and west. These hybrid zones or zones of intergradation are especially interesting to evolutionary biologists because they provide opportunities to examine important stages in population differentiation. The Timor, Roti, Semau and Sabu region has obviously had colonisation from both northern Australia and other parts of Wallacea and the direction of colonisation from that region of Wallacea to northern Australia is also evident judging from morphological variation in a number of species.

Much of this similarity is no doubt due to the fact that both the Timor and west Kimberley regions share a tropical monsoon type climate, characterised by moderate stable temperatures and high relative humidity. West Timor is generally slightly cooler than west Kimberley (Kupang for example has an average annual temperature of 24.4° C compared to Mitchell Plateau 32.9° C) and a very similar rainfall (e.g. average annual rainfall for Kupang 1,493 mm compared to Mitchell



Plateau 1,548 mm). The wet season (north-west monsoon) begins in November and may continue until March–April and the Timor region is generally similar with the driest months July, August, September receiving almost no rain in most years as in west Kimberley. Overall the two regions experience a similar climate and in many cases have similar vegetation and habitat types, thereby resulting in many of the birds shared by the two regions undergoing little or no geographic variation.

#### Changes to the avifauna

Two introduced birds (Sooty-headed Bulbul and Tree Sparrow) were recorded in 2012, but were not recorded in 1989–1991 and have become naturalised relatively recently. The White-vented Myna *Acridotheres cinereus* and Yellow-vented Bulbul *Pycnonotus goiavier* have very re-

cently formed naturalised populations (originally from the Java-Sunda region) in West Timor, with flocks of up to 100 White-vented Myna observed about Kupang Bay (OH unpubl. data).

Several forest specialist bird species, particularly those preferring evergreen forest on neighbouring Timor (Table 2) have probably declined on Semau since the historical collections. Of the seven unrecorded resident landbirds several (e.g. Rainbow Lorikeet) may reach Semau as occasional visitors from the Timor mainland, while Great-billed Parrot, and possibly Spectacled Monarch, may have declined or been extirpated over the past 150 years in association with a reduction in the extent and quality of tropical forest. The Great-billed Parrot is one of the most poorly known birds in Nusa Tenggara, with few modern records. Deforestation may also

**Table 2.** Status of bird species that prefer tropical forest/evergreen forest on Semau

Species	Historical	1989-1991	2012
Olive-brown Oriole	Collected	Common	Occasional
Arafura Fantail	Collected	Uncommon	Unrecorded
[Banded Fruit Dove]	Unrecorded	1 bird	Unrecorded
Orange-sided Thrush	Unrecorded	Uncommon	Common
Pink-headed Imperial Pigeon	Collected	Uncommon	Unrecorded
Marigold Lorikeet	Observed	Unrecorded	Unrecorded
Yellow-throated Whistler	Collected	Moderately common	Occasional
Timor Blue Flycatcher	Collected	1 bird	Unrecorded
Red-cheeked Parrot	Collected	Common	Frequent
Short-tailed Starling	Unrecorded	2 birds	Unrecorded



have affected Pink-headed Imperial Pigeon, Banded Fruit Dove and Timor Blue Flycatcher. Frugivores such as Pink-headed Imperial Pigeon and Short-tailed Starling may visit occasionally from Timor, but the origin of the Pied Imperial Pigeon is unclear.

The abundance of Yellow-crested Cockatoo and Helmeted Friarbird has probably declined through trapping for the cage bird trade. The cockatoo may be now extinct on Semau, but a few Helmeted Friarbirds were observed in 2012. Surprisingly Orange-sided Thrush maintains widespread populations despite intensive captures for songbird trade in West Timor and Roti Island (OH unpubl. data).

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## APPENDIX

Semau Island bird species list\* indicates a new island record, predominantly of migrant, visiting or non-forest resident species. Square brackets indicate that the species specific identity is unconfirmed.

Status: RR=Restricted-range (<50,000 km<sup>2</sup>; Stattersfield *et al.* 1998); R=Resident; M=Migrant; Int=Introduced; F=Forest-dependent; V= Visitor/Vagrant; CR=Critically Endangered; EN=Endangered; VU=Vulnerable; NT=Near Threatened.

Data source: Mü (S. Müller in Hellmayr 1914), ARW (A.R. Wallace, [his personal notes] & in Hellmayr 1914), TK (H. ten Kate in Büttikofer 1892 and Hellmayr 1914), Lo (L. Loria in Salvadori 1890, Hellmayr 1914), Ha (C.B. Haniel in Hellmayr 1914), WB (White and Bruce 1986, Bruce 1987); DH (Holmes 1993); CB (Coates and Bishop (1997); REJ (Johnstone 1989-1991), HT (Hidayat-Trainor 2012). Unconfirmed records are included in square brackets.

Species Name	Status	Mü	ARW	Lo	TK	Ha	WB	DH	CB	REJ	HT
BROWN QUAIL <i>Coturnix ypsilophora</i>	R							X		X	
RED JUNGLEFOWL <i>Gallus gallus</i>	R,F									X*	
WANDERING WHISTLING DUCK <i>Dendrocygna arcuata</i>	V?									X*	
SUNDA TEAL <i>Anas gibberifrons</i>	V?									X*	
GREY TEAL <i>Anas gracilis</i>	V									X*	
RED-THROATED LITTLE GREBE	R									X*	
<i>Tachybaptus ruficollis vulcanorum</i>											
AUSTRALASIAN DARTER <i>Anhinga novaehollandiae</i>	NT, R										X*
LITTLE EGRET <i>Ardea garzetta</i>	R									X*	
EASTERN REEF EGRET <i>Ardea sacra</i>	R									X*	X
CATTLE EGRET <i>Bulbulcus ibis coromandus</i>	R									X*	
BLACK BITTERN <i>Ixobrychus flavicollis australis</i>	R									X*	
STRIATED HERON <i>Butoroides striatus javanicus</i>	R		X							X	X
GREAT FRIGATEBIRD <i>Fregata minor</i>	V					X	X			X	
LESSER FRIGATEBIRD <i>Fregata ariel ariel</i>	M									X*	X
WHITE-BELLIED SEA EAGLE <i>Haliaeetus leucogaster</i>	R							X	X	X	



BROWN GOSHAWK <i>Accipiter fasciatus hellmayri</i>	R,F				X	X
SPOTTED KESTREL <i>Falco moluccensis microbalia</i>	R		X		X	X
AUSTRALIAN KESTREL <i>Falco cenchroides</i>	M		X		X	X
ORANGE-FOOTED SCRUBFOWL <i>Megapodius reinwardt</i>	R,F			X	X	X
RED-BACKED BUTTONQUAIL <i>Turnix maculosa maculosa</i>	R			X	X	X
BAR-TAILED GODWIT <i>Limosa lapponica</i>	M				X*	X*
EASTERN CURLEW <i>Numenius madagascariensis</i>	M					X*
WHIMBREL <i>Numenius phaeopus variegatus</i>	M				X*	X
COMMON GREENSHANK <i>Tringa nebularia</i>	M				X*	X
COMMON SANDPIPER <i>Actitis hypoleucos</i>	M		X		X	X
GREY-TAILED TATTLER <i>Tringa brevipes</i>	M				X*	X
RUDDY TURNSTONE <i>Arenaria interpres interpres</i>	M				X*	X
RED-NECKED STINT <i>Calidris ruficollis</i>	M				X*	X
BEACH STONE-CURLEW <i>Esacus neglectus</i>	R				X*	X*
PACIFIC GOLDEN PLOVER <i>Pluvialis fulva</i>	M					X*
GREY PLOVER <i>Pluvialis squatarola</i>	M					X*
MALAYSIAN PLOVER <i>Charadrius peronii</i>	NT,R	X			X	X
RED-CAPPED PLOVER <i>Charadrius ruficapillus</i>	R		X		X*	X
JAVAN PLOVER <i>Charadrius javanicus</i>	M					X*
GREATER SAND PLOVER	M				X*	
<i>Charadrius leschenaultii leschenaultii</i>						
MONGOLIAN SAND PLOVER <i>Charadrius mongolus</i>	M					X*
RED-NECKED PHALAROPE <i>Phalaropus lobatus</i>	M		X			
[PARASITIC SKUA <i>Stercorarius parasiticus</i> ]	M					X*
[LESSER CRESTED TERN <i>Sterna bengalensis</i> ]	?					X*
CRESTED TERN <i>Sterna bergii</i>	V					X*
BLACK-NAPED TERN <i>Sterna sumatrana</i>	V				X	X



Species Name	Status	Mü	ARW	Lo	TK	Ha	WB	DH	CB	REJ	HT
COMMON TERN <i>Sterna hirundo longipennis</i>	V									X*	
WHISKERED TERN <i>Chlidonias hybrida javanica</i>	V								X		X
LITTLE TERN <i>Sterna albifrons ?sinensis</i>	V									X*	X
BRIDLED TERN <i>Sterna anaethetus</i>	V									X*	
SOOTY TERN <i>Sterna fuscata</i>	V									X*	
SPOTTED DOVE <i>Streptopelia chinensis tigrina</i>	R			X		X	X	X	X	X	X
EMERALD DOVE <i>Chalcophaps indica</i>	R,F		X	X		X	X	X	X	X	X
ZEBRA DOVE <i>Geopelia striata maugei</i>	R		X	X		X		X	X	X	X
TIMOR GREEN PIGEON <i>Treron psittaceus</i>	RR, ENR,F		X				X		X	X	
ROSE-CROWNED FRUIT DOVE <i>Ptilinopus regina flavicollis</i>	R,F		X				X		X	X	X
[BANDED FRUIT DOVE <i>Ptilinopus cinctus cinctus</i> ]	R?,F									X*	
PINK-HEADED IMPERIAL PIGEON <i>Ducula rosacea</i>	R,F		X			X	X		X	X	
PIED IMPERIAL PIGEON <i>Ducula bicolor</i>	V,F									X*	
YELLOW-CRESTED COCKATOO	CR,R,F	X					X		X	X	
<i>Cacatua sulphurea parvula</i>											
RAINBOW LORIKEET <i>Trichoglossus haematodus capistratus</i>	V?		X								
RED-CHEEKED PARROT <i>Geoffroyus geoffroyi geoffroyi</i>	R,F		X	X			X		X	X	X
GREAT-BILLED PARROT	R,F					X	X		X		
<i>Tanygnathus megalorynchos hellmayri</i>											
HIMALAYAN CUCKOO <i>Cuculus saturatus</i>	M									X*	
BRUSH CUCKOO <i>Cacomantis variolosus</i>	R									X*	X
[AUSTRALIAN/COMMON <i>Eudynamys scolopacea/cyanocephala</i> ]	V?,									X*	
LESSER COUCAL <i>Centropus bengalensis sarasinorum</i>	R									X*	
SOUTHERN BOOBOOK <i>Ninox novaeseelandiae?fusca</i>	R,F									X*	



SAVANNA NIGHTJAR <i>Caprimulgus affinis ?timorensis</i>	R								X*
GLOSSY SWIFTLET <i>Collocalia esculenta neglecta</i>	R	X						X	X
HOUSE SWIFT <i>Apus nipalensis</i>	V								X*
ORIENTAL DOLLARBIRD <i>Eurystomus orientalis</i>	V								X*
COLLARED KINGFISHER <i>Todiramphus chloris chloris</i>	R		X					X	X
SACRED KINGFISHER <i>Todiramphus sanctus sanctus</i>	M							X	X
COMMON KINGFISHER <i>Alcedo atthis</i>	R								X*
RAINBOW BEE-EATER <i>Merops ornatus</i>	M	X						X	X
ELEGANT PITTA <i>Pitta elegans elegans</i>	R,F	X						X	
STREAK-BREASTED HONEYEATER <i>Meliphaga reticulata</i>	RR,R	X						X	X
HELMETED FRIARBIRD <i>Philemon buceroides buceroides</i>	R,F		X					X	X
BROWN HONEYEATER <i>Lichmera indistincta limbata</i>	R	X						X	X
PLAIN GERYGONE <i>Gerygone inornata</i>	RR,R,F								X
ZITTING CISTICOLA <i>Cisticola juncidis fuscicapilla</i>	R	X						X	X
GOLDEN-HEADED CISTICOLA <i>Cisticola exilis</i>	R								X*
GOLDEN WHISTLER <i>Pachycephala pectoralis</i>	R,F	X						X	X
[FAWN-BREASTED WHISTLER <i>Pachycephala orpheus</i> ]	R							X	X
LONG-TAILED SHRIKE <i>Lanius schach bentet</i>	R								X*
SPECTACLED MONARCH <i>Symposiachrus trivirgatus</i>	R							X	
BROAD-BILLED FLYCATCHER <i>Myiagra ruficollis ruficollis</i>	R		X					X	X
ISLAND MONARCH <i>Monarcha cinerascens</i>	R?	X						X	
ARAFURA FANTAIL <i>Rhipidura dryas semicollaris</i>	R,F							X	
NORTHERN FANTAIL <i>Rhipidura rufiventris rufiventris</i>	R,F	X						X	X
WALLACEAN DRONGO <i>Dicrurus densus densus</i>	R,F		X					X	X
WALLACEAN CUCKOO-SHRIKE	R,F		X					X	X
<i>Coracina personata personata</i>									
WHITE-SHOULDERED TRILLER <i>Lalage sueurii sueurii</i>	R	X						X	X



Species Name	Status	Mü	ARW	Lo	TK	Ha	WB	DH	CB	REJ	HT
SOOTY-HEADED BULBUL <i>Pycnonotus aurigaster aurigaster</i>	R,Int										X*
OLIVE-BROWN (TIMOR) ORIOLE <i>Oriolus melanotis melanotis</i>	RR,R,F					X	X	X	X		X
TIMOR FIGBIRD <i>Sphecotheres viridis</i>	RR,R,F		X			X	X	X	X		
WHITE-BREADED WOODSWALLOW <i>Artamus leucorhynchus albiventer</i>	R									X*	X
BLACK-FACED WOODSWALLOW <i>Artamus cinereus perspicillatus</i>	R				X	X	X		X	X	X
LARGE-BILLED CROW <i>Corvus macrorhynchos macrorhynchos</i>	R		X					X	X	X	
PACIFIC SWALLOW <i>Hirundo tahitica javanica</i>	R									X*	
TREE MARTIN <i>Hirundo nigricans nigricans</i>	V										X*
ASHY-BELLIED WHITE-EYE <i>Zosterops citrinellus citrinellus</i>	R									X*	
PIED BUSHCHAT <i>Saxicola caprata pyrrhonota</i>	R		X	X	X		X	X	X	X	X
WHITE-BELLIED BUSHCHAT <i>Saxicola gutturalis luctuosa</i>	RR,R,F		X	X	X	X	X		X	X	X
TIMOR BLUE FLYCATCHER <i>Cyornis hyacinthinus hyacinthinus</i>	RR,R,F		X		X		X	X	X	X	
SHORT-TAILED STARLING <i>Aplonis minor</i>	R,F									X*	
ORANGE-SIDED THRUSH <i>Zoothera peronii peronii</i>	RR,NT,R,F									X*	X









Johnstone, Ronald E et al. 2014. "The avifauna of Semaui Island, Lesser Sundas, Indonesia: ecology, taxonomy and conservation." *The Western Australian Naturalist* 29(3), 162–221.

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