Avifauna of the Ninigo, Hermit, Sae and Kaniet Islands, and adjacent seas, Papua New Guinea

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Source: Bulletin of the British Ornithologists' Club, 140(4) : 404-422

Published By: British Ornithologists' Club

URL: https://doi.org/10.25226/bboc.v140i4.2020.a5

Avifauna of the Ninigo, Hermit, Sae and Kaniet Islands, and adjacent seas, Papua New Guinea

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Received 12 June 2020; revised 31 August 2020; published 9 December 2020

http://zoobank.org/urn:lsid:zoobank.org:pub:A6F3C925-4F03-48A9-941F-EA6384666DF6

Summary.—One of us (SMH) surveyed the Ninigo and Hermit Islands (27 January–13 February and 2–14 October 2019), providing the first observations of birds on these islands for *c*.50 years. KDB collated data from the unpublished diaries of W. F. Coultas, a member of the Whitney South Sea Expedition, including observations from the nearby Kaniet and Sae Islands. Four new landbirds, in addition to six new shorebirds and five new seabirds, were added to the list of birds for these poorly known islands, bringing the total list to 59 species. We also document significant extensions of the known breeding ranges of Brown Noddy *Anous stolidus*, Black Noddy *A. minutus* and Red-footed Booby *Sula sula*. The biological importance of the West Melanesian Trench is further emphasised by our seabird observations.

The birds of the small islands in the far north-west of Papua New Guinea are poorly documented. A list of the species recorded from the Ninigos, Hermits, Anchorites (= Kaniet Islands) and Wuvulu can be derived from Mayr & Diamond (2001), while a few notes on species of interest were made in Dutson (2011). Bell (1975) noted that 'the birds comprise a depauperate atoll avifauna, of strong affinities with the Bismarck Archipelago and not with mainland New Guinea, which is almost equidistant'. Published historical records are collated here alongside previously unpublished notes from W. F. Coultas' visits in 1934 and SMH's visits in 2019. Three subspecies are endemic to these islands (Mayr & Diamond 2001), a number dependent on taxonomy, and a significant proportion of the global population of the extremely range-restricted Atoll Starling *Aplonis feadensis* is found there. This paper presents new records of four landbird species, six shorebirds and five seabirds, and the first breeding of Red-footed Booby *Sula sula* in the region.

Geography of the region

The Ninigo Islands are a group of seven coralline atolls including some 48 islands and islets (www.Bing.com/maps/aerial), *c*.260 km north of mainland Papua New Guinea and *c*.265 km west of Manus. The largest atoll is approximately 18 × 33 km and includes 21 islands. None of the main Ninigo islands is higher than 2 m. The four most populated islands are Longan (50 ha) in the north-west, Amik (9 ha) and Pihun (70 ha) in the east, the latter which SMH did not visit but was visited by Coultas, and Mal (305 ha) in the south. Longan supports *c*.200 people that live in the eastern quarter of the island, while garden crops and brush cover the western part. The islanders keep pet cats and dogs, and occasionally wing-clipped Rainbow Lorikeets *Trichoglossus haematodus*. Mal has several family settlements, a clinic and a school, and is characterised by coconut palms *Cocos nucifera*, breadfruit *Artocarpus altilis*, Indian almond *Terminalia catappa* and ornamental plants. Menam (88 ha) now has a small population of farmers. As there is no longer a viable market for copra, the coconut plantations are being left to die, or are burned and cleared for food crops and housing. Many islands are characterised by a few large, old hardwood

ISSN-2513-9894 (Online)

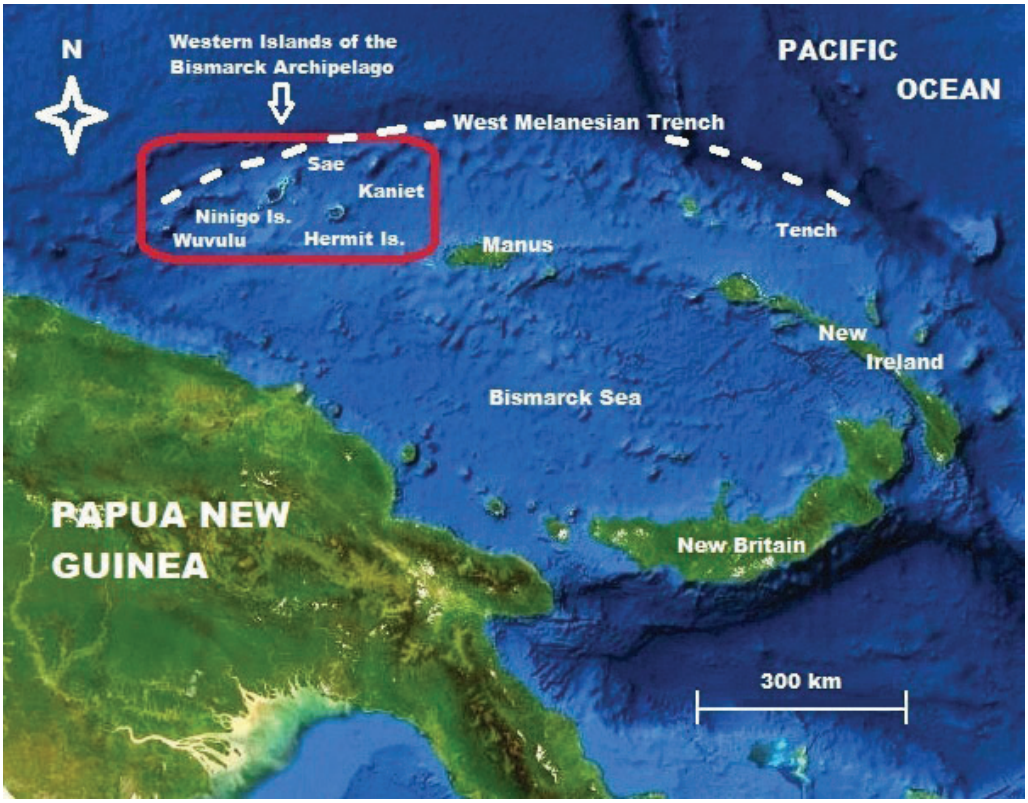

Figure 1. The western Admiralty Islands (inside the red rectangle), the West Melanesian Trench, and their geographical relationship to the Bismarck Archipelago and mainland New Guinea. Contextually important islands such as Wuvulu, Manus and Tench are also shown (based on https://www.arcgis.com/home/webmap/viewer.html?webmap=c1c2090ed8594e0193194b750d0d5f83).

trees (probably *Pisonia* sp.) along the beaches, in addition to the commoner Indian almond. Coasts are composed of white sand and coral, with extensive tidal flats and reefs.

Nahanu (1 ha), Bahanat (5 ha), Xaheihon (13 ha) and Nana (0.4 ha) are all uninhabited islands, typically covered in a very dense mosaic of *Cocos nucifera*, mangrove *Rhizophora* sp., *Pandanus* sp. and *Casuarina* sp. Nahanu is frequently visited by villagers to gather coconut crabs, pigs and introduced chickens. Xaheihon and Nana have prominent sand spits which host an assemblage of shorebirds and terns.

The four largest Hermit Islands (plus three tiny islets) form a single atoll (*c.*16 km across) with a rim of nine low sandy islands surrounding a lagoon. The atoll is *c.*260 km north of mainland Papua New Guinea and *c.*175 km west of Manus. Unlike the Ninigos, the interior islands are of volcanic origin, high and rocky. Luf (234 m, 600 ha) is the most populous, followed by Akib (109 m, 75 ha) (www.Bing.com/maps/aerial; www.gpsnauticalcharts.com/main/australia-nautical-charts-by-folio.html). Slopes on the north sides of Maron, Akib and Luf appear to retain a dense native vegetation dominated by *Ficus* sp., casuarinas and *Pandanus* sp. with a shoreline fringe of mangrove. In contrast, old coconut plantations still dominate the south slope of Akib. South-west Akib is currently being cleared for a school, and on Luf trees have been cleared in small plots high above villagers' homes to create gardens. SMH did not birdwatch on Luf and only briefly on Akib, but in view of the topography and dense vegetation these islands would probably be very productive areas to explore (as suggested by Bell 1975). Pemei (9 ha) is a low, uninhabited island densely

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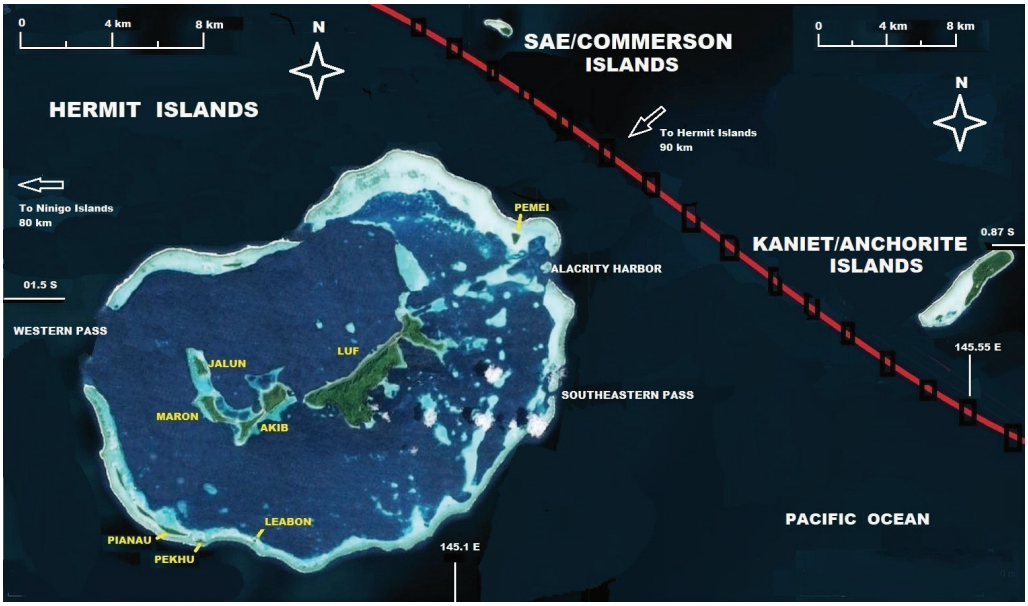

Figure 2. The Hermit Islands, showing all of the islets mentioned in the text; the Sae and Kaniet Islands are shown at a different scale (based on www.Bing.com/maps/aerial).

covered in coconut palms, *Casuarina*, mangrove, *Terminalia catappa* and *Pandanus* sp., which makes penetration of more than a few dozen metres into the interior near-impossible. The south-west coralline islands support similar vegetation with tall *Casuarina* predominating. Dense vegetation made casual access impossible. These islands are uninhabited except three families that reside on the eastern tip of Pianau (37 ha).

Coultas camped on Suf, the largest of the five Kaniet Islands and described it in 1934 as low-lying and covered in coconuts with no 'bush' remaining and populated by fewer than 50 people. Fresh water was scarce and birdlife almost non-existent, although formerly (according to a native informant) landbirds were present. He described Sae from aboard his ship as two 'flat sandy knobs connected at ebb tide by a reef.' The larger of the two was covered in shrubs and trees, while the smaller bore a single coconut palm. Coultas was informed that these islands were breeding grounds for turtles and seabirds including 'countless' terns and frigatebirds nesting there in November and December.

Historical knowledge of the avifauna

The first zoological exploration of these islands was by collectors on behalf of Johann Caesar Godeffroy (Hartlaub 1867) and the species he collected are marked (G) in the species accounts. Reichenow's (1899) treatise on the birds of the Bismarcks appears to merely repeat Hartlaub. Ernst Mayr made a small collection on Mal, in the Ninigos, on 10–11 November 1928, including specimens of Bismarck Black Myzomela *Myzomela pammelaena* and Singing Starling *Aplonis cantoroides* (Meise 1929a,b). During the Whitney South Sea Expedition, William Ferrell Coultas (hereafter WFC) collected on three of the four island groups in 1934: 10–14 May Hermits; 16–22 May Kaniets and Sae (but was unable to land on the latter); and 23 May–1 June Hermits, where he was based on Maron but visited Luf and other unspecified islands (Fig. 2). During 3–18 June WFC visited the Ninigos, where he camped for a week on Ahu, one day on Taulil and spent an unspecified amount of time on Pihun and other islands (Fig. 3). Information on the number of specimens and the locations

ISSN-2513-9894 (Online)

Figure 3. The main Ninigo Atoll, showing all of the islets mentioned in the text (based on www.Bing.com/maps/aerial).

where they were collected was initially taken from WFC's unpublished diary. This was subsequently amended following reference to the American Museum of Natural History, New York's (AMNH) online catalogue, which is based on WFC's specimen label data. To our knowledge, the Kaniets and Sae have not been surveyed ornithologically since WFC's visit, but in 1970, Lt.-Col. Harry Bell camped on Menam, in the Ninigos, on 10–12 August and visited Luf in the Hermits on 13–14 August (Bell 1975).

Although the seas of north-western Northern Melanesia are potentially very interesting in terms of seabird distributions, especially around the West Melanesian Trench, which is close to Sae and the Ninigos, there are very few data for this region (Cheshire 2010).

Methods

On 27 January–13 February 2019, SMH sailed from Indonesia to the Ninigos and Hermits and then further east, returning to the Ninigos and Hermits on 2–14 October 2019. During seven days at sea in a 14 m yacht moving at an average of six knots, SMH observed birds for *c*.12 hours per day and recorded all birds seen. During 18 of 23 days in the Ninigos and Hermits, SMH with, at times, one or two companions, Liz Crawford (LC) and Chris Herbert (CH), logged >35 hours of bird observations. Some observations were made from a 2.9 m inflatable dinghy off the coast of small islands if getting ashore was not feasible. Birds and times were recorded in field notes. A large proportion of these records has been submitted to eBird (https://ebird.org/home). Photographs of seabird flocks were used to confirm species identification and estimate numbers and composition of flocks. Seabird locations were determined by correlating photographic time stamps with track files recorded using navigational software. In the species accounts below, omission of an island group implies a lack of known records for that group. Species new for either the Ninigos or Hermits, but not both, are indicated by an asterisk next to the name of the group; those

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new for the entire region are similarly indicated next to the species name. Nomenclature and sequence follow Beehler & Pratt (2016) for all species included therein.

Annotated list of birds of the Ninigo, Hermit, Sae and Kaniet Islands, and adjacent waters

MELANESIAN SCRUBFOWL *Megapodius eremita*
Occurs on virtually every island in Northern Melanesia including several tiny islets (Mayr & Diamond 2001).
Ninigos WFC collected 22 specimens: two each on Ahu and Taulil, and 18 on Pihun (AMNH 336200–221), and received local reports from Liot. Bell (1975) noted that in 1970 imported labourers hunted the birds and took their eggs. He recorded one bird on Menam and found two disused nesting mounds. 6 October 2019: five were scratching leaf-strewn and coconut husk-covered ground on Bahanat. Local people sometimes consume scrubfowl eggs, but it is not a common practice (local informant).
Hermits WFC considered the species extinct in the Hermits, but Bell (1975) noted that villagers on Luf insisted that it still occurred in tiny patches of scrub on coral islands, but not on Luf. No sign of scrubfowl on any of the five islands visited in 2019.
Kaniets Capt. Mackenzie (pers. comm. to WFC) found scrubfowl common in 1921; however, in May 1934 WFC saw none.

WHITE-BIBBED GROUND DOVE *Alopecoenas jobiensis jobiensis*
Recorded in the Admiralties only on Tong (Dutson 2001, 2011, Mayr & Diamond 2001).
Hermits The only record is a specimen collected by WFC from Maron, 24 May 1934 (AMNH 336319).

NICOBAR PIGEON *Caloenas nicobarica*
Mayr & Diamond (2001) observed that this is one of the most widespread species in Northern Melanesia, but there appear to be very few records from the study area. Neither SMH nor Bell (1975) observed it on the Ninigos or Hermits. WFC noted that it is 'known to occur on Luf at times and at others absent. We did not encounter it on our visit', and that there were 'old native reports' for Sae. Coates & Swainson (1978) observed one on Wuvulu 160 km south-west of the Ninigos on 27 February 1975. Apparently local people report its presence on Wuvulu in small numbers, but have noted that its gizzard stones could not have been picked up there. WFC included it for the Hermits because he was told that the species visits Luf occasionally.

YELLOW-BIBBED FRUIT DOVE *Ptilinopus solomonensis johannis*
Widespread in Northern Melanesia (Mayr & Diamond 2001).
Ninigos WFC collected three on Pihun (AMNH 336246–248) but none on Taulil, and mentioned that local people reported the species from Liot. Bell (1975) recorded it on Menam. Two photographed by CH, one observed and many heard on Longan.
Hermits Collected by WFC on Luf where he considered it rare (however, AMNH 336318 is listed as having been collected on Maron, 25 May 1934). Heard on Pemei (SMH).
Kaniets WFC noted that it used to occur on these islands.

PACIFIC IMPERIAL PIGEON *Ducula pacifica sejuncta*
Scattered and local distribution off northern New Guinea, including on Wuvulu, but common to the south-east (Dutson 2011).

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Ninigos WFC secured a single specimen and noted the species to be 'very rare'. Bell (1975) found it common on Menam and Pihun. Five in breadfruit trees in the cultivated area of Longan, three on Bahanat and two on Mal (SMH).
Hermits WFC noted that a few remained on Luf where it was hunted. Bell (1975) found the species common. Heard on Pemei (SMH).
Kaniets Apparently extirpated long ago (WFC).

FLOURY (ISLAND) IMPERIAL PIGEON *Ducula pistrinaria*
Widespread throughout Northern Melanesia (Mayr & Diamond 2001).
***Ninigos** 13 October 2019: three seen and heard on Mal; photographs were not obtained but SMH clearly saw the white around the bill base, an impression of white around the eyes, and definite lack of a bill knob. The neck and hindneck were pale grey, offset by darker glossy green upperparts. Overall jizz was of a paler-necked bird than Pacific Imperial Pigeon, with a brighter green back and wings, and no knob. Furthermore, SMH is familiar with the call of this species from extensive experience in the Solomons and Bismarcks during the previous seven months. This would appear to be the first record of the species for the Ninigos, but it is known from the nearby Hermits, as well as Wuvulu and Manus (Mayr & Diamond 2001) and was thus perhaps to be expected.
Hermits WFC, who was only on Luf for a few hours, collected a single specimen that was not 'saved'. He was informed that both species of *Ducula* were occasionally taken by hunters but mainly *D. pacifica*. Bell (1975) saw a group of *Ducula* sp. that was probably this species.

***WHITE-TAILED TROPICBIRD** *Phaethon lepturus*
The nearest known breeding site appears to be Tench (*c.*705 km east of the Ninigos) (Coates 1985, Beehler & Pratt 2016).
Ninigos One photographed at sea 17 km east of the Ninigos and north of Liot. Previously recorded off Wuvulu (Coates & Swainson 1978).

MATSUDAIRA'S STORM PETREL *Oceanodroma matsudairae*
Ten seen 193–357 km north-east of Suf Atoll (Kaniet Islands) (Cheshire 2010).

WEDGE-TAILED SHEARWATER *Ardenna pacifica*
Widespread and recorded in most, if not all, months throughout northern Melanesia but does not breed (Coates 1985, Dutson 2011). Approximately150 reported 133 km north-west of Sae and *c.*60 354 km north-east of the Kaniets (Cheshire 2010).
Ninigos One south of the Ninigos (Bell 1975). 'Numerous' in 2019 with a large mixed feeding flock of seabirds 240 km west of the Ninigos; one inside the main lagoon, presumably in response to strong winds outside the atoll (SMH).

***STREAKED SHEARWATER** *Calonectris leucomelas*
During October–April (especially December–March) it is locally common in the seas north of New Guinea including around the Admiralties and Bismarcks (Coates 1985, Cheshire 2010, Dutson 2011, Beehler & Pratt 2016).
Ninigos 2019: at least 23 and then *c.*13 seen with mixed-species feeding flocks 240 km west of the atoll (SMH).
Hermits 2019: 20 seen with a feeding flock of seabirds 85 km east of the Hermits (SMH).

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YELLOW BITTERN *Ixobrychus sinensis*
Ninigos WFC collected two specimens at a swamp on Ahu, probably migrants from Asia (AMNH 336191–192).

BLACK BITTERN *Ixobrychus flavicollis australis*
Ninigos WFC collected six roosting in coconut trees on Ahu, with evidence of marine and terrestrial foraging (AMNH 336185–190). One near the centre of Menam (Bell 1975).
Hermits One at *c.*130 m in steep hillside jungle on Luf (Bell 1975).

NANKEEN NIGHT HERON *Nycticorax caledonicus australasiae*
Ninigos WFC collected seven (AMNH 336193–198, 336277) and noted that the species roosted on Ahu and other islands with swamp vegetation; he also heard it on Pihun. Bell (1975) observed two on Menam. Three seen on Longan (SMH).
Kaniets One collected in the swamp on the most northerly island (WFC).

EASTERN REEF EGRET *Egretta sacra*
Ninigos Recorded by WFC and Bell (1975) on Menam. Ones and twos of both grey and white morphs on Longan, near Nahanu, Amik, Xaheihon, Mal and Nana (SMH).
Hermits Scarce. Recorded by WFC and Bell (1975). Single black-splotched white morph seen off Pemei and near the western islands (SMH).
Kaniets and Sae Recorded by WFC.

GREAT FRIGATEBIRD *Fregata minor*
Small numbers of unidentified frigatebirds occasionally seen offshore.
Ninigos Recorded by Bell (1975). Approximately 20 with a large mixed feeding flock of seabirds 19 km offshore (SMH).
***Hermits** One seen amongst *Sula sula* on Pekhu (SMH).

LESSER FRIGATEBIRD *Fregata ariel*
Ninigos Recorded by Bell (1975). Small numbers (<5) seen offshore including *c.*20 with a large mixed feeding flock of seabirds 19 km west of the Ninigos, and two over the main lagoon (SMH).
Hermits Recorded by WFC and Bell (1975). Nine over Pemei and two roosting on Pekhu and Leabon (SMH).
Sae 'Observed in abundance about Commerson (*sic*). It roosts and nests there.' (WFC).

MASKED BOOBY *Sula dactylatra*
The status of this pantropical species is somewhat enigmatic in Northern Melanesia, with very few records, although this may, however, simply reflect the paucity of observers. King (1967) regarded it as a vagrant to the south-west Pacific.
***Ninigos** SMH photographed an immature in a large mixed seabird flock *c.*240 km west of the atoll on 27 January 2019.
Hermits Bell (1975) noted one over the western entrance to the lagoon.
Sae Numerous (WFC).

***RED-FOOTED BOOBY** *Sula sula*
Infrequently recorded in Northern Melanesia, except around small remote islets (Dutson 2011).
Ninigos One over the main lagoon at Mal (SMH).

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Figure 4. Nesting Red-footed Boobies *Sula sula*, Pianau, Hermit Islands, October 2019 (Sue Muller Hacking)

Hermits 3 October 2019: Pianau *c.*300, with 124 nests (17 with chicks) mostly high on open branches of *Casuarina* with a few in dense mangrove (Fig. 4); on Pekhu, *c.*200 birds and at least 40 active nests, a few with chicks (photographed); and on Leabon, the smallest island, with fewest *Casuarina*, *c.*100 with *c.*10 nests (2–3 with chicks) (SMH). These are the first observations of nesting in Northern Melanesia west of Tench, and also apparently the first of the species breeding in *Casuarina* trees (Schreiber *et al*. 2020).
Sae Numerous (WFC).

BROWN BOOBY *Sula leucogaster*
Although regularly observed within inshore waters, there are no known breeding sites in Northern Melanesia (Dutson 2011, Schreiber & Norton 2020).
Hermits Two at the western entrance of the lagoon (Bell 1975). Three in the eastern passage to the lagoon, and two near Pekhu and Leabon (SMH).
Sae Numerous (WFC).

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BUFF-BANDED RAIL *Hypotaenidia philippensis anchoretae*
Race *anchoretae* is endemic to the region, although birds breeding on Wuvulu (Coates & Swainson 1978) probably involve this subspecies.
Ninigos WFC collected 11 specimens on the smaller islands including Taulil (AMNH 336222–232) and reported this rail to be common on almost every island he visited in the Ninigos (Ahu, Mal, Longan, Taulil, Pihun, Ami, Lau and others), including at the edge of villages where it appeared quite tame. Bell (1975) revisited the same islands but failed to find the species. 2019: one observed by LC (*in litt*. to SMH) on Nahuna and one on Longan, where the species is apparently hunted.
Hermits WFC collected nine on Maron (AMNH 336305–313), but noted that it apparently did not occur on Luf.
Kaniets WFC collected ten (AMNH 336278–287) and noted that Buff-banded Rail was common in 'the olden days' but that there were only 'a few left in the islands and those, in all probability, will not survive many years.'

LONG-TAILED CUCKOO *Eudynamys taitensis*
Breeds almost exclusively in New Zealand during October–February (Higgins 1999) and would probably have been absent at the time of SMH and Bell's visits.
Ninigos WFC saw but failed to collect the species.

***SWIFTLET** *Collocalia* / *Aerodramus* sp.
Ninigos 12 October 2019: two swiftlets observed over Mal (SMH). They appeared larger than Glossy *Collocalia esculenta* or White-rumped Swiftlets *Aerodramus spodiopygius*, had a light grey mantle with a barely discernible paler rump, and a shallow but well-defined tail fork. They were perhaps Uniform Swiftlet *A. vanikorensis*, which is resident on Manus and mainland New Guinea, but other species could occur and field identification of swiftlets is not always possible.

PACIFIC GOLDEN PLOVER *Pluvialis fulva*
***Ninigos** 13 October 2019: one off the north-west tip of Mal (SMH).
Hermits WFC collected one, the only shorebird he recorded in the Hermits. 3 October 2019: two on Leabon (SMH).

***GREY PLOVER** *Pluvialis squatarola*
Ninigos 10 October 2019: at least ten on a sand spit off the north end of Xaheihon (SMH; photo).

***LESSER SAND PLOVER** *Charadrius mongolus*
Ninigos 10 October 2019: seven photographed in a mixed shorebird flock on a sand spit off northern Xaheihon; 13 October, one on a sand spit on Mal (SMH).

***BAR-TAILED GODWIT** *Limosa lapponica*
Ninigos 10 October 2019: six photographed in a mixed flock of shorebirds on a sand spit on Xaheihon (SMH). Previously recorded on Wuvulu (Coates & Swainson 1978).

WHIMBREL *Numenius phaeopus*
***Ninigos** In January, February and October 2019, small numbers seen daily on Longan including a roost of seven; in October, 20 in a mixed flock of shorebirds on Xaheihon (SMH).

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Figure 5. Eastern Curlew *Numenius madagascariensis* with Whimbrel *N. phaeopus*, Grey Plover *Pluvialis squatarola* and Lesser Sand Plover *Charadrius mongolus*, Xaheihon, Ninigo Islands, October 2019 (Sue Muller Hacking)

Hermits Bell (1975) recorded >20 on Luf in August. 9 February 2019: four in flight on Pemei; 10 February, one in flight on Pemei.

***EASTERN CURLEW** *Numenius madagascariensis*
Over the last 30 years this curlew's population has declined to such an extent that its conservation status has changed from Near Threatened to Endangered (van Gils *et al*. 2020). Dutson (2011) regarded it as a rare migrant with records from just a few islands in Northern Melanesia.
***Ninigos** 10 October 2019: SMH photographed one on a sand spit on Xaheihon in a mixed flock of shorebirds (Fig. 5).

WANDERING TATTLER *Tringa incana*
Ninigos Bell (1975) thought it common on Menam during August. 12 October 2019: SMH photographed one with a flock of terns and *Anous stolidus* at the eastern end of Nana.
Hermits One seen on Luf (Bell 1975).

COMMON SANDPIPER *Actitis hypoleucos*
***Ninigos** 2 February 2019: one on Longan; 7 October, one off Longan with a flock of noddies; singles also seen on Xaheihon and the north coast of Mal in October (SMH).

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Hermits Bell (1975) collected a specimen and observed *c*.20 on Luf. 9 February 2019: four flushed on the sandy coast of Pemei (SMH).

RUDDY TURNSTONE *Arenaria interpres*
Ninigos By far the commonest shorebird on the islands: 29 January 2019: eight near Longan; 31 January, a large flock flying off on Nahuna; 3 February, 14 in flight near Amik; 5 October, eight seen off Longan with four there on 10 October; 12 October, three in a mixed shorebird flock on Nana; 13 October, two in flight on Mal. McClure (1968) reported an adult, ringed 9 May 1968 at Ichikawa, Chiba, Japan, found dead on Amich (*sic*), Ninigo group, 16 January 1969.
Hermits Bell (1975) saw five in full breeding plumage in August on Luf. 3 October 2019: SMH photographed a flock of *c*.75 on Leabon.

***RUFF** *Philomachus pugnax*
Rare but regular visitor to eastern New Guinea (Beehler & Pratt 2016) and Northern Melanesia (Dutson 2011), but possibly only on passage (Coates 1985).
Ninigos 13 October 2019: SMH photographed a juvenile male on Mal.

***RED-NECKED PHALAROPE** *Phalaropus lobatus*
Ninigos 28 January 2019: a flock of 12 flushed from the sea, possibly associated with a large mixed seabird flock 19 km west of the Ninigos.
Hermits 5 February 2019: a tight flock of *c*.40 flushed from the sea 2 km west of the atoll.

BROWN NODDY *Anous stolidus*
The nearest known breeding sites are on Wuvulu (D. J. Ringer in www.birdsofmelanesia.net) and Tench (Coates 1985).
***Ninigos** 2019: common on and around Longan, *c*.20 on Nahanu,15 near Liot, 1–2 seen daily on Mal, and *c*.20 on Nana including some apparently on nests, but too deep in dense foliage to photograph (SMH). Numbers probably under-estimated as often impossible to distinguish from Black Noddy *A. minutus*.
Hermits One seen by Bell (1975). 2019: *c*.40 regularly seen in flight over, or roosting on, Pemei (SMH); could not be confirmed if the species was nesting.
Kaniets Observed (WFC).
Sae Abundant, flying to and from the island (WFC).

BLACK NODDY *Anous minutus*
Ninigos Bell (1975) considered this species abundant, but only a few were seen by WFC. 31 January 2019: at least six pairs nesting on Nahanu, in low tangled mangroves, 3–4 m above ground, plus *c*.100 in flight over the island; seen daily near Longan with roost counts of 23–103 birds, a feeding flock of *c*.200 off Bahanat, and smaller numbers off Liot and Mal (SMH). *A. minutus* was far commoner than *A. stolidus* (in a ratio of 4:1 to 7:1). Large counts of unidentified noddies included *c*.80 just outside the western entrance and *c*.200 in a feeding flock.
Hermits One collected by WFC and a few others seen. Bell (1975) observed a flock of 150 outside the lagoon and many groups (of 5–10) inside it. 2019: *c*.25 on Pemei (SMH). Nesting was not confirmed; however, the birds were roosting in *Casuarina* trees on the shore and were seen to frequently disappear into the interior. Large counts of unidentified noddies included *c*.300 near the western entrance and *c*.200 roosting and flying around Leabon.
Sae Abundant, flying to and from the island (WFC).

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WHITE TERN *Gygis alba candida*
Ninigos WFC noted a few and collected two specimens on Maron (AMNH 336315–316). 2019: ten on Longan, <1 km from Menam where Bell (1975) found it almost certainly nesting; 22 off Mal and Nana (SMH).
Hermits Recorded by WFC but not by Bell (1975). 2019: *c*.200 on Pemei, some of which were aggressive, circling and swooping, suggestive of nesting (SMH).
Kaniets WFC observed three or four, and took one specimen.
Sae Nests on Sae (WFC).

CRESTED TERN *Thalasseus bergii*
Widespread throughout Northern Melanesia, but perhaps uncommon west of Manus, with no previously known breeding sites in the region (Dutson 2011).
Ninigos Bell (1975) recorded small numbers during August. In late January 2019, <5 with a large mixed feeding flock of seabirds *c*.240 km west of the Ninigos, and two seen with a large feeding flock 19 km offshore. Noted in small numbers on Longan on 1 February and again 5–10 October, including 2–10 at roosts.
Hermits Bell (1975) noted small numbers outside the reef and on Luf.
Kaniets Observed over the reefs (WFC).
Sae 'Nests on Sae' (WFC).

BRIDLED TERN *Onychoprion anaethetus*
Hermits Bell (1975) saw two inside the lagoon.

SOOTY TERN *Onychoprion fuscatus*
Typically more pelagic than most terns in the region (Coates 1985, Dutson 2011), and none was seen within the atolls.
Ninigos Bell (1975) noted four or five at the entrance to the main lagoon. 2019: approximately 32 with mixed-seabird feeding flocks 240 km west of the Ninigos (SMH).
Hermits 2019: *c*.30 just west of the atoll within a mixed feeding flock of 400 terns, and *c*.20 in a mixed feeding flock 85 km to the east.

ROSEATE TERN *Sterna dougallii*
***Ninigos** Three in breeding plumage photographed near Liot (SMH).
Hermits Bell (1975) noted two on Luf, both in breeding plumage.

***BLACK-NAPED TERN** *Sterna sumatrana*
Ninigos 2019: *c*.95 observed 19 km west of the Ninigos, >50 on Nahanu, *c*.20 on Nana, and 3–6 around Mal; 2–34 seen daily on Longan in February and October, many of them roosting (SMH).
Hermits 2019: five just west of the entrance into the Hermits and 47 on a sand spit on Leabon (SMH).

COMMON TERN *Sterna hirundo longipennis*
Ninigos Bell (1975) noted small groups in August. In January–February 2019, a max. 20 in the main lagoon and *c*.40 observed 19 km west of the Ninigos; in October singles were seen in the north of the atoll and on Nana (SMH).
Hermits Bell (1975) noted small flocks provisionally identified as this species. In February 2019, *c*.60 with a mixed flock of seabirds near the western entrance; one on Leabon in October (SMH).

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***LONG-TAILED JAEGER** *Stercorarius longicaudus*
Very rare in New Guinea waters (Beehler & Pratt 2016) with even fewer records in Northern Melanesia (Dutson 2011).
Ninigos 14 October 2019: a first-year with a flock of feeding seabirds 260 km west of the Ninigos, at the edge of the West Melanesian Trench (Fig. 6).

Figure 6. Juvenile Long-tailed Jaeger *Stercorarius longicaudus*, near the West Melanesian Trench, October 2019 (Sue Muller Hacking)

OSPREY *Pandion haliaetus cristatus* (G)
Ninigos 9 June 1934: WFC took a specimen (AMNH 336199) and noted a total of eight in flight near Longan. Bell saw two on Menam (Bell 1975). 2019: one seen on Longan (SMH).

BRAHMINY KITE *Haliastur indus*
Ninigos Not seen by Bell (1975) whereas WFC recorded it 'several times'. 2019: three flying over Longan on two consecutive dates (SMH).

RAINBOW BEE-EATER *Merops ornatus*
None recorded in 2019: this migrant is usually present in Northern Melanesia from early March to early October.
Ninigos Bell (1975) saw birds roosting on Menam.
Hermits Bell (1975) observed a flock of five on Luf.
Kaniets WFC reported a few.

BEACH KINGFISHER *Todiramphus saurophagus admiralitatis*
Those on the Ninigos, Hermits and Kaniets (plus Wuvulu) are usually treated as an endemic race *anachoreta*. Bell (1975) noted that this species 'has a white-headed (*admiralitatis* Sharpe, 1892) and a blue-headed (*anachoreta* Hartlaub, 1867) phase, originally described as separate species, but recognized as phases by Stresemann (1923) and Mayr (1949b [= 1950]). Specimens in the AMNH show that the phases are not linked to sex and that intermediates occur. The museum has no white-headed specimens from the Ninigos, but has almost the same number of specimens of both from the Hermits. WFC, under the impression that there were two species, thought that blue-headed birds were more common on the Ninigos and vice versa on the Hermits.'
Ninigos WFC found it more common in the Hermits. Bell (1975) reported this species to be abundant on Menam. White-crowned birds were seen on Bahanat, Xaheihon, Longan and Mal, and dark blue-crowned individuals on Bahanat, Longan and Mal (SMH).
Hermits WFC found it common and breeding. Bell (1975) collected one on Luf. A single white-crowned bird was seen on Pemei and a dark blue-crowned individual on Akib (SMH).
Kaniets WFC collected ten but did not believe the species to be common.
Sae Reported to WFC.

SACRED KINGFISHER *Todiramphus sanctus*
Ninigos Bell (1975) observed unidentified kingfishers, possibly this species, on Menam.
Hermits The only record is of one seen on Luf (Bell 1975).

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RAINBOW LORIKEET *Trichoglossus haematodus* (G)
The Ninigo population is considered to be an endemic subspecies *nesophilus* and, although Mayr & Diamond (2001) treated birds in the Hermits as *flavicans* (otherwise found east to New Hanover), most if not all other recent commentators suggest these birds too belong with *nesophilus* (Dickinson & Remsen 2013, del Hoyo & Collar 2014, Collar *et al*. 2020).
Ninigos WFC noted it to be the commonest landbird in the group, with flocks of 2–10 everywhere. Bell (1975) found it 'abundant (2–5) in plantations, feeding on flowering coconuts; seen to fly to Longan, 800 m from Menam.' 2019: up to six on Longan, Bahanat, Xaheihon and Mal (SMH).
Hermits WFC reported it to be common. Bell (1975) also found the species common but only in coconuts fringing beaches on Luf. 2019: small flocks flying between Luf and Akib (SMH).

BISMARCK BLACK MYZOMELA *Myzomela pammelaena ernstmayri*
This subspecies is confined to small islands from Wuvulu east to the Admiralty group (Mayr & Diamond 2001).
Ninigos WFC collected ten (AMNH 336266–276) and found it 'moderately common', reporting that the species 'appears to go in flocks or waves through the plantation.' Mayr collected one in May 1928 (AMNH 294655). Bell (1975) collected two on Menam and found it abundant in coconuts and forest. 2019: common on Longan, Bahanat and Mal, where 2–14 recorded most days (SMH).
Hermits WFC collected five on the outer islands but did not find it on Luf. Bell (1975) remarked that one of his party reported a 'black sunbird' in coconut trees, which was probably this species. 2019: four seen in *c*.15 minutes of observation on Pemei within 10 m of the beach (SMH).
Kaniets 'A few' of which WFC collected four.

[***COMMON CICADABIRD** *Edolisoma tenuirostre*]
The nearest known population is on Manus, where the subspecies *admiralitatis* exhibits sexual dimorphism similar to that of birds observed in the Ninigos.
Ninigos 6 October 2019: on Bahanat, SMH observed two black and one russet-plumaged bird of similar size and structure on the small outer branches of a tree *c*.8 m overhead. They were seen through binoculars but flew off before photographs could be taken. The rufous individual had a grey crown, rufous breast and belly, and brown/rufous upperparts. The black birds had dark eyes and an unbarred belly. SMH is familiar with *E. tenuirostre* and related taxa from the Solomons and New Britain, and confirmed the sighting based on the illustration in Dutson (2011). Other grey-and-rufous birds were eliminated, such as Island Monarch (grey, not rufous neck and upperparts), as well as other dark birds like Shining Flycatcher *Myiagra alecto* (head too angular, different jizz), Singing Starling *Aplonis cantoroides* (tail too short), Atoll Starling *A. feadensis* (eyes yellow not black, tail too short) and Barred Cuckooshrike *Coracina lineata* (eyes yellow, black and white barring; far out of range). However, this population could represent an undescribed taxon and a considerable extension of range, meaning that much greater detail, preferably a photograph and / or specimen, will be necessary to confirm the presence of this species.

***WILLIE WAGTAIL** *Rhipidura leucophrys*
The nearest known population to the Ninigos is on Mussau (Mayr & Diamond 2001).
Ninigos 12 October 2019: SMH observed one on Mal; noting the black back, white breast and belly, white supercilium, and long wagged tail. Other potentially similar birds were

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eliminated: Manus Monarch (shorter tail and whiter body); Northern Fantail (white throat, and browner, not black-and-white plumage). SMH is very familiar with *R. leucophrys* from New Guinea and the Solomons where this species is common. This is a surprising record and ideally requires photographic or specimen confirmation. Nevertheless, SMH is confident of the identification.

ISLET MONARCH *Monarcha cinerascens fulviventris*

Ninigos WFC noted 'not too common but a few in small shrubs around plantations on Pihun.' He collected four (AMNH 336253–255). Bell (1975) collected an immature on Menam where it was 'extremely abundant'. 2019: singles or pairs on Longan and Bahanat, and 5–8 foraging in low bushes on Mal (SMH).

Hermits WFC collected eight on tiny outer islands of the atoll (AMNH 336347–354) but not on Luf. 2019: one on Pemei (SMH).

Kaniets WFC collected two, 16 May 1934 (AMNH 336298) and 21 May 1934 (AMNH 336299).

***MANUS MONARCH** *Symposiachrus infelix*

Endemic to Manus, Rambutyo and Tong (Mayr & Diamond 2001, Dutson 2011).

Ninigos 1 February 2019: LC & CH saw a small, striking, black-and-white bird moving quickly through foliage in the south of Longan. Through binoculars, they were struck by its starkly contrasting black-and-white plumage, black-and-white head, black throat, black back and white belly. It was clearly a monarch but smaller than, albeit similarly proportioned to, Islet Monarch which they saw the same day. Later, on 1 February they identified the bird as a Manus Monarch using Dutson (2011). Other black-and-white birds were eliminated such as Willie Wagtail (less white, longer tail), a triller (*Lalage* sp.; different jizz, stance more upright, less black on face) and Northern Fantail *Rhipidura rufiventris* (grey and white with white not black throat, not black-and-white plumage). Manus Monarch is relatively uncommon and could have been overlooked by previous observers. Given that birds on Rambutyo and Tong are a separate subspecies, *S. i. coultasi*, it is likely that any population on the Ninigos represents an undescribed subspecies.

Figure 7. Specimen of the Arctic Warbler *Phylloscopus borealis* complex (perhaps race *kennicotti*), collected by W. F. Coultas in the Kaniets, May 1934 (Paul Sweet, © American Museum of Natural History, New York)

ARCTIC WARBLER *Phylloscopus borealis*

This northern Palearctic and Alaskan breeder winters largely in South-east Asia (Lowther & Sharbaugh 2020) including Indonesia as far east as the Moluccas (Coates & Bishop 1997).

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Kaniets An adult male collected by WFC on 21 May 1934 (Mayr 1955) is the sole record from the New Guinea region (Dutson 2011, Beehler & Pratt 2016), strangely though WFC made no mention in his diary of this specimen (AMNH 336300; wing 67.5 mm, tail 48.5 mm, bill to skull 14.46 mm, measured by P. R. Sweet). The coloration of the upperparts and its long bill agree best with race *kennicotti*, but the specimen is not certainly separable from *borealis* (P. R. Sweet *in litt*. 2020; Fig. 7). However, it bears mention that AMNH 336300 has not been critically re-examined in the light of the proposed splits of Kamchatka Leaf Warbler *P. examinandus* and Japanese Leaf Warbler *P. xanthodryas* from *P. borealis* (Alström *et al*. 2011); despite that their non-breeding distributions are poorly known, in the boreal winter both of these recently recognised species do occur well east into Wallacea (Eaton *et al*. 2016).

ORIENTAL REED WARBLER *Acrocephalus orientalis*
Kaniets A badly damaged specimen collected by WFC was probably this species (Coates 1990) but was not preserved (Bell 1975; P. R. Sweet *in litt*. 2020).

ATOLL STARLING *Aplonis feadensis heureka*
Range spread over many small islets, but probably encompasses no more than *c*.64 km^2 of land (Mayr & Diamond 2001).
Ninigos Bell (1975) collected a male on Menam and apparently found it quite common. 2019: 2–8 seen on Longan and Bahanat, and *c*.11 in open forest and near houses on Mal. A local informant stated that this species nests in holes of large broadleaf trees. SMH noted it as the most common starling on the atoll. Also recorded by WFC.
Hermits WFC found it to be the commonest landbird on these islands and collected 15. Found by Bell (1975) on Luf, the only island in the Hermits he visited. 2019: six adults and four juveniles recorded within a few minutes of being ashore on Pemei (SMH).

SINGING STARLING *Aplonis cantoroides*
Ninigos 11 May 1928: Mayr collected a single male (AMNH 294656) on Mal (Meise 1929b). The species was not found by Bell (1975) or WFC. 2019: two, six and four were seen on three dates on Longan. SMH found it more common on Longan in the indigenous gardens of the west of the island than on Bahanat or other uninhabited islands where the species was scarce. However, open agricultural areas are easier areas in which to see birds.
Hermits WFC found this to be one of the commonest species on these islands. Bell (1975) noted a flock of five unidentified starlings on Luf.

OLIVE-BACKED SUNBIRD *Cinnyris jugularis flavigastra*
Ninigos Bell (1975) observed one or two on Menam. 2019: four on Bahanat only permitted glimpses of their distinctive size, shape and bright yellow underparts (SMH).
Hermits WFC failed to find the species on Luf, but on Maron he noted it was 'not a common bird' and collected two. Bell (1975) found it 'very abundant' on Luf.

Discussion

We added four landbird species to the avifauna of the Ninigos and Hermits: a swiftlet sp., *Edolisoma tenuirostre*, *Rhipidura leucophrys* and *Symposiachrus infelix*. Whether these birds are recent colonists or vagrants is unclear, but three of these species are not typical migrants. The cicadabird, Willie Wagtail and monarch are all sedentary landbirds that are not known to migrate. Nevertheless, they probably travelled long over-water distances to reach these tiny atolls, although the possibility of ship-assisted travel is a possibility, albeit seemingly a remote one.

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The total list of birds for these islands and their adjacent seas is 59. Approximately 28 land and freshwater birds are now known from the Ninigos (24) and Hermits (18). Our observations added one resident species to the Ninigos' list: Island Imperial Pigeon. The Ninigos are richer than the Hermits in three presumed resident species: *Nycticorax caledonicus*, *Pandion haliaetus* and *Haliastur indus*. Although the Ninigos are considerably larger in area than the Hermits, they are 87 km further west of Manus, which is presumably the main source for most landbirds in these two island groups. However, the Hermits include two islands, Luf and Akib, which rise to 260 m and 100 m, respectively, and thus support a greater range of habitats.

Three austral migrants have been recorded on these atolls; *Eudynamys taitensis* from New Zealand, and *Todiramphus sanctus* and *Merops ornatus* from Australia and New Guinea. The low numbers and diversity of austral and Palearctic migrants is presumably a result of limited ornithological effort and the islands' locations at the extremity of these species' ranges.

Two Palearctic landbird migrants, *Ixobrychus sinensis* and *Phylloscopus borealis*, have been recorded in the region. *I. sinensis* is probably a regular Palearctic migrant to Northern Melanesia, given its status in New Guinea (Beehler & Pratt 2016). A third species, thought to be Oriental Reed Warbler *Acrocephalus orientalis*, was collected by WFC but the specimen was too badly damaged to identify with certainty (WFC; Coates 1990) and was not retained. Despite the paucity of non-shorebird Palearctic migrants recorded to date on the islands, the records mentioned in the Kaniets suggest that surveys of these islands during the southbound migration period (September–November) could produce additional species such as those recorded in northern Australia (see Menkhorst *et al*. 2017).

Migrant Palearctic-breeding shorebirds are moderately well represented, with 11 species now known from these atolls, albeit none in large numbers. We added six species to the list of Bell (1975). The presence of several flocks of *Phalaropus lobatus* further evidences that the seas of Northern Melanesia form part of the non-breeding range of this species.

In view of the avifaunal changes on these atolls between WFC's visit in 1934 and Bell's in 1970, it is relatively unsurprising that further changes should have occurred in the 50 years since they were last visited by an ornithologist (see Mayr 1942, Mayr & Diamond 2001). Unfortunately, however, the three surveys are not comparable in the islands visited or time involved, making it impossible to determine if such changes are genuine or a reflection of effort and / or seasonal differences. Nevertheless, the post-Bell colonisation of the Ninigos by *Aplonis cantoroides* (almost certainly from the Hermits) is a clear example of change. Our discovery of four previously unobserved landbirds indicates that a longer, well-timed and systematic survey of these islands may produce further additions. For example, SMH did not survey swamps where WFC found *Ixobrychus flavicollis* and *Nycticorax caledonicus*, and she did not visit Luf which supports tall hill forest and may harbour additional species.

Seabirds.—The seabirds of Northern Melanesia, in particular the north-west of the region, are very poorly known (Cheshire 2010, Dutson 2011). SMH's observations in the waters in and around the Ninigos and Hermits further evidence the importance of the West Melanesian Trench as a foraging area for pelagic birds, with feeding flocks of up to 900 *Anous* spp. and mixed-species feeding flocks of up to 500 individuals observed. Probably some species of seabirds were overlooked, in particular tubenoses such as *Oceanodroma matsudairae*, Bulwer's Petrel *Bulweria bulwerii*, Heinroth's Shearwater *Puffinus heinrothi* and others. This may reflect SMH's inexperience with this group, but it is also the case that her attention was often focused on sailing in at times challenging seas. Nevertheless, SMH's observations of *Phaethon lepturus*, *Ardenna pacifica*, *Calonectris leucomelas*, *Fregata* spp.,

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Stercorarius longicaudus, three species of booby and nine of terns augments the steadily accumulating body of knowledge of seabirds in Northern Melanesia.

Conservation.—Bell (1975) suggested that the overall conservation status of these atolls had improved since WFC's visit there in 1934, and we broadly concur. However, without comparable observations from the same island(s) visited by WFC and Bell it is difficult to draw definite conclusions. Nevertheless, it is heartening that *Megapodius eremita* is extant and probably common on Bahanat. Conversely, its status in the rest of the Ninigos is unknown and the species may have been extirpated on the Hermits. However, the relatively rugged terrain and extensive wooded cover on some islands in the latter group could still harbour megapodes, but this needs confirming.

Arguably the species of greatest concern is *Hypotaenidia philippensis*, which WFC found to be common on both the Ninigos and Hermits, but was not seen by Bell or SMH. The only modern record for either atoll is that by LC (see above). Of the three pigeons apparently resident on the islands, *Ptilinopus solomonensis* is common on the Ninigos but may have been extirpated on the Hermits; *Ducula pacifica* is also numerous on the Ninigos but possibly extirpated on the Hermits where Bell (1975) reported it to be common *c*.50 years ago. The status of *D. pistrinaria* requires clarification. Atoll Starling remains common on both the Ninigos and Hermits.

The discovery of breeding colonies of *Anous minutus* on Nahanu (Ninigos), *A. stolidus* on Nana (Ninigos), *Gygis alba* on Pemei (Hermits) and *Sula sula* on Pekhu, Pianau and Leabon (in the Hermits) underlines the conservation importance of these little-known atolls.

Clearly, there is a need for a thorough survey of all of the islands comprising these four groups, but especially the remote islets such as Sama, Sumasuma and Awin in the southern Ninigos, and the two subsidiary atolls of Heina and Pelleluhu in the north, plus many of the small islands that form the Hermit Atoll. A survey of Sae in November–December should determine the status of its nesting seabirds.

Acknowledgements

SMH thanks Liz Crawford and Chris Herbert for their cheerful competence in the field and for sharing their observations. We thank them and Cliff Frith for meticulously reviewing drafts of the manuscript; Jeff Davies was very generous with his time, checking many images of seabirds and providing detailed identification criteria; Danny Rogers and Tony Palliser also kindly commented on the identifications of species photographed; Jared Diamond made very useful suggestions that greatly improved the paper; and a copy of Coultas' unpublished expedition diary in the library of Harry Bell, kindly donated to KDB by Ann Bell, permitted inclusion of a number of previously unpublished records from the Kaniet Islands and Sae. Paul R. Sweet and Thomas J. Trombone, at AMNH, generously assisted us with our enquiries and photographed the specimen of Arctic Warbler. We thank two anonymous reviewers for their helpful and welcome suggestions, and Guy Kirwan for his exemplary editing. Last, but by no means least, we thank Jon Hacking, patient husband of SMH, and captain extraordinaire of s/v *Ocelot*.

References:

Alström, P., Saitoh, T., Williams, D., Ishiumi, I., Shigeta, Y., Ueda, K., Irestedt, M., Björklund, M. & Olsson, U. 2011. The Arctic Warbler *Phylloscopus borealis* – three anciently separated cryptic species revealed. *Ibis* 153: 395–410.

Beehler B. M. & Pratt, T. K. 2016. *Birds of New Guinea: distribution, taxonomy, and systematics*. Princeton Univ. Press.

Bell, H. L. 1975. Avifauna of the Ninigo and Hermit Islands, New Guinea. *Emu* 75: 77–84.

Cheshire, N. 2010. Procellariiformes observed around Papua New Guinea including the Bismarck Archipelago from 1985 to 2007. *South Austr. Orn*. 36: 9–24.

Coates, B. J. 1985. *The birds of Papua New Guinea*, vol. 1. Dove Publications, Alderley.

Coates, B. J. 1990. *The birds of Papua New Guinea*, vol. 2. Dove Publications Alderley.

Coates, B. J. & Bishop, K. D. 1997. *A guide to the birds of Wallacea. Sulawesi, the Moluccas and Lesser Sunda Islands, Indonesia*. Dove Publications, Alderley.

Coates, B. J. & Swainson, G. W. 1978. Notes on the birds of Wuvulu Island. *Papua New Guinea Bird Soc. Newsl*. 145: 8–10.

ISSN-2513-9894 (Online)

Collar, N., Christie, D. A. & Kirwan, G. M. 2020. Coconut Lorikeet (*Trichoglossus haematodus*), version 1.0. *In* del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.railor4.01 (accessed September 2020).

Coultas, W. F. 1935. Manuscript of journal and letters, vol. 4, of William F. Coultas, Whitney South Seas Expedition, October 1933–March 1935. Unpubl. American Museum of Natural History, New York.

Dickinson, E. C. & Remsen, J. V. (eds.) 2013. *The Howard and Moore complete checklist of the birds of the world*, vol. 1. Fourth edn. Aves Press, Eastbourne.

Dutson, G. 2001. New distributional records for Melanesian birds. *Emu* 101: 237–248.

Dutson, G. 2011. *Birds of Melanesia. The Bismarcks, Solomons, Vanuatu and New Caledonia*. Christopher Helm, London.

Eaton, J. A., van Balen, B., Brickle, N. W. & Rheindt, F. E. 2016. *Birds of the Indonesian archipelago: Greater Sundas and Wallacea*. Lynx Edicions, Barcelona.

van Gils, J., Wiersma, P. & Kirwan, G. M. 2020. Far Eastern Curlew (*Numenius madagascariensis*), version 1.0. *In* del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.faecur.01 (accessed September 2020).

Hartlaub, G. 1867. On a collection of birds from some less well-known locations in the Western Pacific. *Proc. Zool. Soc. Lond*. 1867: 828–832.

Higgins, P. J. (ed.) 1999. *Handbook of Australian, New Zealand and Antarctic birds*, vol. 4. Oxford Univ. Press, Melbourne.

del Hoyo, J. & Collar, N. J. 2014. *HBW and BirdLife International illustrated checklist of the birds of the world*, vol. 1. Lynx Edicions, Barcelona.

Lowther, P. E. & Sharbaugh, S. 2020. Arctic Warbler (*Phylloscopus borealis*), version 1.0. *In* Billerman, S. M. (ed.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.arcwar1.01 (accessed September 2020).

King, W. B. 1967. *Preliminary Smithsonian identification manual. Seabirds of the tropical Pacific Ocean*. Smithsonian Institution, Washington DC.

Mayr, E. 1949. Notes on the birds of Northern Melanesia. 2. *Amer. Mus. Novit*. 1417: 1–38.

Mayr, E. 1950. Artbildung und Variation in der *Halcyon-chloris*-Gruppe. *Orn. Biol. Wiss*. 66: 55–60.

Mayr, E. 1955. Notes on the birds of Northern Melanesia. 3 Passeres. *Amer. Mus. Novit*. 1707: 1–46.

Mayr, E. & Diamond, J. 2001. *The birds of Northern Melanesia*. Oxford Univ. Press.

McClure, H. E. 1968. *Migratory animal pathological survey annual report*. Applied Scientific Research Corporation, Bangkok.

Meise, W. 1929a. Zwei neue Rassen von *Myzomela nigrita*. *Orn: Monatsb*. 37: 84–85.

Meise, W. 1929b. Uber den Formenkreis *Aplonis cantoroides*. *Orn. Monatsb*. 37: 111–113.

Menkhorst, P., Rogers, D., Clarke, R., Davies, J., Marsack, P. & Franklin, K. 2017. *The Australian bird guide*. CSIRO Publishing, Australia.

Reichenow, A. 1899. Die Vogel der Bismarck Inseln. *Mitt. zool. Mus. Berlin* 1: 1–106.

Schreiber, E. A. & Norton, R. L. 2020. Brown Booby (*Sula leucogaster*), version 1.0. *In* Billerman, S. M. (ed.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.brnboo.01 (accessed September 2020).

Schreiber, E. A., Schreiber, R. W. & Schenk, G. A. 2020. Red-footed Booby (*Sula sula*), version 1.0. *In* Billerman, S. M. (ed.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.refboo.01 (accessed September 2020).

Sharp, A. 1960. *The discovery of the Pacific Islands*. Clarendon Press, Oxford.

Stresemann, E. 1923. Dr. Burgers ornithologische Ausbeute im Stromgebiet des Sepik. *Arch. Naturgesch*. 89: 38–39.

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ISSN-2513-9894 (Online)