

The avifauna of Biak Island, Papua, Indonesia with comments on status, conservation, natural history and taxonomy

Authors: Bishop, K. David, and van Balen, Sebastianus (Bas)

Source: Bulletin of the British Ornithologists' Club, 143(1) : 3-62

Published By: British Ornithologists' Club

URL: <https://doi.org/10.25226/bboc.v143i1.2023.a2>

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

The avifauna of Biak Island, Papua, Indonesia with comments on status, conservation, natural history and taxonomy

by K. David Bishop & Sebastianus (Bas) van Balen

Received 1 January 2022; revised 10 October 2022; published 6 March 2023

<http://zoobank.org/urn:lsid:zoobank.org:pub:805136AB-F3FE-4C77-85AC-E37423156B6D>

SUMMARY.—New Guinea and its satellite islands are justly renowned for their spectacular and highly diverse, endemic avifauna. The oceanic island of Biak and its satellites, in Teluk Cenderawasih (formerly Geelvink Bay), Papua province, Indonesia, has an avifauna of c.159 species including the largest number of endemics of any island in the New Guinea region: seven species are strictly endemic to Biak and another six are shared with other Teluk Cenderawasih islands but not Yapen. Despite Biak attaining an elevation of c.1,034 m there are no species whose range on Biak is known to be entirely montane. We provide a physical description of Biak and its twin Supiori, and discuss the biogeography and conservation of their birds. We present a detailed checklist of all species recorded to date. Since the publication in 1939 of Mayr & Meyer de Schauensee, 66 species have been added to the Biak list, of which Short-eared Owl *Asio flammeus* and Black-winged Stilt *Himantopus himantopus* are new for the entire Australo-Papuan region and Grey Heron *Ardea cinerea* only the second for the region and first for New Guinea; 47 of these additions are also first records for any island in Teluk Cenderawasih. An appendix summarises the distribution and status of birds in Teluk Cenderawasih (excluding mainland New Guinea species only on Yapen).

New Guinea and its satellite islands are renowned for their spectacular and highly diverse, endemic avifauna (Pratt & Beehler 2015, Beehler & Pratt 2016). Despite this, much of the region and its birds are poorly studied with very few detailed, long-term inventories critical for our understanding of distribution, biogeography and conservation. The enormous Teluk (= Bay) Cenderawasih (= Bird of Paradise), formerly Geelvink Bay, off New Guinea's north-west coast (Fig. 1) hosts a diverse assemblage of islands including tiny sandy cays, small atolls, small forested islands, a large, mountainous, land-bridge island (Yapen) and several oceanic islands of which Biak is one (Fig. 2). New Guinea is surrounded by two types of smaller islands: oceanic islands in deep water with no prior land connection to New Guinea, of which Biak is a prime example (Hill & Hall 2002), thus all of their bird species must have arrived overwater; and land-bridge islands in shallow water, which had land connections to New Guinea at Pleistocene times of low sea level, thus many species arrived overland. At the northern edge of Teluk Cenderawasih and part of the Geelvink Islands Endemic Bird Area (*sensu* Stattersfield *et al.* 1998), Biak has the most highly endemic avifauna of any of New Guinea's oceanic satellites (Mayr & Meyer de Schauensee 1939), i.e., those islands immediately surrounding New Guinea but excluding the Bismarck archipelago, Seram, Halmahera and Kei Islands, as defined by Mayr (1941) and Beehler & Pratt (2016).

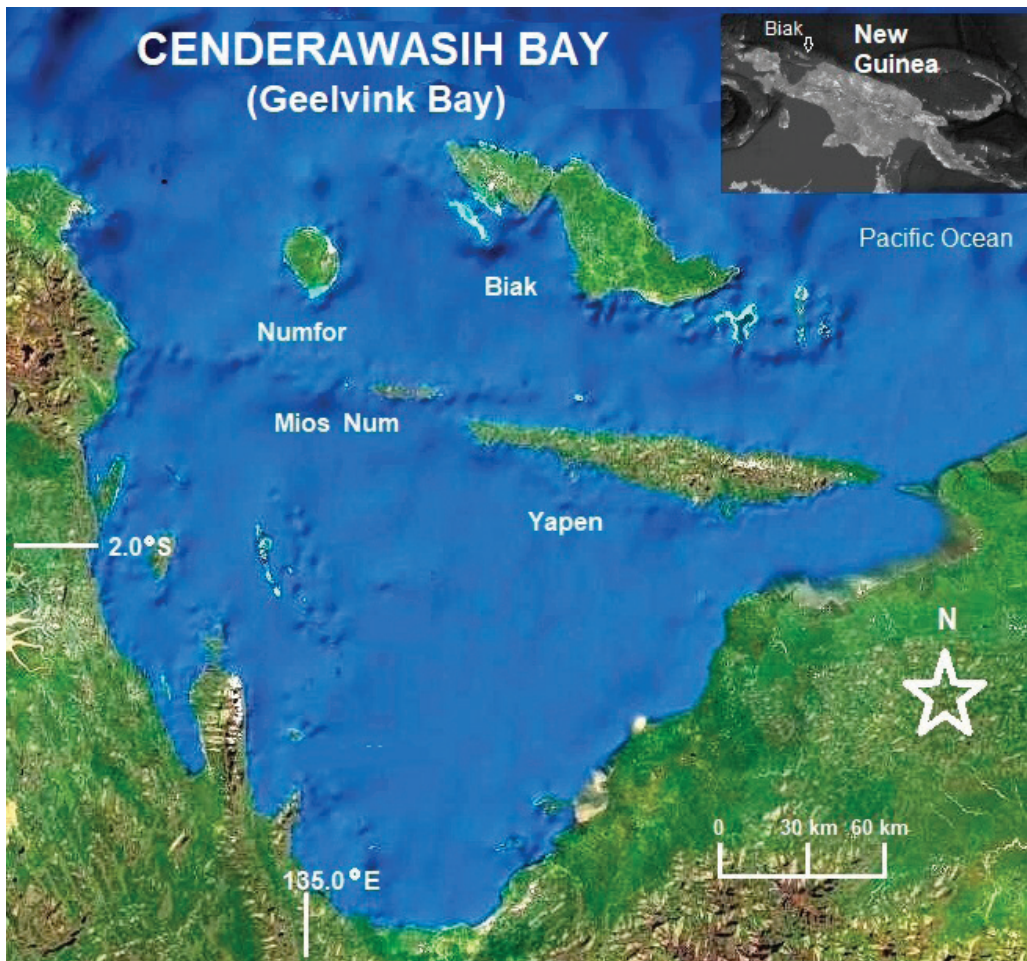


Figure 1. Teluk (Bay) Cenderawasih showing the principal islands and relationship with mainland New Guinea.

Methods

In 1981 BirdLife International (then International Council for Bird Preservation) were informed that Biak and its birds were in a perilous state. As a result, KDB was commissioned to undertake field work on Biak during 1–12 July 1982, during which he was largely based at the village of Kuneff, on the south coast of Supiori just a few km north-west of the military base of Korrido (or Korido), formerly the base for S. Dillon Ripley's expedition (in Mayr & Meyer de Schauensee 1939). Thereafter KDB made regular observations on Biak while leading bird tours and during serendipitous birding at the beginning and end of other field work: 1–5 August 1983; 13 June 1989; 30 September–1 October 1989; 4–5 June 1990; 1 July 1990 with J. Diamond (hereafter JD), 25–27 February 1992; 26 July 1992; 21 March 1993 with JD; 11–12 September 1994 with JD; 28–30 August 2015 and 8 December 2016. During these periods, KDB was largely based at a hotel adjacent to Frans Kaisiepo airport, immediately east of Biak township. A motor boat was used on the first survey to visit Kuneff. Thereafter all surveys were conducted by motor vehicle and on foot. The recent expansion of the road system on Biak, including a bridge to Supiori, enabled a brief road-based survey of south-west Supiori in August 2015. SvB made observations on Biak on 8–16 January 1997, mainly



Figure 2. Biak showing locations mentioned in the text.

around Marauw (or Marao) in the south-east, and Sansundi in the north. He also made brief visits to southern and western Biak on 12–13 and 23 October 1997 and 25–26 April 2007.

Observations were made by walking established trails and a few trails that were specially cut for use, stopping at fruiting and flowering trees where birds gathered, and measuring elevations with a Garmin GPS. Vocalisations were recorded with a Sony TCM5000 EV tape-recorder (KDB) or a Marantz PMD222 (SvB) and Sennheiser shotgun microphone. Unidentified vocalisations were played back in the field in order to track down and identify the source. Recordings were re-listened to each day, in the hotel room, because our microphones often captured vocalisations not noticed in the field. SvB's audio-recordings have been deposited at www.xeno-canto.org (XC). Both of us contributed recordings to an App of New Guinea birds (Woxvold & Bishop 2020).

We have accepted records from observers known to be reliable and experienced, and who have supported their records with images and/or descriptions (see Annotated checklist). Nevertheless, one of the problems we faced when compiling this list was the large number of dubious / implausible records mentioned for Biak since birders started to visit the island. KDB as a reviewer for eBird (<http://www.ebird.org>) was able to resolve many of these records, which have now been expunged. We carefully evaluated records and wherever possible sought confirmation. Because they have been listed elsewhere for Biak, 21 species claims are listed in Appendix 1 with brief rationale for their exclusion from the Biak avifauna. Despite the enormous value of citizen science, there is a potential danger to uncritically accepting reports by recreational birders.

At the end of this paper, we present a comprehensive annotated checklist of the birds of Biak *sensu lato* and its satellites, i.e., Padaido Islands in the south-east and Rani and the Aruri islets immediately south of Supiori. In addition to documenting all species in the Biak area, each account includes a list of the subspecies on Biak and other Teluk Cenderawasih Islands. Taxonomy and nomenclature follow Beehler & Pratt (2016). However, several

authorities (e.g., del Hoyo & Collar 2014, 2016) have proposed revised treatments for some taxa and these are discussed in the checklist.

Environment

Biak is in the northern part of Teluk Cenderawasih, in the Indonesian province of Papua, north-west New Guinea, and is centred on 00°55'S, 135°56'E. The nearest point on the New Guinea mainland is 114 km to the south-east; Yapen and Mios Num, which are species-rich land-bridge islands that support a diverse subset of the New Guinea lowland avifauna (for Yapen, see Diamond & Bishop 2020), are 49 km due south of Biak (Fig. 1). The biogeographically closely related oceanic island of Numfor is 62 km to the south-west and the tiny island of Bepondi (or Korwar) 28 km to the north-west. Many small islands and islets lie close to Biak, most of which have never been surveyed ornithologically, including: Rani and the associated Aruri islets off the south coast of Supiori; and in the south-east the ornithologically potentially interesting Padaido (Padeaido, or Traitor's) Islands, a cluster of islets and small atolls including Padaidori, Owi and Wando. In addition, there are several more remote islets such as Ayawi that are not included as Biak satellites herein.

On old maps Biak is treated as two islands (e.g., Anon. 1938), which are separated by a narrow strait, but connected by a mangrove-lined channel c.20 m wide and c.9 km long (Fig. 2). The western part is known as Supiori (old spelling Soepiori), Korido, Korrido, Sowek, Sook or Soëk¹, the eastern part as Biak or Wiak.

The combined 'islands' were formerly known as Schouten, Mysori, Myfor or variations on these. For simplicity, we refer throughout to Biak and Supiori simply as Biak except when specifically noting a particular record for Supiori. If a species occurs on one or more of Biak's satellites this is noted.

In the next section we describe the topography and vegetation of Biak and, separately, Supiori. Biak and Supiori have a typical tropical climate with max. temperatures averaging 29–30°C (www.weather-atlas.com), and rainfall at the village of Bosnik ranging from 172 mm in October to 256 mm in January, with annual total precipitation of 2,564 mm (Sandy 1987).

Biak *sensu stricto*

The much larger Biak (2,455 km²) with a population of 131,152 in 2019 (Anon. 2020) lies east of the more topographically rugged Supiori. The southern third of Biak boasts a relatively flat, uplifted, coralline plain, buttressed by a limestone pre-coastal escarpment that rises steeply along most of its southern side. This area supports the bulk of Biak's human population, an international airport and important port. Much of this area was heavily logged during the 1960s and 1970s. For example, stands of *Agathis* (Araucariaceae), a highly sought-after timber tree, were logged in an area of ultramafics near Bosnik (Beehler 2007). Elsewhere, large patches have been converted to smallholder farms, indigenous gardens and / or coconut plantations. Areas not currently farmed are often covered in low-stature secondary woodland or a mosaic of scrub and alang-alang *Imperata cylindrica* grassland. Where the soil is especially thin and limestone bedrock exposed it resembles a semi-arid scrub association. Roads, established initially for logging, now provide easier access to forests that were once rarely visited by people. Consequently, in many areas there

¹ Soek (or Soëk, Sowek and Sook) is a synonym for Supiori, but Sowek is also the name of a small island off southern Supiori (Mayr & Meyer de Schauensee 1939), whereas Soëk is also the name of a village on the south coast of Supiori (Junge 1956).

are now few tall trees and those still standing are being rapidly cut and the land cleared and burnt in preparation for more farming.

Five small rivers dissect western Biak, whereas there is just one river on the north side and none in the south. The many small villages on Biak's coast are often associated with these freshwater sources. The north-west exhibits a notably rugged terrain of limestone karst. Here the hills rise to 740 m (Anon. 1938). This area encompasses *c.*50% of the land area of Biak and is still largely covered in primary forest. A reserve of *c.*11,000 ha, designated as Biak Utara, has been established in the far north (Fig. 2), and a 2,000 ha Nature Recreation Park, designated as Parieri, in the south (MacKinnon & Artha 1981, de Fretes 2007) (exact location unclear thus not shown on Fig. 2). In addition, there is what appears to be a large, naturally flooded river valley (Fig. 2) that has apparently never been explored zoologically. The rest of Biak is rather flat, gradually sloping from the north-west, where mean elevation is 300–350 m. To the south-east the terrain is only 100–150 m above sea level (Feuilletau de Bruyn 1920; KDB). Despite reports to the contrary, parts of the south also remain clothed in primary forest. However, increasing numbers of roads are slowly opening up this forest permitting greater access to hunters and farmers.

On 17 February 1996 a tsunami hit the extreme south-east corner of Biak (Henry & Das 2002) breaching the island's natural sea defences. This created a small area of flooded forest, dead trees and regenerating mangrove (the 'tsunami swamp'). Since KDB explored the site in 2015 and drew attention to it, this area has produced an impressive number of novelties including at least three new records for the New Guinea region as defined by Mayr (1941) and Beehler & Pratt (2016).

Supiori

Supiori covers 634 km² and had a population of 22,547 in 2020 (wikipedia.org). Supiori Regency also includes the small coral islets of Rani and Aruri as well as >100 smaller islets mainly off the north coast. Supiori supports a very narrow and fragmented strip of lowland forest along its south coast, with a handful of small villages including the administrative centre of Korrido. The forest here is tall, well developed and persists to *c.*400 m elevation. However, at *c.*200 m the land is already steep, characterised by rugged limestone karst that is very difficult to penetrate.

Supiori's forests still appear as a vast swath of green and *c.*90% of Supiori is clothed in unlogged, moist tropical forest. Nevertheless, on closer examination it is clear these forests have been subject to constant natural disturbance given the intermittently broken canopy, regular large patches of tall secondary forest and very dense ground flora consisting principally of bamboo, rattan and barbed vines. Furthermore, Supiori's steep slopes are notably rugged, dissected by house-sized limestone karst boulders and deep sinkholes. Higher, between *c.*300 and 460 m, extensive patches of dense 2 m-high ferns (not dissimilar to bracken) form almost impenetrable thickets. These steep slopes support relatively few large-diameter trees although impressive-girth strangler figs are abundant. Ripley observed that above *c.*800 ft. (243 m) the trees were smaller with abundant mosses and epiphytes (Mayr & Meyer de Schauensee 1939).

There has been some discussion regarding the highest point of Biak and Supiori. Ripley claimed that he reached 2,200 ft. (670 m) and Supiori's highest point (Mayr & Meyer de Schauensee 1939). However, Mees (1961: 90) related that on meeting Dr ten Haaft, Ripley's companion in 1937, ten Haaft stated that 'they had not nearly reached the highest point of the island.' From Google Earth it is evident that Supiori reaches *c.*972 m (00°48'24.48"S, 135°36'20.28"E), which compares well with Mees' examination of maps (see Anon. 1937) which indicated the island's highest point as 1,034 m. This point is almost due north of

Korrído where Ripley was based and KDB surveyed in 1982. Thus, Supiori attains a notably higher elevation than adjoining Biak. It would appear that the highest elevations of Supiori, and for that matter Biak, have yet to be surveyed ornithologically.

Supiori's north coast, which is open to strong winds and seas, is wild and rocky behind which there is a narrow strip of relatively undisturbed lowland forest. Conversely, the south is dominated by a narrow c.30 km long inlet, which provides a sheltered anchorage. Coastal areas comprise a mosaic of small sandy coves separated by jagged headlands, interspersed with patches of mangrove and Sago Palm *Metroxylon sagu* and Nipa Palm *Nypa fruticans* swamp forest. Coral reefs extend along much of the south and west coasts.

A strict nature reserve of c.44,500 ha has been designated for Supiori, ranging from the coast to the highest point (MacKinnon & Artha 1981). Other than the information contained herein, there appears to be very little known about this reserve. Relatively little of Supiori's forest appears to have been altered by man and very little by commercial exploitation including in the reserve. However, the construction of a coastal road from Korrído via northern Biak and thence south to Biak township may change that situation. Perhaps due to the conditions described above, agriculture is notably marginal on the south coast, being confined to small patches cleared for gardens in the immediate vicinity of villages. If anything, this has increased the diversity of available habitats. For example, patches of grassy secondary scrub have colonised recently abandoned gardens whilst c.10 m-tall secondary woodland grows on what were once indigenous gardens. During 1982 extensive areas of forest along the lower Wandei River were being cleared for gardens and there was some utilisation of Sago Palms. Large trees were also being systematically cut, either for canoes or construction timber. Clearance around the relatively large village of Korrído was noticeably more extensive than elsewhere on Supiori and an unsuccessful attempt to establish gardens on steep limestone karst resulted in badly eroded slopes.

Despite supporting a plethora of small fishing villages, the entire north coast of Supiori is ornithologically unexplored. Of special interest must surely be the area of lowland forest on flat terrain. Notwithstanding, a road is now pushing along the north coast and with it all the environmental problems that such roads typically bring. In addition, it is understood there are plans to house large numbers of settlers from overcrowded Java, Bali and Sulawesi in this area. Presumably, as elsewhere under Indonesia's transmigration policy, these forests will be cleared as a result. Sadly, the biological importance of this area can only be guessed. Furthermore, as also seen elsewhere, transmigrants have no traditional or spiritual ties to the land and will almost certainly range into surrounding areas, possibly including the nearby Supiori Reserve, probably degrading natural resources until they are exhausted.

Language

Biak is an Austronesian language of the south Halmahera–west New Guinea subgroup of eastern Malayo-Polynesian languages. Biak is spoken by c.70,000 people on Biak, Numfor and numerous associated small islands (Lewis 2016). Independently, in and around Sansundi, Biak (SvB) and Kuneff, Supiori (KDB) we noted indigenous Biak bird names, which are listed in the checklist. It will be apparent from the latter that the two sites produced some names that were different from one another. Further study is needed to determine if this variation reflects a slight difference in dialect or misidentifications. Names taken from the Biak-Indonesian dictionary by Soeparno (1977) provided additional material. Many Biak names are onomatopoeic, such as Man Pirpir for bee-eaters, Man Wawa for crows; other names describe certain behaviour, such as Man Doranzia ('restless flying bird' for swiftlets) or Munsob ('killing couscous' for Gurney's Eagle *Aquila gurneyi*).

Previous ornithological field work

With the exception of Dillon Ripley's observations made 84 years ago (22 November–15 December 1937; Mayr & Meyer de Schauensee 1939) which were conducted around the village of Korrido (or Korido) on the south coast of Supiori, there are very few published data on the birds of Biak.

Mayr & Meyer de Schauensee (1939) presented a synopsis of the history of ornithological exploration on Biak and the results of Ripley's expedition. A previous list published by Rothschild *et al.* (1932) that numbered 59 resident species, was augmented with ten breeding species by Ripley, bringing the total to 69. Subsequent to Ripley's work there has been very little additional collecting. During July 1953–December 1954 C. Hoogerheide made a small collection of birds (Junge 1956), adding five species to the Biak list including White-bibbed Fruit Dove *Ptilinopus rivoli prasinorrhous*. As part of a five-month trip through New Guinea Ben King made brief observations on Biak during 8–18 December 1962 and 29–30 March 1963 (King 1979), adding Superb Fruit Dove *P. superbus*, Gray's Grasshopper Warbler *Locustella fasciolata* (which he collected) and three seabirds. In March 1976 David Melville and three companions spent a couple of days around Biak town; some of their more interesting observations were included in Melville (1979, 1980). In 1991 David Gibbs spent a few days on Supiori and Biak (Gibbs 1993). Our visits to Biak and Supiori are detailed above.

Avifauna

The avifaunas of New Guinea's oceanic islands, including Biak, 'are all drawn from a subset of the New Guinea avifauna characterised by ability and willingness to colonise across water' (Diamond *et al.* 2009). Biak hosts the largest number of endemics of any island in the New Guinea region: seven species (a coucal, scops owl, kingfisher, triller, monarch, warbler and a white-eye) are strict endemics. Another six (a megapode, imperial pigeon, lory, pygmy parrot, flycatcher and a starling) are shared with other Teluk Cenderawasih islands, especially Numfor and Mios Num, but not with Yapen. Biak also hosts 18 endemic subspecies (seven non-passerines and 11 passerines) plus four Teluk Cenderawasih non-passerine endemic subspecies (Appendix 1). Several of these subspecies may warrant species rank (see the checklist below). Thus, Biak is of considerable biological interest and great conservation importance. Two other facts that make Biak interesting are the contrast in species composition between oceanic Biak and the nearby land-bridge island of Yapen; and the occurrence of two levels of supertramp bird species, i.e., those present on Biak and some other oceanic islands but absent from the much larger and richer island of New Guinea, plus species present on tiny species-poor islands near Biak but not on Biak itself. Appendix 1 provides a checklist of the birds of Biak and other Teluk Cenderawasih islands (excluding Yapen endemics and mainland New Guinea species found only on Yapen: the only species listed for Yapen are those also found on other Teluk Cenderawasih islands). A detailed annotated checklist of all species recorded on Biak and its satellites is presented below.

Mayr & Meyer de Schauensee (1939) listed 69 breeding landbirds plus 11 winter visitors and two seabirds for a total of 82 species. That number has now increased by 66 confirmed species, bringing the total for Biak to 148 (Appendix 1). In addition, there is one feral (Rock Dove *Columba livia*), four introductions (Spotted Dove *Streptopelia chinensis*, Sooty-headed Bulbul *Pycnonotus aurigaster*, Eurasian Tree Sparrow *Passer montanus* and House Sparrow *Passer domesticus*), three taxa not specifically identified (a *Pterodroma*, *Stercorarius* and *Cuculus*) and three unconfirmed taxa (*Tyto*, *Acrocephalus* and Pacific Swift *Apus pacificus*), for a total list of 159. Biak and its satellites currently support 42 resident non-passerines (plus

several species whose temporal status is unresolved) and 25 resident passerines (plus one species, Island Whistler *Pachycephala phainota*, unconfirmed as resident); one feral and four introductions. Note, slight discrepancies between our totals and those of Mayr & Meyer de Schauensee (1939) reflect minor differences in definitions. For example, if we are uncertain if a species is resident on Biak or its satellites, e.g., Beach Thick-knee *Esacus magnirostris*, we include it among species whose status is undetermined. Of species added to the Biak list, Short-eared Owl *Asio flammeus* and Black-winged Stilt *Himantopus himantopus* are new for the entire Australo-Papuan region and Grey Heron *Ardea cinerea* is only the second record for the region and the first for New Guinea.

In the checklist, we have included our own field notes in addition to collating and reviewing the increasingly numerous unpublished reports by visiting birders, most of whom spend only 1–2 days on the island, invariably in southern Biak. Recently, many records have also been made available via eBird. With the exception of our own data, virtually all modern records are for the period July–November, especially August–September (eBird), i.e., the Northern Hemisphere summer holidays when most birders visit Biak.

Mayr & Meyer de Schauensee (1939) provided a summary of the biogeography of Biak's avifauna. In the following sections we extend this by discussing its avifauna in relation to the nearby land-bridge island of Yapen and the possible origins of its birds. We also discuss the possibility of a montane avifauna on Biak and compare the composition of Biak and Supiori's avifaunas.

Biak and Yapen compared

Biak and Yapen lie quite close to one another (one can see Biak on a clear day from Yapen's mountains), 51 km at the nearest point, and are roughly similar in size (Biak and Supiori 3,089 km² vs. Yapen 2,278 km²). However, Biak attains an elevation of c.1,034 m (on Supiori) whereas Yapen reaches 1,430 m (Diamond & Bishop 2020). There are dramatic differences in their avifaunas because Biak is an oceanic island whilst Yapen is a land-bridge island that was connected to mainland New Guinea during the Pleistocene (Beehler 2007) and presumably once supported an avifauna very similar to today's mainland. As a result, Yapen is considerably more species-rich than Biak, despite being smaller. However, Yapen exhibits much lower endemism than Biak with no unique species or allospecies, and just a few endemic subspecies. Being considerably higher than Biak, Yapen has an upland avifauna of 24 species (Diamond & Bishop 2020), while it is uncertain if Biak supports any montane birds.

The most striking difference between the two islands is that Yapen hosts several dozen New Guinea bird species absent from all oceanic islands of the Papuan region, but present on one or more of the region's large land-bridge islands: New Guinea Bronzewing *Henicophaps albifrons*, Purple-tailed Imperial Pigeon *Ducula rufigaster*, Chestnut-breasted Cuckoo *Cacomantis castaneiventris*, Hook-billed Kingfisher *Melidora macrorrhina*, Dusky Lory *Pseudeos fuscata*, Palm Cockatoo *Probosciger aterrimus*, Green-backed Honeyeater *Glycichaera fallax*, Rusty Mouse-Warbler *Crateroscelis murina*, Pale-billed Scrubwren *Sericornis spilodera*, Black Berrypecker *Melanocharis nigra*, Chestnut-backed Jewel-babbler *Ptilorrhoea castanonota*, Hooded Pitohui *Pitohui dichrous*, Sooty Thicket-fantail *Rhipidura threnothorax*, King Bird of Paradise *Cicinnurus regius* and Ochre-collared Monarch *Arses insularis*, among others. All of Biak's resident land and freshwater species occur at sea level with, to the best of our knowledge, none confined to higher elevations (see discussion below).

Many of Biak's species probably arrived via the short sea crossing from Yapen whilst the latter was connected to the mainland. However, 14 species that have been recorded on Biak also occur on mainland New Guinea but are no longer present on the intervening land-

bridge island of Yapen: Spotted Whistling Duck *Dendrocygna guttata*, Common Emerald Dove *Chalcophaps indica*, Black Bittern *Ixobrychus flavicollis*, Bare-eyed Rail *Gymnocrex plumbeiventris*, Rufous-tailed Bush-hen *Amaurornis moluccana*, Channel-billed Cuckoo *Scythrops novaehollandiae*, Little Bronze Cuckoo *Chalcites minutillus*, White-bellied Sea Eagle *Haliaeetus leucogaster*, *Tanysiptera*, Red-fronted Lorikeet *Charmosyna rubronotata*, Geelvink Pygmy Parrot *Micropsitta geelvinkiana*, Hooded Pitta *Pitta sordida*, Dusky Myzomela *Myzomela obscura*, Biak Triller *Lalage leucoptera* and Golden Monarch *Carterornis chrysomela*. Of these *Ixobrychus flavicollis*, *Gymnocrex plumbeiventris*, *Scythrops novaehollandiae* and *Haliaeetus leucogaster* could be either resident on Biak or simply occasional visitors or vagrants. The absence from Yapen of the other ten taxa is striking, as none, except *Chalcophaps indica* and *Myzomela obscura*, is represented by resident congeners on the latter island. Notably, seven taxa on Biak are endemic subspecies whilst *Tanysiptera* and *Lalage* are represented by endemic species, suggesting that these nine have been isolated on Biak for a long time. An explanation for their absence on Yapen may be that the latter is very rugged and mountainous with steep slopes descending almost directly to the sea (KDB). Post-Pleistocene flooding left very little lowland forest on flat terrain effectively extinguishing these 14 lowland taxa. Conversely, Biak shares 38 breeding land and freshwater species with Yapen of which 25 (67%) are shared subspecies (see the checklist and Appendix 1).

Montane avifauna

As noted above, Ripley did not reach the highest elevations on Supiori, only getting to 670 m, c.400 m below the highest peak. KDB climbed only to c.400 m. Thus, it would appear no one has reached the islands highest elevations and very little time has been spent above c.600 m. J. Diamond (*in litt.* 2021) pointed out that Supiori's elevation could potentially support a couple of montane populations. Further, Biak Leaf Warbler *Seicercus misoriensis* and Biak Monarch *Symposiachrus brehmii* which are scarce and infrequently encountered in the lowlands may have the bulk of their populations in the uplands.

Recent colonisation

The steady accumulation of new records of resident species on Biak since Mayr & Meyer de Schauensee (1939) offers a window into the colonisation of oceanic islands. It is probable that Biak was recently colonised by the now regularly recorded, distinctive-looking and sounding *Ptilinopus superbus* (see King 1979) which would surely have been found by at least one of the early collectors or seen by Ripley (Mayr & Meyer de Schauensee 1939), if it had been present then. Presumably, this species reached Biak from Yapen where it is known from early specimens and is regularly recorded today (Diamond & Bishop 2020). Similarly, *Aquila gurneyi* was not obtained by any collectors nor observed by Ripley (Mayr & Meyer de Schauensee 1939) but was first seen on Biak in March 1976 (Melville 1980). Subsequently, this species has been regularly observed on the island. That such a large and conspicuous species was not obtained by any collector suggests that it too may be a recent colonist, although early collectors often preferred not to collect large taxa because of problems associated with preparing them as specimens (J. Diamond *in litt.* 2021). The presence of *Haliaeetus leucogaster* on Biak is enigmatic with just six, mostly unconfirmed, sight records. It is resident on Yapen and widespread throughout coastal mainland New Guinea, north-west through South-East Asia to India, and is a regular inhabitant of small offshore islands. Whether this species is trying to colonise Biak—perhaps struggling in the face of competition with *Aquila gurneyi*—an occasional visitor or a resident on the virtually unexplored Padaido Islands is a subject for future investigation.

TABLE 1

Doubtful species. Reasons for rejection: 1. Inconclusive evidence; 2. Erroneous record/misidentification; 3. Likely escapee. References: a. Ahlman (1996); b. Beehler & Pratt (2016); c. Brickle & Tizard (2009); d. Feuilletau de Bruyn *in* Hartert (1932); e. Hornbuckle (1991); f. Mayr & Meyer de Schauensee (1939); g. Poulsen & Frølander (1994); h. Richardson (1997); k. van den Schoor (2009); m. listed in several unpublished reports on www.cloudbirder.com, eBird etc.; n. K. Behrens (*in litt.* 2021).

		Notes	References
Brown-collared Brushturkey	<i>Talegalla jobiensis</i>	2	d, see f
Stephan's Ground Dove	<i>Chalcophaps stephani</i>	2	m
Orange-bellied Fruit Dove	<i>Ptilinopus iozonus</i>	2	k
Purple-tailed Imperial Pigeon	<i>Ducula rufigaster</i>	2	a
Elegant Imperial Pigeon	<i>Ducula concinna</i>	2	m, see b
Shining Bronze Cuckoo	<i>Chalcites lucidus</i>	1/2	c, g
Grey-headed Sparrowhawk	<i>Accipiter poliocephalus</i>	1	m, see b
Collared Sparrowhawk	<i>Accipiter cirrhocephalus</i>	1	m
New Guinea Harpy Eagle	<i>Harpyopsis novaeguineae</i>	2	m
Rufous-bellied Kookaburra	<i>Dacelo gaudichaud</i>	2	h
Collared Kingfisher	<i>Todiramphus chloris</i>	2	n
Yellow-billed Kingfisher	<i>Syma torotoro</i>	2	h
Red-flanked Lorikeet	<i>Charmosyna placentis</i>	2	m
Grey-headed Cicadabird	<i>Edolisoma schisticeps</i>	2	m
Black Cicadabird	<i>Edolisoma melas</i>	2	m
Common Golden Whistler	<i>Pachycephala pectoralis</i>	2	h
White-bellied Thicket-Fantail	<i>Rhipidura leucothorax</i>	2	m
Leaden Flycatcher	<i>Myiagra rubecula</i>	1	h
Green-backed Honeyeater	<i>Glycichaera fallax</i>	2	k
Yellow-vented Bulbul	<i>Pycnonotus goiavier</i>	3	n
Chestnut-breasted Munia	<i>Lonchura castaneothorax</i>	3	e

A handful of species records are of interest as they may represent early stages of colonisation. Their presence on Biak requires corroboration: Helmeted Friarbird *Philemon buceroides*, White-breasted Woodswallow *Artamus leucorhynchus* and Yellow-faced Myna *Mino dumontii*. All three are familiar, easily identified and, on mainland New Guinea, characteristic of tall secondary forest and open or lightly wooded country—the same habitat in which they have been observed on Biak. *Philemon buceroides* and *Mino dumontii* are resident on nearby Yapen and *Artamus leucorhynchus* is common in the lowlands of the nearby mainland and colonises small offshore islands. The unmistakable Blyth's Hornbill *Aceros plicatus* has been recorded several times in southern Biak. This species' ability to fly long distances including over water is well known and these records may indicate vagrancy or nomadism from nearby Yapen.

Supertramps

Mayr & Diamond (2001) defined supertramps as 'species absent as breeding residents from species-rich or large islands and confined to species-poor or small islands.' Supertramps are good at dispersing including overwater colonisation. They tend to possess

high reproductive potential and broad habitat tolerance but low competitive ability, and are thus absent (presumably excluded by competitors) from the New Guinea mainland and large land-bridge islands like Yapen. Teluk Cenderawasih is interesting because it may be the only area with two levels of supertramps. One comprises species present on Biak, and in some cases also on Numfor, but absent on the mainland and Yapen. These include Yellow-bibbed Fruit Dove *Ptilinopus solomonensis*, Geelvink Imperial Pigeon *Ducula geelvinkiana*, Black-winged Lory *Eos cyanogenia* and Long-tailed Starling *Aplonis magna*. The other level, apparently unique to Teluk Cenderawasih, are species absent not only from New Guinea but even absent on the main island of Biak, and confined to very small islands in Teluk Cenderawasih: Moluccan Fruit Dove *Ptilinopus prasinorrhous*, Island Whistler *Pachycephala phaionota* and Islet Monarch *Monarcha cinerascens*. Much remains to be learned about the distribution of supertramps and other species on Biak's small satellites. Our knowledge is summarised in Table 2.

TABLE 2

Supertramps and other landbirds on Biak's satellite islands. Supertramps in bold. \$ = Known from a single specimen but where on Biak or its satellite islands is unknown.

		Biak	Rani	Padaido Is	Korwar = Bepondi
Biak Scrubfowl	<i>Megapodius geelvinkianus</i>	X		X	X
Nicobar Pigeon	<i>Caloenas nicobarica</i>				
Moluccan Fruit Dove	<i>Ptilinopus prasinorrhous</i>		X	X	X
Yellow-bibbed Fruit Dove	<i>Ptilinopus solomonensis</i>	X		X	
Claret-breasted Fruit Dove	<i>Ptilinopus viridis</i>	X	X	X	
Geelvink Imperial Pigeon	<i>Ducula geelvinkiana</i>	X	X		
Torresian Imperial Pigeon	<i>Ducula spilorrhoa</i>	X		X	
Great-billed Heron	<i>Ardea sumatrana</i>	X		X	
Eastern Reef Egret	<i>Egretta sacra</i>	X		X	
Eastern Koel	<i>Eudynamys orientalis</i>			X	
Brush Cuckoo	<i>Cacomantis variolosus</i>	X		X	
Large-tailed Nightjar	<i>Caprimulgus macrurus</i>	X		X	
Brahminy Kite	<i>Haliastur indus</i>	X		X	
White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	X		X	
Sacred Kingfisher	<i>Todiramphus sanctus</i>		X		
Black-winged Lory	<i>Eos cyanogenia</i>	X		X	
Island Whistler	<i>Pachycephala phaionota</i>		X		
Willie Wagtail	<i>Rhipidura leucophrys</i>	X	X		
Biak Black Flycatcher	<i>Myiagra atra</i>	X	X	X	
Islet Monarch	<i>Monarcha cinerascens</i>		Biak\$		X
Torresian Crow	<i>Corvus orru</i>	X	X	X	
Metallic Starling	<i>Aplonis metallica</i>	X		X	
Long-tailed Starling	<i>Aplonis magna</i>	X		X	
Black Sunbird	<i>Leptocoma aspasia</i>	X	X		
Olive-backed Sunbird	<i>Cinnyris jugularis</i>	X	X	X	

Biak and Supiori compared

Appendix 1 demonstrates that there is very little difference in the distributions of resident land and freshwater birds recorded on Biak *sensu stricto* and Supiori. *Dendrocygna guttata* has been recorded only on the former, whereas Papuan Dwarf Kingfisher *Ceyx solitarius* may occur only on Supiori. The latter is undoubtedly now the least known of all Biak's resident birds. Very few observers visit Supiori, largely because of the time needed to get there. In consequence, many more species have been recorded on Biak, but these are almost all migrants or vagrants. The recently created swampy area of tsunami-damaged mangroves and coastal swamp-forest in south-east Biak has produced a relatively large number of additional waterbirds and Palearctic migrant shorebirds. Whilst the species list of residents may be very similar between the two landmasses, the difference in terrain—Supiori is predominantly very steep whereas Biak is moderately flat—may be reflected in differences in population densities but this remains to be investigated.

Mixed-species flocks

Mainland New Guinea and nearby Yapen host two distinctive types of mixed flocks: 'brown-black' flocks of medium-sized omnivorous passerines or flocks of small insectivores (Diamond 1987, Diamond & Bishop 2020). We definitely encountered only the latter on Biak. Spangled Drongo *Dicrurus bracteatus* was typically noisy and demonstrative, and apparently acted as the flock leader, although it was more often seen alone and only sporadically in mixed-species flocks. Occasionally, drongos have been observed associating with *Aplonis magna* (Mayr & Meyer de Schauensee 1939). Species that we saw more regularly in these flocks included: Northern Fantail *Rhipidura rufiventris*, Carterornis *chrysomela*, *Symposiachrus brehmii* and *Seicercus misoriensis*. Other species that we observed in flocks albeit less frequently included: Large-billed Gerygone *Gerygone magnirostris*, and nectivores and / or frugivores such as Black Sunbird *Leptocoma aspasia*, Dusky Myzomela *Myzomela obscura*, Biak White-eye *Zosterops mysorensis* and Red-capped Flowerpecker *Dicaeum geelvinkianum*. The latter four are also often seen congregating with other species at flowering or fruiting trees. The only flocks we noted that remotely resembled 'brown-black' flocks were associations between Common Cicadabird *Edolisoma tenuirostre* and Biak Triller *Lalage leucoptera*, which were occasionally joined by *Rhipidura rufiventris* and very occasionally *Dicrurus bracteatus*.

Conservation

There is still much more tall primary forest remaining on Biak and Supiori than previously supposed. However, much of the forest on Biak and Supiori has never been systematically surveyed for birds, thus the status of avifauna in these areas is unknown. For example, have poachers and hunters accessed these seemingly remote forests and wiped out or at least severely depleted populations of Victoria Crowned Pigeon *Goura victoria*, parrots and other larger species? Our checklist lists those species classified as of conservation concern by BirdLife International and species with restricted ranges (<50,000 km²). Biak supports 13 restricted-range species plus the very distinctive Biak population of Rainbow Lorikeet *Trichoglossus haematodus rosenbergii* (treated by BirdLife as an endemic species). Five of these species are classified as threatened and six as Near Threatened. Another nine species whose ranges include Biak are threatened. Based on the data herein (see the checklist) we speculate that Biak Scops Owl *Otus beccarii* might be more appropriately listed as Near Threatened (currently Vulnerable), Rainbow Lorikeet *Trichoglossus haematodus*

rosenbergii as Endangered (Vulnerable) and Biak Monarch *Symposiachrus brehmii* as Vulnerable (Endangered).

Three more taxa are treated by BirdLife International as species endemic to Biak of which two are threatened: Geelvink Fruit Dove *Ptilinopus speciosus* (Least Concern); Biak Hooded Pitta *Pitta rosenbergii* (Vulnerable); and Biak Gerygone *Gerygone hypoxantha* (Vulnerable).

Overall, we regard the conservation situation on Biak and Supiori to be much better than previously feared. Of greatest concern is the unbridled trapping of nearly all parrot species on Biak for the deplorable pet trade both domestic and international. The curtailment of this trade is of the utmost urgency.

Further research

Many questions about Biak's avifauna remain unanswered. We conclude by calling attention to six of them.

1. What, if any, upland populations could be found on Biak (Supiori)? One or two surely await discovery. There is sufficient land area above 600 m to support upland populations, and neither Biak or Supiori's highest elevations have ever been surveyed.

2. Biak's satellites are virtually unknown ornithologically. Rani and the Aruri islets—location of the only record for Biak of *Pachycephala phaionota*. Rani hosted the only modern record of *Ptilinopus prasinorrhous*. Padaido Islands—site of the only specimen record for Biak of *P. prasinorrhous*. This cluster of coralline islands would surely reveal several interesting records including *Monarcha cinerascens*, which has been collected at an unknown location on or near Biak and occurs on islets to the west and east off the north coast of mainland New Guinea (Beehler & Pratt 2016).

3. Like for Yapen (see Diamond & Bishop 2020) molecular data could be used to assess the sources and relationships of Biak's bird populations. The nearest potential sources are Yapen, Numfor and the mainland New Guinea lowlands.

4. Much of Biak and Supiori is unexplored by ornithologists including a large, flooded river valley in western Biak, the uplands of northern Biak, and the north coast and mountains of Supiori.

5. The 'tsunami swamp' has already produced a surprising number of migrants including some very rare in New Guinea. Systematic monitoring of this area and other sites may yield interesting observations of both Palearctic and austral migrants.

6. Ayawi Island is very isolated. Confirmation that it supports a breeding colony of Nicobar Pigeons would be valuable, in addition to documentation of its avifauna.

Annotated checklist

Key:

= specimen record.

RR = restricted-range species (*per* Stattersfield *et al.* 1998).

* = first record for Biak.

** = first record for the Teluk Cenderawasih Islands.

*** = first record for the New Guinea region.

Range = range within Teluk Cenderawasih.

Information on range within Teluk Cenderawasih was compiled from Mayr (1941), Beehler & Pratt (2016), eBird checklists (in the species accounts denoted by the letter S and a unique numeric identifier, which should be presaged by <https://ebird.org/checklist/> to locate them online) and unpublished data including our own, detailed within the relevant accounts.

BIAK SCRUBFOWL *Megapodius geelvinkianus* # RR, Vulnerable

Local names Man Kiryoy (Sansundi), Man Kirio (Kuneff), Man Gerio (Soeparno 1977).

Range Biak, Supiori, Owi (?), Mios Korwar, Rani, Numfor, Manim and Mios Num.

Status Teluk Cenderawasih endemic. Obtained by three collectors including Ripley who thought it common on Supiori and nearby Rani (Mayr & Meyer de Schauensee 1939). July 1982: KDB found it uncommon, sparse but widespread on Supiori up to 305 m in primary forest on limestone karst. Thereafter, recorded regularly in selectively logged and tall, mature secondary forest in southern Biak between 1983 and 1997. On 12–17 January 1997 SvB recorded it daily in and around Biak-Utara Reserve. During the late 1990s until c.2010 it continued to be recorded regularly in small numbers by most visitors. However, during c.2010–19 the species became noticeably rarer and more difficult to find in southern Biak, especially in the Warafri area, which is regularly visited by birders. We consider hunting, poaching of eggs and degradation of forest habitat to be the primary causes for its decline. During 1991 small numbers of birds, putatively of this taxon, were seen in dry scrub on Owi (see Jones *et al.* 1995) where it was common but shy (Gibbs 1993).

Breeding Surprisingly, this species' nest has never been described in detail (see Jones *et al.* 1995, del Hoyo *et al.* 2020). SvB noted a c.1 m tall mound in forest near Sansundi.

****SPOTTED WHISTLING DUCK** *Dendrocygna guttata*

Status Resident? First recorded on Biak, July 2007 (M. Halaouate *in litt.* 2021). Subsequently recorded: 8 October 2017 (H. Jacob, eBird checklist S65111026; video), then ten at the tsunami swamp, 7 August 2018 (S. Lorenz, eBird checklist S47719228) and two photographed at the same site, 14 November 2018 (A. Walker, eBird checklist S46415753; Fig. 3). A. Walker (*in litt.* 2021) added that he saw a flock of 20 flying over the same area on 10 November 2018.

Breeding July 2007: M. Halaouate (*in litt.* 2021) observed juveniles with adults on a river near Wari adjacent to Korim Bay. A. Walker (*in litt.* 2021) noted that the two he photographed (Fig. 3) behaved as if they had a nest.



Figure 3. Spotted Whistling Duck *Dendrocygna guttata*, Biak, 14 November 2018 (© Andy Walker)

****WANDERING WHISTLING DUCK** *Dendrocygna arcuata*

Status Occasional visitor? 26 August 2019: 12 at the tsunami swamp (P. Chaon, eBird checklist S59271786) and three there next day (P. Chaon, eBird checklist S59302575). 26 September 2019: six in the same place, assumed to be this species but not seen well (P. Lansley, eBird checklist S88251028).

***RAJA SHELDUCK** *Tadorna radjah*

Range *T. r. radjah* Biak, Yapen.

Status Occasional visitor? 3 August 2015: a flock of six in flight along the shoreline adjacent to Biak airport hotel (D. Lopez-Velasco *in litt.* 2021).

ROCK DOVE (FERAL PIGEON) *Columba livia*

Local name Man Dun (Soeparno 1977).

Status Feral resident. Widespread in southern Biak especially around the main town and coastal villages. In August 2015 KDB recorded it in the newly established village of Kota Supiori, north-east Supiori.

****SPOTTED DOVE** *Streptopelia chinensis*

Status Resident. Introduced to Indonesian New Guinea and first recorded on Biak in June–July 2004 at the grounds of Biak airport hotel (M. Halaouate *in litt.* 2021). The species ‘has been an integral part of the domestic environment in the Malay Archipelago since ancient times’ (Layton 1991) and is a common cagebird throughout Indonesia; also introduced to the Moluccas, Sulawesi and New Britain (Long 1981).

GREAT CUCKOO-DOVE *Reinwardtoena reinwardti* #

Local name Man Wupu (Sansundi).

Range *R. r. brevis* Biak, Supiori, Mios Num; *R. r. griseotincta* Yapen.

Status Biak endemic subspecies. Recorded on Biak in small numbers by most collectors and visitors. July 1982: KDB recorded it to c.305 m on Supiori, feeding at a fruiting tree on a ridge in primary forest on limestone karst.

BROWN CUCKOO-DOVE *Macropygia amboinensis* #

Range *M. a. cinereiceps* Biak, Supiori, Rani, Yapen; *M. a. maforensis* Numfor; *M. a. griseinucha* Mios Num.

Taxonomy Mayr (1941) placed the Biak population in *M. a. kerstingi* which Beehler & Pratt (2016) synonymised with *M. a. cinereiceps*. Ng *et al.* (2016) reviewed species limits among Indo-Pacific *Macropygia* using bio-acoustic data and placed the Biak population with *maforensis* (Beehler & Pratt 2016). However, no sound-recordings from Biak were included; see below.

Status Resident. Widespread and generally common; obtained by most collectors and recorded by most visitors, in primary, secondary and selectively logged forest. KDB saw it up to c.335 m on Supiori in primary forest on limestone karst. 6 August 2015: two on Rani (N. Voaden, eBird checklist S24512191).

Voice Recordings made on Biak (Xeno-canto: XC75908–75909 [SvB], XC40677 [P. Aberg], XC582453 [K. Behrens]; and KDB [unpubl.]) are characterised by a series of identical, upslurred disyllabic ‘whoops’ repeated *ad nauseum* at a rate of c.5 notes over 3.5 seconds. Recordings of *maforensis* on Numfor (F. Lambert (XC167004–167005) are a noticeably different, much more rapid series of single (i.e., non-disyllabic) notes, 11 in five seconds,

on a very similar pitch. Recordings on Biak closely recall the disyllabic notes of birds from Yapen (KDB), the Mamberamo (SvB; XC140940) and Timika (SvB) areas, all in the range of 'kerstingi'. Moreover, *kerstingi*-plumaged birds in the Eastern Highlands reportedly utter 'double-noted hoots' (Diamond 1972), whilst birds with similar morphology from the Fly River (cf. Rand 1942, Woxvold & Bishop 2020) clearly differ from the monosyllabic notes of *cinereiceps sensu stricto* in far eastern New Guinea (cf. Gregory 2017, Woxvold & Bishop 2020). This suggests vocal differentiation, although there appears to be sufficient variation that further analysis is warranted. However, based on this preliminary assessment, we disagree with Ng *et al.* (2016) that the Biak population should be placed with *maforensis* but concur with Beehler & Pratt's (2016) assignment of it to *cinereiceps*, albeit with the caveat that *kerstingi* may represent a valid subspecies.

VICTORIA CROWNED PIGEON *Goura victoria* # Near Threatened

Local names Man Bruk (Sansundi), Mam Mbruk (Soeparno 1977); Mambruk is the Indonesian name of the genus.

Range *G. v. victoria* Biak, Supiori and Yapen.

Taxonomy Del Hoyo & Collar (2014) noted that insular nominate *victoria* is markedly smaller than mainland New Guinea *beccarii* but other differences are not apparent; however, studies of behaviour and vocalisations may establish further points of divergence.

Status Teluk Cenderawasih endemic subspecies. All previous authors have regarded the Biak/Supiori birds as introduced, being the only population of this spectacular genus away from mainland New Guinea or one of its land-bridge islands, thus the evidence appears weighted in favour of it having been introduced historically. Nevertheless, in 1844 a live bird, obtained on Biak by an early visitor to New Guinea, was kept in London Zoo (Mayr & Meyer de Schauensee 1939), so the species has been present on Biak for at least 176 years. Local informants told von Rosenberg (1875) that the pigeon was very common on the island around 1869/70, however, in 1915 Feuilletau de Bruyn (1941) mentioned seeing some hunting by bow and arrow in addition to frequent snaring. July 1982: KDB observed three in four days from near sea level to c.305 m in tall, unlogged lowland and hill forest on limestone karst on the south slope of Supiori. KDB and his guide regularly found shed flight feathers in undisturbed forest along small creeks, where this species apparently likes to forage and drink. People at Kuneff stated that the species also inhabits mangrove. Despite noting a lack of guns in July 1982 the species was nevertheless shy, flying off immediately it detected the observers. During interviews on Biak, local people informed KDB that they considered it relatively plentiful in forests of the north. Nevertheless, even then 'Mambruk' were considered very shy and required a good day's walk to find. The only other record on Supiori is that of Gibbs (1993) who flushed one near Kuneff. In January 1997 SvB noted a single and later two quite approachable birds along a road in forest near Sansundi. Despite that Biak has been relatively regularly visited by birders, since the late 1990s there have been no further records, which suggests that it may now be largely extirpated there, especially in the south. The bridge that now links Biak and Supiori and the roads that extend a considerable distance along the north coast of Supiori, in addition to its east and south coasts, will inevitably have a negative impact on this highly sought-after species. In 1982 and probably until c.2000 very few indigenous people appeared to own guns or even air rifles on Biak and Supiori, and most hunting was conducted using snares (KDB). However, security forces possessed guns and almost certainly hunted this and other species regularly, albeit possibly only in a narrow radius of their base. However, the recent large increase in the human population of Biak, the opening of roads especially on Supiori and proliferation of high-powered air-rifles throughout Indonesian New Guinea (KDB) almost

certainly spells doom for any Victoria Crowned Pigeon within easy reach of a road and/or village. Clearly the status of the species on Biak/Supiori requires investigation.

NICOBAR PIGEON *Caloenas nicobarica* # Near Threatened

Local name Man Fmar Mandwan (Sansundi).

Range *C. n. nicobarica* Ayawi, Numfor, Mios Num, and Kumbur and Nutabari in the Auri archipelago.

Status Resident? Collected on 'Biak' in May 1915 by Feuilletau de Bruyn (Hartert 1932) who reported that the species used to be common but was nearly extirpated (Feuilletau de Bruyn 1941). Reported during October–March on Kumbur and Nutabari in the Auri archipelago, south-west Teluk Cenderawasih (Mitchell 1989), whilst Gibbs (1993) stated 'Apparently August to December there is a large colony of Nicobar Pigeons breeding on Ayawi Island', 62 km north-west of Supiori. Ajawai (Ayawi) was also listed by Mayr (1941). Gibbs (1993) saw an immature in Biak town market. It has not been reported on Biak since.

COMMON (ASIAN) EMERALD DOVE *Chalcophaps indica* #

Local name Man Kiryoy Wum (Sansundi).

Range *C. i. minima* Biak, Supiori, Numfor, Mios Num.

Status Teluk Cenderawasih endemic subspecies. Obtained by just two collectors but recorded by nearly all recent visitors to Biak. Common but infrequently seen, however its distinctive advertising call is frequently heard around dawn. On Supiori the species was first recorded by Ripley (Mayr & Meyer de Schauensee 1939), then by KDB during July 1982 and Gibbs in 1991 (Gibbs 1993).

***SUPERB FRUIT DOVE** *Ptilinopus superbus*

Range *P. s. superbus* Biak, Numfor, Yapen.

Status Resident. First recorded on Biak in December 1962 (King 1979). Thereafter few records until the early 1990s when greater familiarity with the species' vocalisations improved visitors' ability to detect it. We recorded several on most visits. That this species has only recently been found on Biak and was not taken by any collectors suggests it may be a latter-day colonist, as this dove was obtained by early collectors such as A. A. Bruijn and O. Beccari on Numfor and Yapen (Salvadori 1880–82) and repeatedly recorded thereafter, especially on Yapen (Diamond & Bishop 2020). The bird in Fig. 4 has a grey, rather than purplish, breast thereby confirming that the Biak population belongs with the nominate subspecies as expected.



Figure 4. Superb Fruit Dove *Ptilinopus superbus*, Biak, 8 September 2019 (© Ken Behrens)

***MOLUCCAN FRUIT DOVE** *Ptilinopus prasinorrhous*

Range Small islands and islets in Teluk Cenderawasih including Rani, Wundi (Padaido Islands), Roon, Manim (not the larger island of Numfor *per* several authors), Mios Korwar (Mios Bepondi), possibly some islets off Yapen (Mayr 1941, Beehler & Pratt 2016). Beehler & Pratt (2016) incorrectly assigned the Wundi record by Hoogerheide (Junge 1956) to White-bibbed Fruit Dove *P. rivoli miquelii*.

Taxonomy Beehler & Pratt (2016) split *P. rivoli* into three species: Mountain Fruit Dove *P. bellus* (all of New Guinea's mountains plus Ferguson and Goodenough Islands); White-bibbed Fruit Dove *P. rivoli* (a small-island supertramp on Mios Num, Yapen, the South-East islands and Bismarcks; and *P. prasinorrhous* (small-island specialist of New Guinea's North-West Islands, islets in Teluk Cenderawasih, Kai Islands and south Moluccas). Conversely, Gibbs *et al.* (2001), del Hoyo & Collar (2014) and Baptista *et al.* (2020) all treated White-bibbed Fruit Dove as a single species. J. Diamond observed (*in litt.* 2021) that clarification of the taxonomic affinities of the single Biak specimen (see below) contributes to understanding a uniquely complex and interesting situation: four members of the same superspecies in close proximity on islands of different sizes and species richness: *P. rivoli*, *P. bellus*, *P. prasinorrhous* and Yellow-bibbed Fruit Dove *P. solomonensis* (Biak, Supiori, Padaido Islands and Numfor).

Status Resident supertramp? On Biak known from a single specimen, an adult male, collected at Oerip, Wundi Atoll, Padaido Islands, 11 February 1954 (Junge 1956). 6 August 2015: male seen on Rani (D. Lopez-Velasco *in litt.* 2021; N. Voaden, eBird checklist S24512191). Not found on Owi by Gibbs (1993), P. Gregory (*in litt.* 2000), D. Roberson (eBird checklist S6813691) or T. Boucher (eBird checklist S26960957).

YELLOW-BIBBED FRUIT DOVE *Ptilinopus solomonensis* #

Range *P. s. speciosus* Biak, Supiori, Padaido Islands, Numfor and Marai (near Yapen) (Beehler & Pratt 2016).

Taxonomy Based on morphological and vocal characters, del Hoyo & Collar (2014) split this taxon into two species: Yellow-banded Fruit Dove *P. solomonensis* (Admiralty Islands, and small islands of the Bismarck archipelago east to and including the Solomons) and Geelvink Fruit Dove *P. speciosus* (Geelvink Islands).

Status Teluk Cenderawasih endemic subspecies. A supertramp that favours small, species-poor islands and is absent from mainland New Guinea and larger islands of the Bismarcks (Mayr & Diamond 2001). Common and frequently recorded in primary and lightly logged forest; less common in secondary forest. Usually singly or in pairs. February 1991: recorded on Owi (Gibbs 1993).

Voice Woxvold & Bishop (2020) provided Biak sound-recordings of both the distinctive advertising song and the *hoo* series.

CLARET-BREADED FRUIT DOVE *Ptilinopus viridis* #

Local name Man Burwof (Sansundi).

Range *P. v. geelvinkianus* Biak, Supiori, Owi, Rani, Numfor, Manim, Mios Num and Marai near Yapen; *P. v. salvadorii* Yapen. Old records of the latter from Manokwari and of *P. v. pectoralis* from Numfor and Biak are now discounted (Mayr 1941).

Status Teluk Cenderawasih endemic subspecies. Obtained by just two collectors but seen by most visitors. Widespread and common. Frequent in small numbers (<5) in primary and selectively logged forest; less common in secondary forest, lightly wooded cultivation and rare in severely degraded or cleared areas. 6 July 1982: KDB saw ten with other frugivores

at a fruiting fig *Ficus* sp. at c.305 m on a ridge in primary forest on limestone karst on the south slope of Supiori. 6 August 2015: two on Rani (N. Voaden, eBird checklist S24512191). 13 January 1994: one on Owi (P. Gregory *in litt.* 2000).

GEELVINK IMPERIAL PIGEON *Ducula geelvinkiana* # RR

Local names Man B yore n, Man Kankuw (Sansundi).

Range Biak, Supiori, Rani, Numfor and Mios Num.

Status Teluk Cenderawasih endemic species. During 1937 Ripley found it to be very common in mangroves on Biak, but did not see it above 500 m (Mayr & Meyer de Schauensee 1939). Rand & Gilliard (1967) noted the species as very common in second growth and primary forest on Biak. In 1982 KDB heard and saw it commonly in coastal and lowland forests to at least 350 m on Supiori. Thereafter most visitors have found the species widespread and common. However, since c.2000 it has become noticeably less numerous such that it is now shy and scarce, and recorded in just ones and twos. The decline is probably attributable to hunting and loss of tall forest. 6 August 2015: two on Rani (N. Voaden, eBird checklist S24512191).

Voice Woxvold & Bishop (2020) provided Biak sound-recordings of the advertising song and guttural call notes.

TORRESIAN IMPERIAL PIGEON *Ducula spilorrhoa* #

Local name Man Dun (Sansudi, Kuneff).

Range Biak, Supiori, Owi, Mios Num, Yapen and many small islets.

Taxonomy Formerly considered a race of Pied Imperial Pigeon *D. melanura* but split by del Hoyo & Collar (2014) and Beehler & Pratt (2016). Christidis & Boles (2008) highlighted the complexity of issues related to the various populations in this species group (Pied Imperial Pigeon *D. bicolor*, Torresian Imperial Pigeon *D. spilorrhoa*, Silver-tipped Imperial Pigeon *D. luctuosa* and Yellowish Imperial Pigeon *D. subflavescens*), which clearly merits re-analysis using molecular data (Beehler & Pratt 2016).

Status Resident. Obtained by four collectors including Ripley who found it common in mangroves and up to 500 m. Infrequently seen by subsequent visitors. 29 August 2015: KDB saw a flock of five in flight over forest west of Biak town and 13 perched in tall mangrove forest at Tanjung Barai, at the eastern tip of Biak. 8 December 2016: KDB saw 20 flying into the tsunami swamp; 10 November 2017: three (A. Walker, eBird checklist S46415319) and 5 August 2018 ten (S. Lorenz, eBird checklist S47661085) at the latter site. 13 January 1994: five on Owi (P. Gregory *in litt.* 2000); July 2012 small numbers on a rocky islet off southern Biak (van Beirs 2012).

Breeding Ripley found nests with eggs in mangroves in mid December (Mayr & Meyer de Schauensee 1939). 11 January 1997: a young bird was shown to SvB at Marauw. Mitchell (1989) noted the species nesting in October–March on Kumbur and Nutabari in the Auri archipelago, south-east Teluk Cenderawasih. Recent observations in mangroves during December–January may pertain to breeders like Ripley’s observations. Largely a seasonal migrant from north-east Australia (Beehler & Pratt 2016), but breeds in the Middle Sepik and on islands off south-east New Guinea (Coates 1985). These may be the only breeding records for Indonesian New Guinea.

[PETREL *Pseudobulweria* sp.]

Ripley stated ‘In November, these birds were seen off Biak...’ (Mayr & Meyer de Schauensee 1939), which he listed as Tahiti Petrel *Pseudobulweria rostrata*. On 5 July 2017 D. Lopez-Velasco

(*in litt.* 2021) photographed a Tahiti / Beck's Petrel over deep water between Biak and Numfor (Fig. 5). Unfortunately, the images are insufficient to determine whether they pertain to the relatively common Tahiti Petrel *P. rostrata* or the extremely little-known Beck's Petrel *P. becki* (Shirihai 2008).

****WEDGE-TAILED SHEARWATER**
Ardenna pacifica

Status Regular visitor? Although widespread in the tropical and subtropical Pacific and regularly recorded in waters immediately north of Papua New Guinea, there are few records from adjacent Indonesian New Guinea seas (Beehler & Pratt 2016; KDB). 24 August 2008: A. Whitlock (eBird checklist S48329087) noted 15, mostly dark morph, off southern Biak. KDB (together with J. Diamond) observed small numbers in the Raja Ampat Islands during January 1986 and October 2017; furthermore, on 17 November 2016 he noted *c.*60 off the north coast of Batanta, Raja Ampat Islands, and in September 1990 he saw small numbers off the north coast of the Vogelkop. These observations indicate that the species regularly occurs further west in northern New Guinea waters than previously surmised.



Figure 5. Tahiti Petrel *Pseudobulweria rostrata* or Beck's Petrel *P. becki*, between Biak and Numfor, 5 July 2017 (© Daniel Lopez-Velasco)

****STREAKED SHEARWATER** *Calonectris leucomelas* #

Range Common throughout Teluk Cenderawasih.

Status Palearctic migrant. Regular and common Palearctic migrant to New Guinea in the austral summer (mainly October–March) and seasonally abundant in the north (Beehler & Pratt 2016, Bishop & Hacking 2020). 18 December 1962: *c.*35 between Biak and Yapen (King 1979). June 1990: KDB saw modest numbers west of Biak. Wardill & Nando (2000) reported *c.*16,000 off the north coast of the Bird's Head, 30 December 1999.

YELLOW BITTERN *Ixobrychus sinensis* #

Local name Man Paiwar (Sansundi).

Range Supiori.

Status Palearctic migrant that is locally common in the northern watershed of New Guinea (Beehler & Pratt 2016). The sole Teluk Cenderawasih record is a female collected by Ripley near Korrido in southern Supiori in November 1937 (Mayr & Meyer de Schauensee 1939). Ripley added 'said to breed in the mangrove swamps near Korrido.' Notably difficult to detect it may have been overlooked on Biak like elsewhere in New Guinea.

****BLACK BITTERN** *Ixobrychus flavicollis*

Local name Man Paiwar (Sansundi).

Range Biak.

Status Occasional visitor. On mainland New Guinea resident throughout the lowlands (Beehler & Pratt 2016). On 12 October 2012 a melanistic individual was photographed



Figure 6. Melanistic Black Bittern *Ixobrychus flavicollis*, Biak, October 2012 (© Richard Noske)

(Fig. 6) in the tsunami swamp (F. Antram, eBird checklist S98647576); 5 August 2018: one at the same site (S. Lorenz, eBird checklist S47661085). KDB *in* Beehler & Pratt (2016) was incorrect to assert that there is at least one specimen from Biak.

RUFOUS NIGHT HERON *Nycticorax caledonicus*

Range *N. c. australasiae* Biak, Numfor (D. Lopez-Velasco *in litt.* 2021), Yapen (specimen in American Museum of Natural History, New York, collected by W. Doherty, examined by J. Diamond *in litt.* 2021).

Status Resident? Until recently known only from a juvenile collected by Feuilletau de Bruyn on the north coast of Biak in 1915 (Hartert 1932). At dusk on 29 August 2015 KDB saw an adult fly into the tsunami swamp; singles in the same area 14 November 2017 (A. Walker, eBird checklist S46415753) and 26 September 2019 (P. Lansley, eBird checklist S88251028).

STRIATED HERON *Butorides striata*

Local name Man Posow (Sansundi).

Range *B. s. papuensis* Biak, Supiori, Numfor, Yapen.

Status Resident. Obtained by two collectors including Ripley (Mayr & Meyer de Schauensee 1939). Sparsely distributed and infrequently seen, mainly in coastal mangroves, very rarely on mudflats. 19 January 1995: seen on north coast of Biak (D. Holmes unpubl.). Recently small numbers (1–3) fairly regularly recorded at the tsunami swamp.

Breeding Ripley noted an empty nest on a small mangrove island off Korrido, Supiori.

*CATTLE EGRET *Ardea ibis*

Range Biak, Numfor, Yapen.

Status Occasional visitor. Possibly a recent colonist. First recorded 26 February 1992, a group of 15 at Biak airport (KDB). Subsequently observed at the same site, 26 July 1992

(KDB), with *c.*25 there 13 October 1997 (SvB). Perhaps surprisingly, just two additional records. 30 August 2015: one in non-breeding plumage in central Biak (KDB) and 14 November 2017, one at the tsunami swamp (A. Walker, eBird checklist S46415753). First observed in Indonesian New Guinea during December 1962–April 1963 when flocks of up to 40 were seen near Manokwari in the Bird's Head (Hoogerwerf 1971).

*****GREY HERON** *Ardea cinerea*

Status Vagrant. The first documented record for New Guinea (see Beehler & Pratt 2016, Mayr 1941) and only the second in Australasia (Lane 2002). In the afternoon of 26 June 2019 an adult in non-breeding plumage was photographed at the tsunami swamp (P. Chaon, eBird checklist S59271786; Fig. 7). The nearest documented records are from Sumba (Coates & Bishop 1997) and Flores (van Balen & Irawan 2014) in the western Lesser Sundas of Indonesia.



Figure 7. Grey Heron *Ardea cinerea*, Biak, 26 June 2019 (© Phil Chaon)

GREAT-BILLED HERON *Ardea sumatrana* #

Local names Man Kubuy (Sansundi; Soeparno 1977: Samber, Urembori dialects); Man Sowi (Soeparno 1977).

Range Biak, Supiori, Owi, Yapen.

Status Resident? The only specimen is an adult female collected by Beccari in May 1875 (Salvadori 1880–82). Very few recent records on Biak or anywhere in Teluk Cenderawasih: singles at the tsunami swamp 2 October 2017 (R. Tizard, eBird checklist S51365737), 14 November 2017 (A. Walker, eBird checklist S46415753), 23 August 2019 (K. Behrens, eBird checklist S59190619) and 26 August 2019 (P. Chaon, eBird checklist S59271786). 13 January 1994: immature on Owi (P. Gregory *in litt.* 2000).

GREAT EGRET** *Ardea albaLocal name** Man Bino (Sopen; Soeparno 1977).**Range** Biak, Yapen.**Status** Regular visitor. Common at wetlands throughout New Guinea (Beehler & Pratt 2016). First recorded on Biak, 26 July 1992, at Frans Kaisiepo airport (KDB). Subsequently, we and others have noted 1–2 occasionally at the same place and on nearby coasts. The creation of the tsunami swamp in February 1996 has supported a small but diverse population of waterbirds including *A. alba*; 1–5 regularly seen in August and to a lesser extent September and November; 8 December 2016 seven (KDB) and max. 22 on 26 June 2019 (T. Deininger, eBird checklist S57719463) at this site.***INTERMEDIATE EGRET** *Ardea intermedia***Range** Biak, Numfor.**Status** Regular visitor. Common year-round at wetlands throughout New Guinea. Mainly an Australian migrant but breeds in the southern Trans-Fly (Beehler & Pratt 2016). First recorded on Biak on 29 August 2015, seven at the tsunami swamp (KDB, eBird checklist S25951144). Subsequently, 1–6 at the same site June–December with a max. of eight on 8 August 2018 (W. Cook *et al.*, eBird checklist S47710412).****LITTLE EGRET** *Egretta garzetta***Range** Biak, Yapen (a questionable specimen by von Rosenberg, J. Diamond *in litt.* 2021).**Status** Occasional visitor. Widespread and regular austral visitor throughout the region, albeit rather sparse in northern Indonesian New Guinea (Beehler & Pratt 2016). Until now unrecorded on the Teluk Cenderawasih Islands. 29 August 2015: five at the tsunami swamp (KDB, eBird checklist S25951144); singles 8 December 2016 (KDB), 20 August 2019 (S. Chatterjee, eBird checklist S59122782) and 26 August 2019 (P. Chaon, eBird checklist S59271786) at the same site.**EASTERN REEF EGRET** *Egretta sacra* #**Local name** Man Sorom (Sansundi).**Range** *E. s. sacra* Biak, Supiori, Owi, Numfor, Yapen.**Status** Resident? Infrequently recorded. Collected only by Ripley (Mayr & Meyer de Schauensee 1939). Several observers, including KDB, have noted dark morphs on the south coast of Biak and Supiori. In January 1997 SvB saw one white morph on the south coast and one dark morph on the north coast of Biak. 13 January 1994: ten on Owi (P. Gregory *in litt.* 2000).***GREAT FRIGATEBIRD** *Fregata minor***Local name** Marmaré (Sansundi).**Range** Widespread in New Guinea waters (Beehler & Pratt 2016).**Status** Occasional visitor. 13 January 1997: at least one adult male among 40+ frigatebirds over Sansundi (SvB); 29 June 2011: a male identified with *c.*10 Lesser Frigatebirds *F. ariel* just east of Biak (M. van Beirs *in litt.* 2021).**LESSER FRIGATEBIRD** *Fregata ariel* #**Local name** Marmaré (Sansundi).**Range** *F. a. ariel* Biak, Supiori, Rani, Yapen.

Status Occasional visitor in small numbers to surrounding waters and occasionally along the coast. 6 August 2015: seven off Rani (N. Voaden, eBird checklist S24512191).

****RED-FOOTED BOOBY** *Sula sula*

Status Occasional visitor. Recently found breeding for the first time in the New Guinea region, on the Hermit Islands (Bishop & Hacking 2020). In August 2018 several along the south coast including one at the airport hotel on 5 August (S. Lorenz, eBird checklist S47661085).

****BROWN BOOBY** *Sula leucogaster*

Status Regular visitor. Small numbers throughout New Guinea waters year-round but only known to breed in the South-East Islands (Beehler & Pratt 2016). 4 July 1982: single between Biak and Kuneff, Supiori (KDB). D. Lopez-Velasco (*in litt.* 2021) noted it regularly along the south coast of Biak and during the crossing to Numfor including c.15 on 5 July 2017.

***LITTLE PIED CORMORANT** *Microcarbo melanoleucos*

Range Biak, Numfor.

Status Vagrant. The most widespread cormorant in New Guinea (Beehler & Pratt 2016). However, on Biak the only record is one at the tsunami swamp on 29 August 2015 (KDB, eBird checklist S25951144).

****LITTLE BLACK CORMORANT** *Phalacrocorax sulcirostris*

Range Biak.

Status Vagrant. Locally abundant on mainland New Guinea but not previously recorded in the Teluk Cenderawasih Islands. 29 August 2015: one flying over the tsunami swamp (KDB, eBird checklist S25951144).

****BARE-EYED RAIL** *Gymnocrex plumbeiventris*

Status Unknown. Widespread in New Guinea, also North Moluccas and New Ireland (Bismarcks) but rather poorly known (Beehler & Pratt 2016; KDB). 27 May 2008: M. van Beirs (*in litt.* 2021) observed an adult foraging at a small pool in forest, southern Biak, carefully noting the reddish-pink bare parts. 9 July 2009: one seen in south-east Biak (Brickle & Tizard 2009). 25 September 2018: noted in the Warafri area (P. Chaon, eBird checklist S48733021). The nearest known mainland New Guinea population appears to be in the lowlands bordering Teluk Cenderawasih (Pratt & Beehler 2015). Coates (1985) observed it to be a regular wet-season breeding migrant at Brown River, south-east Papua New Guinea. Coates' observations together with a handful of other records (Taylor & van Perlo 1998) suggest the species might be nomadic. The exceptional records on Biak may refer to wanderers or a previously undocumented resident population of an unknown taxon. That the widespread Buff-banded Rail *Hypotaenidia philippensis* does not occur on the Teluk Cenderawasih Islands is striking in view of its ability to colonise many, often quite isolated, islands across the south-west Pacific, but its absence is in keeping with the lack of records from any of New Guinea's fringing islands (Beehler & Pratt 2016) but begs the question why?

RUFOUS-TAILED BUSH-HEN *Amaurornis moluccana* #

Range *A. m. moluccana* Biak, Supiori.

Status Resident. Surprisingly, the Biak and Supiori population is the sole representative of this taxon on the Teluk Cenderawasih Islands. Collected only by Ripley (Mayr & Meyer de

Schauensee 1939), it is uncommon and easily overlooked unless vocalising, and has been recorded by very few visitors.

Breeding 24 August 2007: Bengtsson (2007) reported an adult with a juvenile.

BIAK COUCAL *Centropus chalybeus* # RR, Near Threatened

Local name Man Sow Sow (Sansundi, Kuneff).

Range Biak, Supiori.

Status Endemic species. Rand & Gilliard (1967) speculated that it may also occur on Numfor but, despite several birders having visited the latter recently, the species has not been found there suggesting that it is endemic to Biak. Generally inconspicuous except when vocalising. July 1982: KDB found the species noticeably commoner on Supiori than Biak, but just as inconspicuous. He observed two in forest below 60 m. The first clambered up a vine-covered tree at the edge of a treefall clearing 5 m from the Wandei River. The second bird was also perched in a dense vine-covered tree 5 m above ground, c.10 m from a dry creek. Even when it moved further into the canopy it remained silent, but calling birds were heard up to c.300 m.

Voice A low, resonant, hollow, hooting call, comprising a single note repeated over and over, ascending and descending in waves. KDB has also recorded *chalybeus* counter-singing. Although a close relationship to its presumed sister species, Greater Black Coucal *C. menbeki*, is indicated by mtDNA (Sorenson & Payne 2005), their vocalisations differ markedly. The song of *chalybeus* is a series of identical upslurred notes repeated at varying speeds, but that of *menbeki* comprises 'low-pitched, resonant, far-carrying, booming hoots, given in a slow and cadenced series that descends in pitch' (Pratt & Beehler 2015). The call of *chalybeus* is a 'gruff cough that turns into a decelerating chatter' (Gregory 2017; KDB tapes) whereas *menbeki* utters a guttural series of dry, rattled notes that rise in pitch (Pratt & Beehler 2015). Woxvold & Bishop (2020) provided sound-recordings of a variety of calls.

****EASTERN KOEL** *Eudynamys orientalis*

Range Padaido Islands (Mayr 1941).

Status Resident or austral migrant? Widespread austral migrant to southern New Guinea. Just two records from the Padaido Islands in the south-east of the study area: an undated record in Mayr (1941), and one heard on Owi on 13 January 1994 (P. Gregory *in litt.* 2000). The date of the latter record suggests it was more likely to have been resident *E. o. rufiventer* rather than the austral migrant *E. o. subcyanocephalus* which should be in Australia at this season.

***CHANNEL-BILLED CUCKOO** *Scythrops novaehollandiae*

Range Biak, Yapen.

Status Austral migrant. On mainland New Guinea this species is also a local breeder. No specimens from Biak, but regularly heard and seen since c.1995. Its status on Biak, as on mainland New Guinea, is unclear. However, on 30 August 2015 KDB saw five being chased persistently by a Torresian Crow *Corvus orru* in selectively logged forest on the north coast of Biak.

LITTLE BRONZE CUCKOO *Chalcites minutillus* #

Range *C. m. misoriensis* Biak.

Status Biak endemic subspecies. Long known only from the female holotype taken by Beccari in May 1875 at Korrido (Salvadori 1875). However, recently, there has been a few

observations of this taxon. 26 August 2007: one in southern Biak (Bengtsson 2007); 20 July 2009: one near Warafri (H. Matheve, eBird checklist S64759629); 8 November 2017: one in central-south Biak (A. Walker, eBird checklist S46415300); 27 September 2018: five near Warafri (J. Mazenauer, eBird checklist S48773694).

BRUSH CUCKOO *Cacomantis variolosus* #

Local name Man Womofèr (Sansundi).

Range *C. v. infaustus* Biak, Supiori, Owi, Numfor, Yapen. No records from Mios Num.

Taxonomy Beehler & Pratt (2016) did not recognise *C. v. chivae* which formerly was regarded as a subspecies endemic to Biak (Mayr & Meyer de Schauensee 1939).

Status Resident. Widespread and generally common in selectively logged forest, secondary woodland and primary forest edge. KDB found it to c.305 m on Supiori. February 1991: recorded on Owi (Gibbs 1993), where seen again on 13 January 1994 (P. Gregory *in litt.* 2000).

***ORIENTAL / HIMALAYAN CUCKOO** *Cuculus optatus* / *C. saturatus*

Range Biak, Yapen.

Taxonomy Recognition of three species-level forms in this lineage, of which these two have been recorded in the New Guinea region, represents a problem for birders in that they are virtually impossible to identify in the field unless heard calling or examined in the hand (Beehler & Pratt 2016). Consequently, the taxon recorded on Biak cannot be identified with certainty, although *C. saturatus* is only a vagrant to New Guinea, whereas *C. optatus* is a fairly common non-breeding visitor and thus more likely to be the species involved (Beehler & Pratt 2016).

Status Palearctic migrant. First recorded February 1990 near Warafri (Gibbs 1993) and thereafter on just a few occasions. 26 February 1992: near Bosnick (KDB); 21–23 September 1995: unstated locality (Myers 1997); 26–27 March 2008: forest near airport (Brickle & Wilson 2008); 1 November 2017: Warafri (G. Poisson, eBird checklist S40240162). 13 January 1994: recorded on Owi (P. Gregory *in litt.* 2000).

[MARBLED FROGMOUTH *Podargus ocellatus*]

Range *P. o. ocellatus* Yapen, Mios Num.

Status Beehler & Pratt (2016) correctly noted that S. F. Bailey's report from Biak requires corroboration. This species' vocalisations are loud and distinctive, and unlikely to have been overlooked by the authors or other visitors.

PAPUAN FROGMOUTH *Podargus papuensis* #

Local name Man Bibi (Sansundi).

Range Biak, Supiori, Numfor and Yapen.

Status Resident. Surprisingly, the only specimens were collected by Ripley (Mayr & Meyer de Schauensee 1939). Nevertheless, the species is widespread and moderately common in all forest habitats and is recorded by most visitors. Gibbs (1993) noted it as 'abundant' near Korrido on Supiori.

LARGE-TAILED NIGHTJAR *Caprimulgus macrurus* #

Local name Man Korkor (Sansundi).

Range *C. m. schlegelii* Biak, Supiori, Owi and Yapen.

Status Resident. The only specimens were collected in the late 19th century and, surprisingly, the species was not found by Ripley (Mayr & Meyer de Schauensee 1939). It is

common, sometimes very common in July–November (eBird) but there are very few records in December–June. Gibbs (1993) obtained the only record for Supiori when he heard one near Korrido on the south coast in February 1991. 13 January 1994: recorded on Owi (P. Gregory *in litt.* 2000).

Breeding 24 August 2008: one flushed off a nest with one egg, on bare ground (A. Whitlock, eBird checklist S48329087).

MOUSTACHED TREESWIFT *Hemiprocne mystacea*

Local name Man Pias (Sansundi).

Range *H. m. mystacea* Biak, Supiori, Numfor and Yapen.

Status Resident. Widespread, moderately common, and recorded by most visitors but surprisingly only two specimens, collected by H. A. Lorentz on Supiori in July 1903 (de Beaufort 1909).

GLOSSY SWIFTLET *Collocalia esculenta*

Local names Man Doranfia (Sansundi), Man Dorya (Soeparno 1977).

Range *C. e. esculenta* Biak, Supiori, Numfor, Yapen and Mios Num.

Status Resident. Widespread, moderately common, and recorded by most visitors. Probably more visible (= more common?) in southern Biak as the forest has been opened up by roads and other clearance.

UNIFORM SWIFTLET *Aerodramus vanikorensis*

Local names Man Doranfia (Sansundi), Man Dorya (Soeparno 1977).

Range *A. v. yorki* Biak, Supiori, Owi, Numfor, Yapen and Mios Num.

Status Resident. Widespread and common. February 1991: recorded on Owi (Gibbs 1993).

[WHITE-THROATED NEEDLETAIL *Hirundapus caudacutus*]

Status No previous records of this Palearctic migrant on any of the Teluk Cenderawasih Islands or in most of Indonesian New Guinea except the Aru Islands (Diamond & Bishop 1994) and south-east lowlands (Beehler & Pratt 2016). However, on nearby Numfor on 25 September 2018, J. Mazenauer (*in litt.* 2021) noted a flock of ten Fork-tailed Swifts *Apus pacificus* together with a single White-throated Needletail, which permitted close views, enabling him to see all of the key features. See also below.

[FORK-TAILED SWIFT *Apus pacificus*]

Status No previous records of this Palearctic migrant on any of the Teluk Cenderawasih Islands or in virtually all of northern New Guinea (Beehler & Pratt 2016). However, Richardson (1997) noted some sizeable groups of this species passing through in late November 1996, and on 25 August 2008 A. Whitlock saw three near Warafri (eBird checklist 48738894), but neither record is documented. More convincing details were provided by J. Mazenauer (*in litt.* 2021) from the airport on nearby Numfor. As noted under the previous species, on the evening of 25 September 2018, during a period of strong winds, he saw a group of ten of this species, which he identified by the clear white rump, deeply forked tail and white scaling on the underparts, before they flew east and disappeared. It therefore seems that both this and the previous species pass through the region, at least during autumn passage.

BEACH STONE-CURLEW *Esacus magnirostris* # Near Threatened**Local name** Man Kdin Kdin (N Biak).**Range** Biak and Yapen.**Status** Unknown. Widespread in New Guinea but sparsely distributed and increasingly confined to undisturbed and remote coastal beaches (Beehler & Pratt 2016; KDB). No records on Biak since one was collected on the north coast by Feuilletau de Bruyn, on 10 October 1915 (Hartert 1932). It should be searched for on offshore islets and isolated beaches around Biak and Supiori, and throughout Teluk Cenderawasih.*****BLACK-WINGED STILT** *Himantopus himantopus***Status** Vagrant. First documented record for Australasia (Beehler & Pratt 2016, Menkhorst *et al.* 2017). 24 September 2019: an adult male (all-white head) first seen by D. Ashdown and photographed by P. Lansley (Fig. 8), feeding on mudflats in the tsunami swamp. It lacked the black on nape of adult Pied Stilt *H. leucocephalus* or browner wings with pale fringes to the primaries and coverts of young Pied Stilt, which do have white heads. It lacked the broad white mantle and back of Banded Stilt *Cladorhynchus leucocephalus* (P. Lansley, eBird checklist S64696799). Widespread throughout the Old World, Black-winged Stilt winters east and south to Borneo (Eaton *et al.* 2021) and the Philippines (Dickinson *et al.* 1991).Figure 8. Black-winged Stilt *Himantopus himantopus*, Biak, 24 September 2019 (© Peter Langsley)**PACIFIC GOLDEN PLOVER** *Pluvialis fulva* #**Range** Biak, Supiori, Owi, Yapen.**Status** Palearctic migrant. Moderately common Palearctic migrant to New Guinea (Bishop 2006). On Biak collected by Ripley (Mayr & Meyer de Schauensee 1939). Small numbers (<10) occasionally seen at sites such as Biak airstrip; the army parade ground; stony

farmland and the tsunami swamp. 9 January 1997: six flying over Marauw (SvB). 13 January 1994: 15 on Owi (P. Gregory *in litt.* 2000).

****GREY PLOVER** *Pluvialis squatarola*

Status Palearctic migrant. Uncommon Palearctic migrant to New Guinea (Bishop 2006). First recorded on Biak on 12 October 1997, one on a sports field in Biak town (SvB). In early August 2010, Dutson (2010) noted one on an unidentified small island off Biak.

****LESSER SAND PLOVER** *Charadrius mongolus* #

Range *C. m. mongolus* Biak.

Status Palearctic migrant. Common Palearctic migrant to New Guinea (Bishop 2006) but just three records on Biak. 14 February 1954: one collected by Hoogerheide at Mokmer, south coast (Junge 1956); 9 January 1997: one with two Greater Sand Plovers *C. leschenaultii* on the coast near Marauw (SvB); 23 August 2019: one (K. Behrens, eBird checklist S59190619) or two (P. Chaon, eBird checklist S59302575) at the tsunami swamp.

****GREATER SAND PLOVER** *Charadrius leschenaultii* #

Range *C. l. leschenaultii* Biak, Owi.

Status Palearctic migrant. Despite being a common Palearctic migrant to the New Guinea region (Bishop 2006) only three records from Biak. 14 February 1954: two collected by Hoogerheide at Mokmer, south coast (Junge 1956); 9 and 11 January 1997: two with a Lesser Sand Plover on the coast near Marauw (SvB); 13 January 1994: five on Owi (P. Gregory *in litt.* 2000).

SWINHOE'S SNIPE *Gallinago megala* #

Range Biak, Supiori.

Status Palearctic migrant. Fairly common southbound passage migrant and winter resident in New Guinea (Beehler & Pratt 2016). Two collected by Ripley at Korrido in late November 1937 (Mayr & Meyer de Schauensee 1939). On 10 November 2017, A. Walker (eBird checklist S46415319) saw what was probably this species at the tsunami swamp. However, given that the very similar Latham's Snipe *G. hardwickii* (Menkhorst *et al.* 2017) is also recorded on passage in New Guinea (Beehler & Pratt 2016), the latter record must be considered unconfirmed.

****LITTLE CURLEW** *Numenius minutus*

Status Palearctic migrant. Locally abundant in southern New Guinea during southbound migration but rare on the north coast (Bishop 2006, Beehler & Pratt 2016). 13 October 1997: several on the grassy margins of Biak airport (D. Holmes unpubl.).

***WHIMBREL** *Numenius phaeopus* #

Local name Man Sibin (Sansundi).

Range *N. p. variegatus* Biak, Supiori, Owi, Yapen.

Status Palearctic migrant. Common Palearctic migrant to New Guinea (Bishop 2006). Moderately common on Biak and Supiori where regularly seen in coastal habitats, especially mangroves, in July–November (eBird) and on 21 March 1993 (J. Diamond & KDB). 13 January 1994: four on Owi (P. Gregory *in litt.* 2000).

****FAR EASTERN CURLEW** *Numenius madagascariensis* Endangered**Local name** Man Sibin (Sansundi).**Status** Palearctic migrant. Uncommon passage migrant to New Guinea (Beehler & Pratt 2016). On Biak, seven at the tsunami swamp, 23 August 2019 (K. Behrens, eBird checklist S59190619). The first and only record on any Teluk Cenderawasih Island.****COMMON REDSHANK** *Tringa totanus***Local names** Man Awèr, Man Do Marmèr (Sansundi).**Status** Rare Palearctic migrant. Just four previous records on New Guinea (Beehler & Pratt 2016). On Biak on 10 November 2017 a flock of four flew into the tsunami swamp calling (A. Walker, eBird checklist S46415319) and one was seen well there again on 14 November 2017, and the observer speculated that the others were possibly out of view behind fallen trees (A. Walker, eBird checklist S46415753).****MARSH SANDPIPER** *Tringa stagnatilis***Local names** Man Awèr, Man Do Marmèr (Sansundi).**Status** Palearctic migrant. Moderately common Palearctic migrant to New Guinea (Bishop 2006). All records on Biak are at the tsunami swamp. 29 August 2015: one in flight (KDB, eBird checklist S25951144); 2 October 2015: two (R. Tizard, eBird checklist S51365737); singles, 14 November 2017 (A. Walker, eBird checklist S46415753), 23 August 2019 (K. Behrens, eBird checklist S59190619) and 26 September 2019 (P. Lansley, eBird checklist S88250909).****COMMON GREENSHANK** *Tringa nebularia***Local names** Man Awèr, Man Do Marmèr (Sansundi).**Status** Palearctic migrant. Common Palearctic migrant to New Guinea (Beehler & Pratt 2016). On Biak: 14 November 2017, two in the tsunami swamp (A. Walker, eBird checklist S46415753) and 24 September 2019, one at the same site (P. Lansley, eBird checklist S64696799).****WOOD SANDPIPER** *Tringa glareola***Local names** Man Awèr, Man Do Marmèr (Sansundi).**Status** Palearctic migrant. Common Palearctic passage migrant and winter resident in New Guinea (Bishop 2006, Beehler & Pratt 2016). First recorded on Biak on 29 August 2015, a flock of c.60 that arrived in the tsunami swamp at dusk (KDB, eBird checklist S25951144). Thereafter regularly seen at the same site. 14 November 2017: four (A. Walker, eBird checklist S46415753); 23 August 2019: two (K. Behrens, eBird checklist S59190619); 27 August 2019: eight (P. Chaon, eBird checklist S59302575); 24 and 27 September 2019: ten (P. Lansley, eBird checklists S64696799, S88251028).**GREY-TAILED TATTLER** *Tringa brevipes* #**Local names** Man Awèr, Man Do Marmèr (Sansundi).**Range** Biak, Supiori, Owi.**Status** Palearctic migrant. Common passage migrant and winter resident throughout coastal New Guinea (Bishop 2006). On Biak and Supiori obtained by two collectors including Ripley (Mayr & Meyer de Schauensee 1939) and a handful of recent records in September–November with a max. of three at the tsunami swamp. 21 March 1993: a group of six on mudflats (J. Diamond & KDB). 13 January 1994: seven on Owi (P. Gregory *in litt.* 2000).

****WANDERING TATTLER** *Tringa incana***Local names** Man Awèr, Man Do Marmèr (Sansundi).**Status** Palearctic migrant. Scarce Palearctic migrant in western New Guinea (Beehler & Pratt 2016). Late November 1996: one giving its diagnostic Whimbrel-like call near Wari, south Biak (Richardson 1997). An unusual record this far west (see Beehler & Pratt 2016).**COMMON SANDPIPER** *Actitis hypoleucos* #**Local name** Man Do Marmèr (Sansundi).**Range** Biak, Supiori, Owi, Numfor, Yapen.**Status** Palearctic migrant. Common Palearctic migrant to New Guinea (Bishop 2006). Regular in small numbers in most coastal habitats on Biak and Supiori. 20 January 1954: Hoogerheide collected one at mudflats near Jediboer on the south coast; 14 February 1954: a second specimen from Mokmer, also on the south coast (Junge 1956); 13 January 1994: five on Owi (P. Gregory *in litt.* 2000).****RUDDY TURNSTONE** *Arenaria interpres***Status** Palearctic migrant. Widespread Palearctic migrant to New Guinea (Bishop 2006). Surprisingly, there are just two records for Biak. 30 September 1989: one on Biak's south coast (KDB). 13 January 1994: six on Owi (P. Gregory *in litt.* 2000).****GREAT KNOT** *Calidris tenuirostris* Endangered**Status** Palearctic migrant. Locally abundant Palearctic migrant to New Guinea (Bishop 2006). Recorded on Biak on 27 August 2019, when one still in partial summer plumage was seen and heard at the tsunami swamp (P. Chaon, eBird checklist S59302575).****RED-NECKED STINT** *Calidris ruficollis* # Near Threatened**Status** Palearctic migrant. Very common passage migrant in New Guinea (Bishop 2006). On Biak, Hoogerheide collected one at Mokmer on the south coast, 14 February 1954 (Junge 1956); 14 November 2017: two (A. Walker, eBird checklist S46415753); 23 August 2019: four (K. Behrens, eBird checklist S59190619); 26 September 2019: four (P. Lansley, eBird checklist S88251028), all at the tsunami swamp. 13 January 1994: four on Owi (P. Gregory *in litt.* 2000).****LONG-TOED STINT** *Calidris subminuta***Status** Rare Palearctic migrant. A regular but rare visitor to New Guinea (Bishop 2006). On Biak, one at the tsunami swamp on 10 November 2017 (A. Walker, eBird checklist S46415319).****SHARP-TAILED SANDPIPER***Calidris acuminata***Status** Palearctic migrant. Common passage migrant in New Guinea (Bishop 2006). Recorded

Figure 9. Sharp-tailed Sandpiper *Calidris acuminata*, Biak, November 2017 (© Andy Walker)

on Biak as follows. 10 November 2017: five (A. Walker, eBird checklist S46415319); 14 November 2017: six (A. Walker, eBird checklist S46415753; Fig. 9); 23 August 2019: eight (K. Behrens, eBird checklist S59190619); 26 September 2019: ten (P. Lansley, eBird checklist S88251028), all at the tsunami swamp.

RED-NECKED PHALAROPE *Phalaropus lobatus*

Status Palearctic migrant. Common Palearctic migrant to waters off northern New Guinea (Beehler & Pratt 2016) including around Biak and Supiori where it is regularly seen, sometimes in large numbers, including big rafts off the north coast such as that observed in March 1930 (Mayr & Meyer de Schauensee 1939).

**BROWN NODDY *Anous stolidus*

Local name Man Gonswan (Sansundi).

Status Regular visitor. Common in most New Guinea waters and breeds on small offshore islands (see Bishop & Hacking 2020). On Biak known from a single specimen collected by Hoogerheide at sea north of Biak on 7 July 1954 (Junge 1956). Recently, regularly observed off southern Biak and Supiori where it often forms mixed flocks with other species of terns, *Sula leucogaster* and frigatebirds *Fregata* spp. 6 August 2015: ten near Rani (N. Voaden, eBird checklist S24512191).

**BLACK NODDY *Anous minutus*

Status Occasional visitor. Seasonally common in New Guinea waters (Beehler & Pratt 2016); recently found breeding on the Hermit Islands (Bishop & Hacking 2020). 6 August 2015: an adult photographed off Rani (N. Voaden, eBird checklist S24512191; Fig. 10).



Figure 10. Black Noddy *Anous minutus*, off Rani, 6 August 2015 (© Nigel Voaden)

**BLACK-HEADED GULL *Chroicocephalus ridibundus*

Status Vagrant. Scarce Palearctic migrant to New Guinea waters (Beehler & Pratt 2016) with just two records on Biak. 29–30 March 1963: an immature in Biak harbour (King 1979); February 1991: eight at Biak wharf (Gibbs 1993).

*CRESTED TERN *Thalasseus bergii*

Local names Man Inèy (Sansundi), Man Gep (Soeparno 1977).

Range *T. b. cristatus* Biak, Supiori, Rani, Owi, Yapen.

Status Regular visitor. Common year-round in New Guinea waters (Beehler & Pratt 2016). In Biak waters moderately common; regularly observed perched on exposed coral reefs. Also seen offshore in mixed flocks with other terns (Sternidae spp.), boobies (*Sula* spp.) and frigatebirds (*Fregata* spp.). 6 August 2015: five off Rani (N. Voaden, eBird checklist S24512191); 13 January 1994: two off Owi (P. Gregory *in litt.* 2000).

****LITTLE TERN** *Sternula albifrons*

Status Occasional visitor. Regular visitor from South-East Asia throughout coastal New Guinea during September–early May (Beehler & Pratt 2016). An unknown subspecies breeds in West New Britain (Bishop 1983) and Bougainville (Hadden 1981) and may nest on the New Guinea mainland. The sole Biak records are: 23 October 1997, four near Woniki village, on south-east coast of Biak (SvB) and 27 April 2007, one between the Padaido Islands and south coast of Biak (T. Boucher, eBird checklist S26960957).

****BRIDLED TERN** *Onychoprion anaethetus*

Status Regular visitor. Common off most New Guinea coasts (Beehler & Pratt 2016). Recorded in Biak and Supiori waters: 27 April 2007, one between the Padaido Islands and the south coast (T. Boucher, eBird checklist S26960957); July 2007, c.30 off the beach adjacent to Biak airport (van Beirs 2007); late August 2007, c.15 off the south coast (Bengtsson 2007); 24 August 2008: 25 (A. Whitlock, eBird checklist S48329087); and 6 August 2015: two off Rani (N. Voaden, eBird checklist S24512191). D. Lopez-Velasco (*in litt.* 2021) noted it as moderately common between Biak and Numfor in July–August.

****SOOTY TERN** *Onychoprion fuscatus*

Status Occasional visitor. Scarce in waters off northern New Guinea (see Bishop & Hacking 2020). In Biak waters: 4 July 2019, at least 15 (adults and first-summer birds) halfway between Biak and Numfor and ten next day during the return journey (D. Lopez-Velasco *in litt.* 2021).

****BLACK-NAPED TERN** *Sterna sumatrana*

Local names Man Inèy (Sansundi), Man Gep (Soeparno 1977).

Status Occasional visitor. Widespread and sometimes common in New Guinea waters (Beehler & Pratt 2016) but just two records for Biak and Supiori: 17 July 1994, 40 off Wundi (Padaido Islands) (D. Roberson, eBird checklist S6813691); 6 August 2015: ten off Rani (N. Voaden, eBird checklist S24512191).

****COMMON TERN** *Sterna hirundo*

Local names Man Inèy (Sansundi), Man Gep (Soeparno 1977).

Status Regular visitor. Seasonally abundant in New Guinea waters (Beehler & Pratt 2016) but just three records around Biak: 23 October 1997, ten with a small flock of *Thalasseus bergii* and *Sternula albifrons* near Woniki off the south-east coast (SvB); late August 2007, one off the south coast (Bengtsson 2007); 6 August 2015, two off Rani (N. Voaden, eBird checklist S24512191).

****WHISKERED TERN** *Chlidonias hybrida*

Local names Man Inèy (Sansundi), Man Gep (Soeparno 1977).

Status Regular visitor. Common Australian visitor to New Guinea in February–October (Beehler & Pratt 2016). Six recent records from Biak (most perhaps pertaining to the same birds), all at the tsunami swamp. 14 November 2017: one (A. Walker, eBird checklist S46415319); 27 September 2018: ten (K. Behrens, eBird checklist S48808438); 26 August 2019: two (P. Chaon, eBird checklist S59271786); 26 September 2019: five (P. Lansley, eBird checklist S88250909), later the same day ten (P. Lansley, eBird checklist S88251028); 27 September 2019: four in transitional plumage (P. Lansley, eBird checklist S88252286).

[JAEGER *Stercorarius* sp.]

Status Vagrant. Three species of *Stercorarius* spp. have been recorded in New Guinea waters but only Pomarine Jaeger *S. pomarinus* is considered a 'common' migrant in northern New Guinea (Beehler & Pratt 2016). Two unidentified jaegers were seen between Biak and Yapen on 18 December 1962 and one between Biak, Supiori and Numfor on 29 March 1963, both immatures (King 1979).

OSPREY *Pandion haliaetus* #

Local name Man Ginin (Sansundi).

Range *P. h. cristatus* Biak, Supiori, Owi, Numfor, Yapen.

Status Resident or Palearctic migrant? First noted by Ripley on Supiori in May 1937 (Mayr & Meyer de Schauensee 1939) and collected by Hoogerheide on 8 December 1953 (Junge 1956). Thereafter recorded by most visitors in May–December. January 1997: singles at Marauw and Sansundi (SvB). During August 2018 and 2019 up to 3–6 at the tsunami swamp. 13 January 1994: two on Owi (P. Gregory *in litt.* 2000). Without more information it is impossible to speculate on the origins of these birds. However, *P. h. haliaetus* has been recorded as a winter migrant on Sulawesi (Coates & Bishop 1997).

Breeding 7 July 1982: KDB observed a pair perched atop a tall dead tree above Kuneff, on the south coast of Supiori whose behaviour suggested they may have been looking to nest.

PACIFIC BAZA *Aviceda subcristata* #

Local name Mamunman (Sansundi).

Range *A. s. obscura* Biak, Supiori; *A. s. megala* Yapen.

Status Endemic subspecies. Obtained by three collectors and observed by most visitors. Moderately common, occasionally seen in groups of 3–4. Most frequent in mature secondary and selectively logged forest, but also at the edge of tall primary forest.

LONG-TAILED BUZZARD *Henicopernis longicauda* #

Local name Man Kènin (Sansundi).

Range Biak, Supiori, Yapen.

Status Resident. Obtained by four collectors and seen by nearly all visitors. A distinctive species that is uncommon and usually seen singly, soaring over tall, selectively logged secondary forest in southern Biak, which may be one of the very few non-land-bridge islands inhabited by this species.

Breeding 25 August 2007: Bengtsson (2007) noted a pair nesting. Two specimens collected by Hoogerheide in November had moulting primaries (Junge 1956).

GURNEY'S EAGLE *Aquila gurneyi* Near Threatened

Local name Man Munsob (Sansundi).

Range Biak, Supiori, Yapen.

Status Resident. First recorded by Melville (1980) in March 1976. Although scarce on mainland New Guinea (Beehler & Pratt 2016), it was observed regularly by us and by most visitors to the southern two-thirds of Biak. In August 2015 KDB saw an adult on Supiori hunting at canopy height at the edge of a mangrove with a small group of houses. In our experience this is characteristic behaviour of the species on Biak, where it is often seen singly or in pairs, hunting low over coastal villages. We have never observed it soaring high on Biak. Compared to elsewhere in its range (KDB & SvB) the species is seen fairly

frequently on Biak, where its status may be related to the virtual absence of White-bellied Sea Eagle *Haliaeetus leucogaster*.

BRAHMINY KITE *Haliastur indus* #

Local name Man Sapur (Sansundi).

Range *H. i. girrenera* Biak, Supiori, Padaido Islands, Numfor, Yapen.

Status Resident. Obtained by just two collectors but seen by most visitors. Regularly observed in ones and twos in coastal areas including the tsunami swamp. 17 July 1994: one on Wundi (Padaido Islands) (D. Roberson, eBird checklist S6813691).

***WHITE-BELLIED SEA EAGLE** *Haliaeetus leucogaster*

Local name Man Gan Gan (Sansundi; Soeparo 1977).

Range Biak, Owi, Yapen.

Status Unclear. Widespread throughout lowland New Guinea (Beehler & Pratt 2016). On Biak just six records: August 1989: P. Green (*in litt.* to D. Holmes) saw an adult flying across a bay on the north coast; 1991: Gibbs (1993) listed the species for the Warafri area; November 1996: Richardson (1997) saw an immature; January 1997: 1–2 at Sansundi (SvB); 24 August 2008: one in the Warafri area (A. Whitlock, eBird checklist S48329087); 13 January 1994: one on Owi (P. Gregory *in litt.* 2000). The paucity of records of this large, unmistakable species may be related to the relative abundance of *Aquila gurneyi* on Biak. Despite making a concerted effort to locate raptors, Germe *et al.* (2013) failed to record it in February 2011. There are no records for anywhere else in the Teluk Cenderawasih Islands except Yapen (Beehler & Pratt 2016), so presence on Biak may involve wanderers from the latter.

****CHINESE SPARROWHAWK** *Accipiter soloensis*

Local name Mamunman (Sansundi).

Range Biak.

Status Palearctic migrant. Very uncommon Palearctic winter migrant to western New Guinea (Beehler & Pratt 2016). 14–15 February 2011: a female roosted in degraded woodland on Biak (Germe *et al.* 2013). The lack of records may be due to the paucity of experienced observers visiting the region at the appropriate season (November–April).

VARIABLE GOSHAWK *Accipiter hiogaster* #

Local name Mamunman (Sansundi).

Range *A. h. misoriensis* Biak, Supiori; *A. h. leucosomus* Numfor, Yapen.

Status Endemic subspecies. Obtained by four collectors including Ripley. Since KDB's first visit in July 1982 the species has been observed widely in southern Biak by most observers. Characteristically, it is seen singly, either soaring over degraded forest or primary forest edge, or perched quietly in the midstorey.

[*Tyto* sp.]

Status Ripley stated that a *Tyto* occurs on Biak, but was unable to collect any specimens (Mayr & Meyer de Schauensee 1939). He went on to mention that it was known from 'deep forest' but 'is occasionally found among rafters of large houses belonging to Europeans in Korrido'. During numerous visits to Biak and Supiori we have never observed any *Tyto* and neither has any visiting birder. A *Tyto* on Biak would be surprising in view of its distribution in the New Guinea region (Beehler & Pratt 2016).

BIAK SCOPS OWL *Otus beccarii* # RR, Vulnerable**Local names** Mandibi (Kuneff), Man Kainabèn (Sansundi).**Range** Biak, Supiori.

Taxonomy Treated by Marshall (1978) as a race of Moluccan Scops Owl *O. magicus*. Rasmussen (1998) examined two specimens and noted that it is so distinct in plumage that she was compelled to concur with Stresemann (1925) and Mayr & Meyer de Schauensee (1939) in giving *beccarii* specific status. This was endorsed by König *et al.* (2008), who stated 'Despite the similarity of its song to that of Moluccan Scops Owl *O. magicus* we consider *beccarii* a full species because of its strikingly different plumage and its isolated and allopatric distribution.'

Status Endemic species. The holotype, a male, was collected by Beccari in 1875 (Salvadori 1875). It was not recorded again until 1937 when Ripley obtained a pair from 'a heavy vine-covered tree in deep forest' near Korrido in southern Supiori (Mayr & Meyer de Schauensee 1939). These three are the only specimens. During 1982 KDB heard it calling at several locations from the vicinity of Kuneff, to his camp at c.305 m. Local informants at Kuneff appeared to be quite familiar with the species. Not recorded again until 1997 when SvB & B. M. Beehler heard one in and around Biak Utara Reserve. The species is specially sought by most visitors to the island and, with the aid of sound recordings of its voice, has been found, contrary to earlier perceptions, to be widespread and fairly common in remaining tall forest and mature secondary forest throughout southern Biak (Fig. 11). However, it is apparently absent from heavily degraded forest and secondary woodland. The northern two-thirds of Biak and most of Supiori are virtually unsurveyed, but the



Figure 11. Biak Scops Owl *Otus beccarii*, Biak, 5 July 2017 (© Daniel Lopez-Velasco)

species is likely to be present there. This, the south-easternmost *Otus* in the Asia-Pacific region, is the only scops owl in Australasia.

*****SHORT-EARED OWL** *Asio flammeus*

Range Biak.

Status Vagrant. The first documented record for the entire Australo-Papuan region and Indonesia. This Western and Northern Hemisphere species is a rare winter visitor to the Philippines (Dickinson *et al.* 1991) and has occurred twice in northern Borneo including one at sea off Labuan (September 2014) (Eaton *et al.* 2021). 13 November 2022: K. Behrens (*in litt.* 2022) flushed one alongside the road at the 'tsunami swamp'. Seen well and the diagnostic features were noted by an experienced observer.

***BLYTH'S HORNBILL** *Rhyticeros plicatus*

Range Biak, Numfor (M. Halaouate *in litt.* 2021), Yapen.

Status Unclear. Presence on Biak is enigmatic. Neither of us has observed the species there despite numerous visits. However, several observers have recorded this very distinctive species. 15 August 1995: two, southern Biak (C. Eastwood, eBird checklist S67701811); 30 October 2003: unknown number, Warafri area (S. Myers, eBird checklist S70322018); Bengtsson (2007) saw several and noted they might be escapees; 26 September 2017: eight in the Oridek area (S. Lorenz, eBird checklist S39398502); 26 June 2019: three in flight (T. Deininger, eBird checklist S58672426); 30 June 2019: one (Goh Soon Kit, eBird checklist S57804552). M. Halaouate (*in litt.* 2021) was informed that three hornbills had escaped from the Biak Birdpark and later saw two in flight; he also observed four on nearby Numfor in 2004. KDB found this species moderately common on nearby Yapen in 2016–17. It appears that the birds on Biak are escapees from captivity, although over-water arrival from Numfor or Yapen is possible.

RAINBOW BEE-EATER *Merops ornatus* #

Local name Man Pirpir (Sansundi).

Range Biak, Supiori, Numfor, Yapen.

Status Austral migrant. Widespread and common in heavily degraded woodland, forest edge, scrub and farmland, occasionally the canopy of primary forest up to c.350 m; common in June–October with a record of five in April (KDB).

ORIENTAL DOLLARBIRD *Eurystomus orientalis* #

Range *E. o. pacificus* Biak, Supiori; *E. o. waigiouensis* Yapen.

Status Austral migrant. Beehler & Pratt (2016) noted that resident *E. o. waigiouensis* is scarce on New Guinea's north coast but in Teluk Cenderawasih has been recorded on Yapen. Austral migrant *E. o. pacificus* is widespread and common on Biak in April–November. 5 June 1990: a loose aggregation of c.50 hawked at dawn over the hotel near Biak airport (KDB). Presumably these were recent arrivals. 12 August 1994: 15 near Waspdori Falls (D. Roberson, eBird checklist S6813709).

BIAK PARADISE KINGFISHER *Tanysiptera riedelii* # RR, Near Threatened

Local names Mangobin Kain Mum (Kuneff), Man Pisosyo (Sansundi).

Range Biak, Supiori.

Taxonomy Formerly treated as a subspecies of the widespread Common Paradise Kingfisher *T. galatea* (Mayr 1941, Beehler *et al.* 1986). This taxon's distinct morphological and

vocal differences combined with its geographical isolation support treatment as a species (Rand & Gilliard 1967, Beehler & Pratt 2016), although it clearly forms a superspecies with Common Paradise Kingfisher *T. galatea*, Biak Paradise Kingfisher *T. riedelii* and Numfor Paradise Kingfisher *T. carolinæ* (Mayr 1941, Beehler & Pratt 2016).

Status Endemic species. Although Ripley found this species only in deep forest along rocky streams on Supiori (Mayr & Meyer de Schauensee 1939), we found it widespread and common on both Supiori and Biak. For example, SvB found seven territories in 1 km of forest near Sansundi, Biak, in January 1997. Most vocal during early morning and late afternoon when it is regularly seen, singly, in pairs, and family groups of up to four. It inhabits all wooded habitats including primary lowland and foothill forest, selectively logged forest and mature secondary forest. It ranges from the ground, where it is regularly observed feeding in the leaf litter, to the canopy, through which it often flies when alarmed.

Breeding As is the case with most if not all other *Tanysiptera* this species nests in arboreal termitaria (KDB; Gibbs 1993).

BEACH KINGFISHER *Todiramphus saurophagus*

Local name Man Kob Biror (Sansundi).

Range *T. s. saurophagus* Biak, Supiori, Padaido Islands, Numfor, Yapen.

Status Resident. Obtained by most collectors including Ripley. The latter observed it in mangroves at the edge of a swamp on Supiori. Thereafter rarely seen on Biak until the creation of the tsunami swamp, where it is common. 17 July 1994: one on Wundi in the Padaido Islands (D. Roberson, eBird checklist S6813691).

SACRED KINGFISHER *Todiramphus sanctus*

Range *T. s. sanctus* Biak, Supiori, Rani, Numfor, Yapen.

Status Austral migrant. Widespread and common in May–October on Biak. Earliest 28 May (D. Holmes unpubl.), latest 8 November 2017 (A. Walker, eBird checklist S46415300) and 1 December 1937 (Mayr & Meyer de Schauensee 1939), a rather late date for this Australian bird. 6 August 2015: one on Rani (N. Voaden, eBird checklist S24512191).

PAPUAN DWARF KINGFISHER *Ceyx solitarius*

Range Supiori, Yapen.

Status Resident. Known only from a single male collected by Beccari at Korrido, 18 May 1875 (Salvadori 1880–82) and an observation by Ripley in November–December 1937 (Mayr & Meyer de Schauensee 1939). There appear to be no records of the species on Biak itself, or any modern records from Supiori.

AZURE KINGFISHER *Alcedo azureus*

Range *A. a. ochrogaster* Biak, Supiori, Numfor, Yapen.

Status Resident. Obtained by four collectors but except KDB's observations and those by Gibbs (1993) there appear to be no recent records on Biak. Based on our few observations it appears widespread but confined to streams and creeks in forest and is usually seen singly or in pairs.

*ORIENTAL HOBBY *Falco severus*

Range Biak, Yapen.

Status Vagrant. Sparingly distributed throughout New Guinea (Beehler & Pratt 2016; KDB). Just two records on Biak. 5 June 1990: one perched under the roof of Biak airport (B.

Coates *in* Beehler & Pratt 2016); 26 August 2019: one at the tsunami swamp (P. Chaon, eBird checklist S59271786).

****AUSTRALIAN HOBBY** *Falco longipennis*

Range Biak.

Status Austral migrant. Uncommon in New Guinea with very few records north of the central ranges (Beehler & Pratt 2016). On 13 June 1989, one perched on a radio mast near Biak airport shortly after dawn. A detailed telescope study revealed it to be an adult male: it had a large area of white on the head-sides with the collar extending to the back of the neck; pale throat becoming rufous on the underparts with indistinct dark markings on the breast; tail indistinctly barred and upperparts mid blue-grey (JD & KDB).

***PEREGRINE FALCON** *Falco peregrinus*

Range *F. p. calidus* and *F. p. ernesti* Biak, Yapen.

Status Palearctic winter visitor (*F. p. calidus*) and rare visitor (*F. p. ernesti*). There are few records of resident *ernesti* and even fewer of the Palearctic migrant *calidus* anywhere in New Guinea (Beehler & Pratt 2016; KDB & SvB). 5 April 2006: Dutson (2006) saw one of the small resident subspecies in flight at dusk; June 2008: a member of a bird tour group saw one in southern Biak but without details (van Beirs 2008); February 2011: two *F. p. calidus* (Germi *et al.* 2013). 13 January 1994: P. Gregory (*in litt.* 2000) saw an adult with a rather pale grey mantle, perched in a dead tree on Owi, which was clearly not resident *ernesti* but presumably one of the Palearctic migrant subspecies.

SULPHUR-CRESTED COCKATOO *Cacatua galerita* #

Local names Awéko, Man Warèf (Sansundi); Man Garas (Kuneff), Man Geras (Soeparno 1977).

Range *C. g. triton* Biak, Supiori, Numfor, Yapen.

Status Resident. Widespread and moderately common; obtained by three collectors including Ripley and observed by nearly all visitors. From 1982 until c.1995, the species was common and very conspicuous, often in small groups of 4–8, occasionally seen flying low over villages especially on Supiori. Thereafter it visibly declined in numbers in southern and central Biak, probably due to habitat degradation, hunting and especially trapping. M. Halaouate (*in litt.* 2021) noted that it is still fairly common especially on Supiori, but has declined dramatically, and 80–90% of this decrease is due to trapping for illegal trade. Halaouate's current estimate of Biak and Supiori's population is 3,500–5,000.

RED-FRONTED LORIKEET *Charmosyna rubronotata* #

Range *C. r. kordoana* Biak, Supiori.

Status Endemic subspecies. Obtained by three collectors including Ripley. During July 1982 KDB observed it commonly, invariably in flocks of ten to c.30, in flowering trees and coconuts both on Biak and Supiori (up to c.350 m). Gibbs (1993) found it in large flocks at flowering trees near Korrido, Supiori. Subsequently, very few visitors have reported the species, but they have seemingly mistaken it for the very similar Red-flanked Lorikeet *C. placentis*. The endemic subspecies *C. r. kordoana* is very similar to *C. placentis* and records of the latter require verification. M. Halaouate (*in litt.* 2021) noted it is still widespread especially in the remaining forests in northern Biak. It has been seen feeding on coconut blooms and on the nectar of flowering Malayan Apple *Syzygium malaccense* with Black-capped Lory *Lorius lory*, Black-winged Lory *Eos cyanogenia* and Red-cheeked Parrot *Geoffroyus geoffroyi*.

BLACK-CAPPED LORY *Lorius lory* #

Local names Man Yauri (Sansundi), Man Nyouri (Soeparo 1977).

Range *L. l. cyanauchen* Biak, Supiori; *L. l. jobiensis* Mios Num, Yapen.

Status Endemic subspecies. Ripley noted that this taxon is more solitary than its cohort on mainland New Guinea and recorded it up to 610 m. Common and widespread, however since 1997 it has become very scarce near roads and trails, and consequently increasingly rarely reported, almost certainly the result of insidious trapping for the cagebird trade. Sadly, this pattern is repeated throughout most of the accessible areas of western (Indonesian) New Guinea (KDB & SvB). M. Halaouate (*in litt.* 2021) noted that this subspecies' wild population has declined horrifically due to trapping for the local market in Papua, to supply the bird markets on Java and Bali, and to satisfy the demand of big collectors who have established huge breeding centres on both of the latter islands. These 'entrepreneurs' try to breed the birds for international export. Many parrot species are exported annually with permits as if bred in captivity, but some wild-caught birds have falsified papers that approves them for export (M. Halaouate pers. obs.). Halaouate's estimate of the remaining wild population on Biak (Supiori?) is fewer than 2,000 birds and even this may be an overestimate.

RAINBOW LORIKEET *Trichoglossus haematodus* #

Local name Man Pèspès (Sansundi).

Range *T. h. rosenbergii* Biak, Supiori, *T. h. haematodus* Numfor, Yapen.

Taxonomy Beehler & Pratt (2016) treated the Biak population as a subspecies of the polytypic and widespread Rainbow Lorikeet. This taxon is a member of a hyper-variable lineage for which species boundaries are problematic and full molecular analysis is needed. Conversely, del Hoyo & Collar (2014) and Gregory (2017) split *T. haematodus* into seven species including Biak Lorikeet *T. rosenbergii*. However, in the latest analysis (Joseph *et al.* 2020), the position of the taxon is still unresolved, which has important implications for conservation.

Status Endemic subspecies. Obtained by seven collectors including Ripley and seen by virtually all visitors. During July 1982 KDB found it 'everywhere' in southern Biak, invariably common and in flocks of 20 or more, sometimes flying over villages near the township of Biak. On Supiori KDB recorded it up to c.360 m in primary forest on limestone karst, often feeding with *Eos cyanogenia* at flowering trees. Most visitors barely did more than list it until the proposed split (del Hoyo & Collar 2014), which dramatically changed their attitude to the taxon. It is difficult to determine when it began to decline on Biak, but clearly much smaller numbers were present from c.2000 onwards. Birders now make special efforts to seek this endemic but invariably struggle to see more than one or two. However, these observations are all from southern Biak, the most heavily populated and degraded part of the island. Large areas of apparently undisturbed forest persist in northern Biak and over much of Supiori, and a survey of these areas to determine the status of the taxon there is much needed. M. Halaouate (*in litt.* 2021) noted that Rainbow Lorikeets usually lack much value for trappers and collectors. However, this is one of the most strikingly beautiful *Trichoglossus* and has attracted collectors on Java, Bali and in the international markets to intensively trap this taxon to a point where it may go extinct on Biak in the near future. It fetches a quite high price in Europe to where it is exported 'legally' from Indonesia. Treating *rosenbergii* as a species has advantages (it can be formally protected) and disadvantages (it would become more sought after by collectors and trapping would thereby increase). Halaouate's estimate of the remaining wild population is 2,000–2,400 birds.

BLACK-WINGED LORY *Eos cyanogenia* # RR, Vulnerable

Local name Man[g] Fir (Sansundi, Kuneff).

Range Biak, Supiori, Owi, Numfor, Manim and Mios Num (the map in Forshaw 1989 incorrectly included Yapen in the species' range).

Status Teluk Cenderawasih endemic species. All collectors that visited Biak obtained this striking endemic. Equally, since 1982 all visitors to Biak have reported the species. In July 1982, KDB found it common from sea level to c.305 m, and uncommon to c.460 m, with small groups or pairs noted constantly in flight over primary forest. KDB occasionally recorded larger groups of 40–60 at flowering forest trees, associating with the then much commoner and widespread *Trichoglossus haematodus*. He also observed pairs in courtship display and saw a pair at a nest hole high in a ridge-top tree at c.100–200 m on Supiori. At this time, he observed flocks on Biak and Supiori flying to coastal areas during the late afternoon to roost in coconut palms. In 1982 the species was commonly kept as a pet on Biak, but KDB saw none in captivity on Supiori. Subsequent visits to Biak market revealed large numbers being sold for the pet trade. In 1995 the species was still present in southern Biak, but then only in small groups (2–10) and it was notably more difficult to find in areas where KDB had previously found it easily. At the time, the species appeared to be a sparse inhabitant of tall secondary lowland forest and primary forest, but we failed to see any in the low scrubby regrowth over much of the southern plateau. In January 1997 it was seen daily at Marauw and Sansundi with flocks of up to 15 (SvB). M. Halaouate's (*in litt.* 2021) assessment of the situation on Biak is that numbers have declined markedly. Whereas flocks of 5–60 were formerly seen occasionally in flight, even over degraded forest, virtually no such flocks were observed during 1986–95. During more recent visits, in 2015–16, KDB failed to see the species on Biak and found only a small group at the edge of tall primary forest on Supiori. Status on Numfor, Manim and Mios Num is unknown. 13 January 1994: three on Owi (P. Gregory *in litt.* 2000); later the same year D. Roberson (*in litt.* 2017) observed two there. The call is a loud, far-carrying, unmusical screech with a slight quavering quality; less high-pitched than *Trichoglossus haematodus*.

ECLECTUS PARROT *Eclactus roratus* #

Local name Man Pofu (Soeparno 1977).

Range *E. r. polychloros* Biak, Supiori, Numfor, Yapen.

Taxonomy Forshaw (1989) and Juniper & Parr (1998) regarded subspecies *biaki* as doubtfully distinct from mainland New Guinea populations. Beehler & Pratt (2016) sank *biaki* in *polychloros*. Recently, Braun *et al.* (2017) proposed splitting *polychloros*.

Status Resident. Obtained by most collectors and seen by virtually all visitors. However, as is true for many Psittaciformes in Indonesian New Guinea, the species has declined markedly since c.1997, especially 2001 when M. Halaouate (*in litt.* 2021) was able to see still large flocks, but during visits to Biak and Supiori in 2015 and 2016 KDB failed to record it, although M. Halaouate (*in litt.* 2021) saw 12, mostly males, in north-west Biak in 2019. February 1991: seen on Owi (Gibbs 1993). M. Halaouate (*in litt.* 2021) has noted 'a huge population decrease' promulgated by illegal trade, with more than 90% of trapped birds bound for Java and Bali via Ambon, Ternate, Manado and Makassar. He considers that a population of perhaps 1,800 birds might still occur on Biak, but this could be too optimistic.

RED-CHEEKED PARROT *Geoffroyus geoffroyi* #

Local name Man Inkèr (Sansundi).

Range *G. g. mysorensis* Biak, Supiori, Numfor; *G. g. jobiensis* Yapen, Mios Num.

Status Teluk Cenderawasih endemic subspecies. Widespread and moderately common; obtained by seven collectors including Ripley who found it up to 460 m. Recorded by all recent visitors. February 1991: seen on Owi (Gibbs 1993). M. Halaouate (*in litt.* 2021) has noted: 'This species is still common on Biak owing that to the fact that it is not very interesting for trappers...as these parrots are very sensitive to the stress of capture and not easy to keep alive with the diet the trappers and traders offer. There is still the fact, however, that these parrots being fairly large...are shot for food.' Halaouate estimates the remaining population at 4,000+.

GEELVINK PYGMY PARROT *Micropsitta geelvinkiana* # RR, Near Threatened

Local name Man Nim As (Sansundi).

Range *M. g. misoriensis* Biak, Supiori; *M. g. geelvinkiana* Numfor.

Status Biak endemic subspecies; Teluk Cenderawasih endemic species. Regularly and often commonly seen throughout southern Biak, in remnant secondary or partially degraded lowland forest, cultivation with isolated trees and at edges of native gardens. Although challenging to see because of its small size and swift direct flight, the species' distinctive series of loud, high-pitched notes is frequently heard. Unlike other *Micropsitta*, which are regularly seen in small flocks, the species appears to occur only in ones and twos, very occasionally groups of 3–4. In July 1982 KDB saw it regularly on Supiori, from sea level, at the edge of native gardens and in undisturbed forest to at least c.360 m. Like congenetics, Geelvink Pygmy Parrot appears capable of adapting to moderate habitat change. 1 July 1990: KDB recorded one uttering a strange warbling vocalisation as it gleaned lichens on a horizontal branch in secondary woodland. Arndt (1992, 1999) who failed to see any on a visit to Biak in 1991, published a detailed study of the species on Biak and Numfor, and estimated its population there at 12,000 birds.

Breeding 30 June 1982: an adult female observed digging a hole with its bill in an arboreal termitarium, c.1 m above ground and 2 m from a road, in dense secondary woodland in southern Biak (KDB). 24 August 2019: one excavating a small cavity in an old termite nest attached to a hanging vine (P. Chaon, eBird checklist S59268098).

HOODED PITTA *Pitta sordida* #

Local name Man Wosre (Sansundi).

Range *P. s. rosenbergii* Biak, Supiori; *P. s. mefoorana* Numfor.

Taxonomy *P. s. rosenbergii* was treated as a species by del Hoyo & Collar (2016) and Gregory (2017), whereas Beehler & Pratt (2016) maintained it as an endemic subspecies. Del Hoyo & Collar (2016) and Gregory (2017) treated *P. s. mefoorana* as a subspecies of Eastern Hooded Pitta *P. novaeguineae* with Gregory (2017) noting that *P. s. mefoorana* is 'fairly distinctive'. More recently, Ericson *et al.* (2019) compared population genomics of 29 individuals of *P. sordida* from the entire distribution and reconstructed their relationships, electing to split Hooded Pitta into three species: Sulawesi, Western and Eastern. Among Eastern birds, *rosenbergii* is sister to all other members of the New Guinea clade, but Sulawesi birds are unquestionably the most differentiated (F. E. Rheindt *in litt.* 2021).

Status Biak endemic subspecies. Widespread and sometimes common (e.g., in southern lowlands of Supiori) in tall secondary, selectively logged and primary lowland forest to at least c.305 m (KDB; Supiori). Obtained by most collectors and seen and heard moderately commonly by most visitors. Regularly perches to call from a horizontal branch 1–2 m above ground. One specimen had consumed the larvae of aquatic insects (Mayr & Meyer de Schauensee 1939). This taxon is categorised by BirdLife International as Vulnerable.

EMPEROR FAIRY WREN *Malurus cyanocephalus* #**Local name** Man Fréfré (Sansundi).**Range** *M. c. mysorensis* Biak, Supiori; *M. c. cyanocephalus* Yapen.**Status** Biak endemic subspecies. Obtained by most collectors and seen by most visitors. Common and widespread; usually encountered in pairs in dense understorey of primary, selectively logged and secondary forest; sea level to c.300 m (KDB; Supiori).**DUSKY MYZOMELA** *Myzomela obscura* #**Range** *M. o. rubrobrunnea* Biak, Supiori.**Taxonomy** Treated as a species by Mayr & Meyer de Schauensee (1939) who stated that it was better to 'list this form as a good species, until the relationship...is better understood.' Mayr (1941) indicated uncertainty over treating it as a subspecies of *obscura*, by placing the species name in parentheses. Rand & Gilliard (1967) noted that the Biak population is very distinct, but maintained it as a subspecies of *obscura*. Del Hoyo & Collar (2016), however, treated this taxon as a species again, based on plumage and morphometrics. Beehler & Pratt (2016) preferred to await the results of molecular analysis before elevating this taxon to species.**Status** Biak endemic subspecies. Obtained by four collectors and recorded by c.30% of recent visitors. Ripley found it 'A shy, nervous species associating in flocks with other nectar eaters or occasionally in groups of two or more in vine-covered forest trees.' KDB too has found the species scarce and observed it infrequently, occasionally singles feeding quietly c.6 m up at the forest edge. During the 1982 visit to southern Supiori KDB watched a small group foraging with a mixed-species flock in primary forest on limestone karst at c.100 m elevation above Kuneff.**[HELMETED FRIARBIRD** *Philemon buceroides*]**Range** Biak?, Yapen.**Status** KDB recorded the species during 30 September–1 October 1989 and 4–5 June 1990 but without notes. Included here to alert future observers as its presence is entirely possible.**LARGE-BILLED GERYGONE** *Gerygone magnirostris* #**Range** *G. m. hypoxantha* Biak, Supiori; *G. m. affinis* Yapen.**Taxonomy** Although Salvadori (1878) could not attribute the two types in Leiden Museum to any species known to him, Mayr & Meyer de Schauensee (1939) emphatically listed *hypoxantha* as a subspecies of *magnirostris* based on Ripley's two specimens. Mayr also described the immature, which is likely to be the source for the confusing reports of 'another' *Gerygone* on Biak (see Gibbs 1993). Treatment as a distinctive subspecies of *G. magnirostris* was subsequently followed by Rand & Gilliard (1967) and Beehler & Pratt (2016). The latter noted that SvB and KDB who are familiar with the species' song had advocated treating *hypoxantha* subspecifically. Conversely del Hoyo & Collar (2016) and Gregory (2017, 2020) treated this taxon as a full species but without a detailed assessment other than to note its taxonomy is unstable and that it has 'clear yellow in plumage and is confined to a long-isolated island.'**Status** Biak endemic subspecies. Infrequently encountered by collectors as evidenced by just four specimens: von Rosenberg (Salvadori 1878) obtained the two syntypes and Ripley (Mayr & Meyer de Schauensee 1939) collected two more, the only examples he encountered. Although infrequently observed by previous visitors, increasing familiarity with its vocalisations coupled with the possibility of it being an endemic species has resulted in numerous records since c.2006 between mid July and early November (eBird).

Voice The song of Biak birds fits well with the general description of the species' geographically variable song: 'a lilting, repetitive, musical, typical gerygone-sequence' (Pratt & Beehler 2015, Gregory 2017), resembling closely that of Australian *G. m. cairnsensis* (Beehler & Pratt 2016).

HOODED BUTCHERBIRD *Cracticus cassicus* #

Local name Man Kowo[k] (Kuneff, Sansundi; Soeparno 1977).

Range *C. c. cassicus* Biak, Supiori, Numfor, Yapen, Kurudu.

Status Resident. Obtained by four collectors and recorded by most visitors. Widespread and common in degraded, selectively logged and primary forest up to c.305 m (KDB; Supiori). Less common in sparsely wooded farmland.

Breeding 12 January 1997: carrying twigs to a platform nest in a 15 m-tall tree (SvB).

[WHITE-BREADED WOODSWALLOW *Artamus leucorhynchus*]

Status KDB recorded this species on 30 September–1 October 1989 and 4–5 June 1990 but without notes. Included to alert future observers as its presence is quite plausible. The species' ability to cross water and colonise remote islands is illustrated by its global distribution (Rowley & Russell 2020). Widespread throughout open and lightly wooded country of lowland mainland New Guinea (Pratt & Beehler 2015) and from its base in Australia has occupied many islands in the south-west Pacific. Thus, its presence would not be surprising on Biak (note, not yet Supiori) given extensive areas of suitable habitat in the south of the island. *Artamus* has not been recorded on Yapen but may have been overlooked there.

****BLACK-FACED CUCKOOSHRIKE** *Coracina novaehollandiae*

Range Subspecies? Biak.

Status Austral migrant. Widespread Australian migrant to New Guinea, especially the south (Beehler & Pratt 2016). Very few records on Biak and substantiation desirable: 4–5 June 1990 (KDB); 30 September–1 October 1989 (KDB) and 25 April 2007 (T. Boucher, eBird checklist S26960960).

BIAK TRILLER *Lalage leucoptera* # RR

Range Biak, Supiori.

Status Endemic species. Widespread and common. Obtained by most collectors and recorded by most visitors. Inhabits selectively logged and primary forest, less common in degraded forest and lightly wooded farmland. Often noisy and conspicuous, in pairs duetting while perched on exposed branches at or about canopy height, occasionally in small groups of 3–4.

COMMON CICADABIRD *Edolisoma tenuirostre* #

Range *E. t. meyerii* Biak, Supiori; *E. t. numforanum* Numfor.

Taxonomy Del Hoyo & Collar (2016) treated Biak and Numfor birds as two species. These authors provided an assessment of the expanded Common (aka Slender-billed) Cicadabird *E. tenuirostre* species complex but stated the 'situation is one of riddling complexity which molecular research has only partially resolved (and partially added to). New arrangement outline here attempts a plausible and consistent use of available evidence, but perhaps no more satisfactory.' Nevertheless, the evidence they assembled for treating *meyerii* as a full

species is compelling, however, until the entire group is thoroughly examined, we follow Beehler & Pratt (2016) in retaining the Biak and Numfor taxa as subspecies of *E. tenuirostre*. **Status** Biak endemic subspecies. Obtained by five collectors but infrequently reported by visitors. Widespread but rather sparse in tall, well-developed secondary and primary forest. **Voice** The song is a distinctive series of up to 50 medium-pitched notes, invariably uttered on a near-even pitch. Towards its end the series descends slightly in pitch and decelerates markedly over the last few notes. The quality is slightly nasal, not clear, almost with a buzzy quality (J. Diamond *in litt.* 1990; Woxvold & Bishop 2020).

LITTLE SHRIKETHRUSH *Colluricincla megarhyncha* #

Range *C. m. melanorhyncha* Biak, Supiori; *C. m. obscura* Yapen.

Taxonomy Treated by Beehler & Pratt (2016) and Mayr (1941) as an endemic subspecies of Little Shrikethrush *Colluricincla (Myiolestes) megarhyncha*. Beehler & Pratt (2016: 386) noted that the Biak bird is 'a distinctive subspecies because of the rufous wings (hopefully not just a juvenile trait).' They also noted that 'Because its song is reputed to be whistler-like, genetic screening may yield some surprises.' Recent genetic studies reveal deep DNA divergence among the various races of the *Colluricincla megarhyncha* complex, suggesting several cryptic species, but sampling is still incomplete and instances of introgression and lineage-sorting require resolution (Deiner *et al.* 2011). However, the taxon on Biak was not included in the latter study. Shortly thereafter Marki *et al.* (2018) in a further study of genetics and species limits in *Colluricincla* recovered *C. m. melanorhyncha* as sister to Island Whistler *Pachycephala phaionota*, but as their results were based on an incomplete sequence amplified from a single museum skin, their findings need corroboration. Despite that Boles (2020a,b) listed this taxon as a separate monotypic species, viz Biak Whistler, we prefer to await confirmation of this arrangement.

Status Endemic subspecies (Fig. 12). Widespread and common in tall secondary woodland, selectively logged and primary forest, from sea level to 488 m (Mayr & Meyer de Schauensee 1939; Supiori).



Figure 12. Little Shrikethrush *Colluricincla megarhyncha*, Biak, 5 July 2017 (© Daniel Lopez-Velasco)

ISLAND WHISTLER *Pachycephala phaionota* #

Range Rani off Biak, Manim off southern Numfor, small islets in Teluk Cenderawasih (Mayr 1941).

Status Resident? Ripley collected an immature on Rani, an islet 12.9 km off southern Supiori (Mayr & Meyer de Schauensee 1939). This record is the easternmost of this supertramp whose distribution is centred on the Raja Ampat Islands (Pratt & Beehler 2015). A survey of the nearby but ornithologically poorly studied Padaido Islands may reveal the species' presence there, as the location and habitat appear ideal.

WILLIE WAGTAIL *Rhipidura leucophrys* #

Local name Manggupre (Kuneff).

Range *R. l. melaleuca* Biak, Supiori, Rani, Numfor, Yapen.

Status Resident. Widespread and locally common, especially in and around villages, at the edges of Biak town and in lightly vegetated farmland. 6 August 2015: six on Rani (N. Voaden, eBird checklist S24512191).

Breeding 11 January 1997: nest in a *Plumeria* sp. tree; 12 January 1997: nest atop a TV antenna; 12 October 1997: nest at tip of a palm frond c.3.5 m above a stream (SvB).

NORTHERN FANTAIL *Rhipidura rufiventris* #

Range *R. r. kordensis* Biak, Supiori; *R. r. gularis* Mios Num, Yapen.

Taxonomy Del Hoyo & Collar (2016) treated *kordensis* as a species following theirs and Eaton *et al.*'s (2016) independent analysis of this large, polytypic species. Beehler & Pratt (2016) acknowledged that this taxon is 'very distinctive' suggesting that it may indeed be best considered an endemic species, as it was treated by Gregory (2017).

Status Biak endemic subspecies. Obtained by five collectors and observed by most visitors. Widespread and generally common in mature secondary woodland, selectively logged and primary forest; sea level to c.320 m (KDB; Supiori).

SPANGLED DRONGO *Dicrurus bracteatus* #

Local name Man Kèswès (Sansundi).

Range *D. b. carbonarius* Biak, Supiori, Numfor, Yapen.

Status Resident. Obtained by six collectors and seen by nearly all visitors. Widespread and common in mature secondary woodland, selectively logged and primary forest; sea level to c.350 m (KDB; Supiori).

SHINING FLYCATCHER *Myiagra alecto* #

Local name Man Mosré (Sansundi).

Range *M. a. chalybeocephala* Biak, Supiori, Numfor, Yapen, Kurudu.

Status Resident. Obtained by most collectors and recorded by virtually all visitors. Widespread and common in riverine and streamside forest.

BIAK BLACK FLYCATCHER *Myiagra atra* # RR, Near Threatened

Range Biak, Supiori, Owi, Rani, Numfor.

Status Teluk Cenderawasih Islands endemic. Obtained by four collectors including Ripley (Mayr & Meyer de Schauensee 1939) and recorded by most visitors. Widespread and generally common in well-developed secondary forest, selectively logged and primary forest to c.400 m (KDB; Supiori). Mostly encountered in the midstorey and canopy of

primary forest where frequent in mixed-species flocks of insectivores. 13 January 1994: one on Owi (*P. Gregory in litt.* 2000).

Breeding 26 April 2007: a nest was observed near Wirmaker. Occupied by a female, it was on an oblique branch c.3.5 m above ground in a small tree on a slope. The nest was constructed of fine fibres, rotund and densely covered with small leaves on its outside (SvB). 25 August 2007: nest with three chicks on a horizontal branch c.4 m above ground in rather open habitat with low trees; fed by male and female (Bengtsson 2007).

BIAK MONARCH *Symposiachrus brehmii* # RR, Endangered

Range Biak, Supiori.

Status Endemic species. Rand & Gilliard (1967) stated that ‘it seems a very rare bird, at least in collections, and to have been met with by few naturalists’. The holotype was collected by von Rosenberg in March 1869 on Supiori (Schlegel 1871, von Rosenberg 1875). In May 1875 a male was collected at Korrido by Beccari (Salvadori 1875). Not met with by Ripley (Mayr & Meyer de Schauensee 1939). Until 1982 only the adult male (Fig. 13) had been described. On 8 July 1982 KDB observed a bird in a lichen-covered, limestone river-bed at c.40 m in dense lowland forest on the south coast of Supiori. A characteristic, grating monarchine flycatcher-type call was heard and eventually KDB had a clear view of a large, bold, chunky monarch. Its overall plumage was jet black with a large white throat and upper breast patch. The relatively long tail was edged orange-brown as were the coverts and flight feathers, forming an incomplete patch. We suggest that this was the previously undescribed female or juvenile plumage. The bird was constantly active, moving between perches, hawking and hover-gleaning in the subcanopy c.10 m up. In January 1997 SvB observed a male in a mixed flock with a female *Carterornis chrysomela*, two *Dicrurus bracteatus*, *Rhipidura rufiventris* and Biak Leaf Warbler *Seicercus misoriensis*. Thereafter the species was very rarely seen until c.2000 when visitors to Biak greatly increased and local guides learnt where to find it. Although recorded in well-developed lowland forest in southern Biak and primary



Figure 13. Male Biak Monarch *Symposiachrus brehmii*, Biak, 5 July 2017 (© Daniel Lopez-Velasco)

lowland forest on Supiori, we postulate that this scarce species prefers hill forest and is best searched for in mixed flocks of insectivores. Categorised as globally Endangered by BirdLife International (2021) we concur with Beehler & Pratt (2016) that it may be better classified as Vulnerable.

Breeding 9 July 2009: family party including two young in south-east Biak (Brickle & Tizard 2009).

GOLDEN MONARCH *Carterornis chrysomela* #

Range *C. c. kordensis* Biak, Supiori.

Taxonomy The Biak population is a well-differentiated taxon in which the sexes are very similar in having attractive, deep orange plumage. The nearest populations occur on neighbouring mainland New Guinea; however, Mayr & Meyer de Schauensee (1939) thought that *kordensis* is most closely related to nominate *chrysomela* of New Ireland, in the Bismarcks (Papua New Guinea). Beehler & Pratt (2016) suggested it may warrant treatment as a separate species.

Status Biak endemic subspecies. Widespread and common. Obtained by most collectors and recorded by most visitors. Invariably seen in pairs, often in mixed flocks of insectivores, in well-developed secondary, selectively logged and primary lowland forest, but absent from scrub and poorly developed secondary woodland, to c.610 m (Mayr & Meyer de Schauensee 1939).

Breeding 5 October 2016: pair with a juvenile in the Warafri area (D. Beadle, eBird checklist S32309891).

ISLET MONARCH *Monarcha cinerascens* #

Range *M. c. geelvinkianus* Biak, Yapen and Mios Korwar; *M. c. steini* Numfor, Mafor.

Status Teluk Cenderawasih endemic subspecies. Collected on or near Biak by Laglaize (Meyer 1884). Although possibly overlooked, it is probably confined to small offshore islands rarely if ever visited by collectors or birders. Should be searched for on Rani and the Padaido Islands, in addition to Biak's other offshore islets.

TORRESIAN CROW *Corvus orru* #

Local name Man Wawa (Sansundi; Soeparo 1977).

Range *C. o. orru* Biak, Supiori, Rani, Owi, Wundi, Numfor, Yapen.

Status Resident. Obtained by just two collectors, Feuilletau de Bruyn (Hartert 1932) and Ripley (Mayr & Meyer de Schauensee 1939), but recorded by most visitors. Widespread and common in forest and other wooded habitats to c.305 m (KDB; Supiori). 6 August 2015: two on Rani (N. Voaden, eBird checklist S24512191). 13 January 1994: two on Owi (P. Gregory *in litt.* 2000). 17 July 1994: two on Wundi (D. Roberson, eBird checklist S6813691).

***BARN SWALLOW** *Hirundo rustica*

Range Biak, Rani.

Status Palearctic migrant. Regular migrant to New Guinea in the boreal winter (Beehler & Pratt 2016). 5 August 1983: JD (unpubl.) noted at least some hirundines in town were this species; 19 January 1997: both species of swallow present (D. Holmes unpubl.); 5 August 2018: three (W. Cook, eBird checklist S47710412); and 26 September 2019: three (P. Lansley, eBird checklist S88251212) over the tsunami swamp. 6 August 2015: two on Rani (N. Voaden, eBird checklist S24512191).

PACIFIC SWALLOW *Hirundo tahitica* #**Range** *H. t. frontalis* Biak, Supiori, Numfor, Yapen.**Status** Resident. Widespread and locally common especially in coastal areas and around airport buildings and Kota Biak.**Breeding** 9 January 1997: nesting under roof of hotel at Marauw (SvB).****SOOTY-HEADED BULBUL** *Pycnonotus aurigaster***Range** Biak.**Status** Introduced. 28 January 1995: first noted on Biak, three near the airport; by 16 October 1997 the feral population was thought to be established (D. Holmes unpubl.). Since then, has become moderately common in southern Biak especially around the airport and nearby hotel gardens.**BIAK LEAF WARBLER** *Seicercus misoriensis* # RR, Vulnerable**Range** Biak, Supiori.**Taxonomy** Beehler & Pratt (2016) noted that the Biak taxon is very distinctive and split it as a separate species from nearby Numfor Leaf Warbler *S. maforensis* and mainland New Guinea Island Leaf Warbler *S. poliocephalus*.**Status** Endemic species. Obtained by two collectors but not Ripley (Mayr & Meyer de Schauensee 1939). Seen by very few visitors although eBird records indicate that since 2018 it has been regularly encountered in forest at Warafri in south-east Biak; Gibbs (1993) saw it near Korrido, Supiori, in 1991. The species has a notably long bill and legs, both of which are strikingly coloured (Fig. 14); the difference in biometrics from other leaf warbler taxa presumably relates to a difference in behavioral traits, which further study should seek to elucidate.

Figure 14. Biak Leaf Warbler *Seicercus misoriensis*, Biak, November 2010; note the lack of an obvious pale supercilium, dull coloration and, especially, the relatively long flesh-coloured bill and brightly coloured legs (© Mikael Bauer)

BIAK WHITE-EYE *Zosterops mysorensis* # RR, Near Threatened

Range Biak, Supiori.

Taxonomy Affinities unclear, although the *Zosterops atrifrons* superspecies group (including Halmahera *Z. fuscifrons* and Bacan White-eyes *Z. atriceps*) both bear a strong resemblance to *Z. mysorensis*, and together with New Guinea White-eye *Z. novaeguineae* have been suggested to be sister species (van Balen 2008, Beehler & Pratt 2016).

Status Endemic species. Obtained by four collectors and seen by many visitors. Nevertheless, this distinctive taxon is often scarce, usually encountered in small flocks, seeming to prefer scrub and secondary forest, sometimes quite close to Kota Biak. In July 1982 KDB found it common in flocks of 3–12 from sea level to c.450 m in forest on Supiori.

Voice The song is apparently undescribed, apparently due to its notably infrequent and sporadic vocalisations. SvB noted that in this respect the species is very different from *Z. atrifrons sensu lato* and *Z. novaeguineae*, which are both generally frequent songsters.

[ORIENTAL REED WARBLER *Acrocephalus orientalis*]

G. F. Mees informed M. LeCroy (1969) about a male *orientalis* labelled as being from Soek (= Biak) Island in Teluk Cenderawasih, collected by von Rosenberg and held in the Leiden Museum. The specimen was formerly mounted and the original label is lost. Von Rosenberg collected on Biak in 1869 but, because the specimen is undated, Mees felt it unwise to add this taxon to the New Guinea avifauna on such a basis. Given that *orientalis* has since been collected on the Vogelkop, the Biak record is probably also valid.

***GRAY'S GRASSHOPPER WARBLER** *Locustella fasciolata* #

Range Biak, Supiori, Owi, Yapen.

Status Palearctic migrant. Widespread Palearctic migrant throughout Wallacea (Coates & Bishop 1997) and western New Guinea (Beehler & Pratt 2016). King (1979) collected a male in secondary woodland in southern Biak, in December 1962. KDB & JD found it common during October–April. Several were recorded at c.100 m intervals in low scrub along most roads in southern Biak. 13 and 15 January 1997: one heard singing and calling near Sansundi (SvB). Recorded on Owi in February 1991 (Gibbs 1993) and on 13 January 1994 (P. Gregory *in litt.* 2000).

METALLIC STARLING *Aplonis metallica* #

Local name Man Sinèm (Sansundi).

Range *A. m. inornata* Biak, Supiori, Owi, Numfor; *A. m. metallica* Yapen, Mios Num. Beehler & Pratt (2016) incorrectly listed Biak under *metallica* as well as *inornata*.

Status Resident. Obtained by four collectors and seen by nearly all visitors. Widespread and common in scrub with remnant forest trees, tall secondary woodland and forest edge. 13 January 1994: 30 on Owi (P. Gregory *in litt.* 2000), where also seen by Gibbs (1993).

LONG-TAILED STARLING *Aplonis magna* # RR

Local names Man Pudwar (Sansundi), Manpasio (Kuneff?).

Range *A. m. magna* Biak, Supiori, Owi; *A. m. brevicauda* Numfor.

Status Biak endemic subspecies; Teluk Cenderawasih endemic species. Obtained by all early collectors and recorded by nearly all visitors. One of the most common and widespread species. Its loud tuneful calls are a characteristic sound of forest and edge. In July 1982 recorded virtually continuously from sea level to c.500 m on Supiori and commonly on Biak (KDB). Ripley recorded it to 670 m on Supiori (Mayr & Meyer de Schauensee 1939).

Apparently adapts to extensive degradation of forest habitat; during the 1980s and 1990s it was occasionally seen on lawns of village houses, as well as in native gardens, thickets, scrub, second growth and dense undisturbed rainforest. Unlike *A. metallica* it rarely forms flocks, remaining largely in pairs. Occasionally seen in multiples of two totalling no more than eight feeding at fruiting trees. Above KDB's 1982 Supiori camp at c.300 m the species was very active at fruiting trees, darting in to take fruit as soon as fruit doves departed. 13 January 1994: six on Owi (P. Gregory *in litt.* 2000), where also recorded by Gibbs (1993).

Breeding 5 July 1982: an active nest attended by two adults in an isolated tree in low scrub, 2 km from Biak town beside a road. The nest was c.12 m up and was a large barrel-shaped construction c.25 cm high and 45 cm across, of moderately thin twigs. The entrance was a hole in the side facing out along the branch. Several other apparently inactive nests were noted in similar habitat and in second growth on Biak and Supiori. One nest was in a tall, dead, emergent mangrove *Rhizophora* sp. (KDB).

[*YELLOW-FACED MYNA *Mino dumontii*]

Range Biak, Yapen.

Status Unclear, possibly an escaped cagebird. 12–13 March 1976: some in scrub near Biak airport (Melville 1980); 26 July 1992: several in the same area (KDB).

*GREY-STREAKED FLYCATCHER *Muscicapa griseisticta*

Range Biak, Yapen.

Status Palearctic migrant. Widespread Palearctic migrant to the northern half of western New Guinea (Beehler & Pratt 2016). 10 January 1997: one perched quietly in a low tree near Mambrau; the wings extended further than half the length of the tail and the breast was marked with faint, dark streaks (SvB).

RED-CAPPED FLOWERPECKER *Dicaeum geelvinkianum* #

Range *D. g. misoriense* Biak, Supiori; *D. g. maforense* Numfor; *D. g. geelvinkianum* Yapen, Kurudu.

Status Endemic subspecies. Obtained by most collectors and seen by nearly all visitors. Widespread and common in all wooded habitats.

Breeding 13 March 1976: two nearly fledged young, probably this species, held by children (Melville 1979); 12 January 1997: a well-developed fledgling; 26 April 2007 an adult carrying nest materials (SvB); 24 September 2019: two begging juveniles (P. Lansley, eBird checklist S87711121).

BLACK SUNBIRD *Leptocoma aspasia* #

Local name Man Ésu (Sansundi).

Range *L. a. mysorensis* Biak, Supiori, Owi (subspecies?); *L. a. maforensis* Numfor; *L. a. aspasia* Adi, Yapen, Kurudu; *L. a. nigriscapularis* Rani, Mios Num.

Status Endemic subspecies. *L. a. mysorensis* obtained by six collectors and seen by all recent visitors. Widespread and common in most wooded habitats. *L. a. nigriscapularis* collected by Ripley on nearby Rani (Mayr & Meyer de Schauensee 1939); 6 August 2015: six on Rani (N. Voaden, eBird checklist S24512191). 13 January 1994: seen on Owi but not identified to subspecies (P. Gregory *in litt.* 2000). Mayr & Meyer de Schauensee (1939) remarked that it is 'highly interesting and significant that this form [*nigriscapularis*] occurs so close (<29 km) from *mysorensis*.'

OLIVE-BACKED SUNBIRD *Cinnyris jugularis* #**Local name** Mangnesou (Kuneff).**Range** *C. j. frenatus* Biak, Supiori, Rani, Owi, Numfor, Yapen.**Status** Resident. Obtained by four collectors and recorded by all recent visitors. Widespread and common in gardens, wooded scrub and secondary woodland edge. 6 August 2015: six on Rani (N. Voaden, eBird checklist S24512191); 13 January 1994: seen on Owi (P. Gregory *in litt.* 2000).***HOUSE SPARROW** *Passer domesticus***Range** Biak, Yapen (KDB & JD).**Status** Resident, introduced. First recorded 3 January 1994, one male and two females at Biak airport, carrying food to a nest under the eaves of a warehouse (Holmes 1997). Intriguingly, this species is not well known in Indonesia (Coates & Bishop 1997, Eaton *et al.* 2021) although recently recorded at Sorong (Beehler & Pratt 2016) and a number of locations in Papua New Guinea, the nearest to Biak being Tabubil (Beehler & Pratt 2016).***EURASIAN TREE SPARROW** *Passer montanus***Range** Biak, Yapen.**Status** Resident, introduced. 27 May 1989: 5–6 visiting the eaves of office buildings in Biak town (Holmes 1989). 12 July 1989: record confirmed (S. Nash *in* Holmes 1989). At the time, the nearest known established population was on Ambon, however by 1990 the species was well established on the Sangihe and Talaud Islands, by 1992 Ternate (North Maluku) and 1994 on Halmahera (Coates & Bishop 1997). During the 1990s small numbers continued to be seen in and around the airport, Biak township and some villages. Subsequently, following the establishment of roads and villages, and small towns such as Kota Supiori in the north, this species became widespread.**Breeding** 17 July 2015: one carrying nesting material (location unknown) (C. Pasterczyk, eBird checklist S24640303).***EASTERN YELLOW WAGTAIL** *Motacilla tschutschensis***Range** Subspecies? Biak.**Status** Palearctic migrant. Uncommon but regular Palearctic migrant to New Guinea (Beehler & Pratt 2016). 7 October 1997: SvB saw one at Wadibu, Biak, on a substrate of pebbles and dry sand. It had uniform dirty greyish-yellow underparts, with the breast-sides washed grey, a pronounced pale supercilium, uniform greyish-brown upperparts, wings with several fine pale bars; legs greyish brown; bill with a pinkish gape (?); white outer tail feathers. It pumped its tail and uttered a single *tsreep* in flight. A second bird was seen a short while later in the same area.***GREY WAGTAIL** *Motacilla cinerea***Range** Biak, Yapen.**Status** Palearctic migrant. Common and widespread Palearctic migrant to New Guinea (Beehler & Pratt 2016). 7 October 1997: one along the road at Wadibu, Biak. Also recorded by S. F. Bailey (*in* Beehler & Pratt 2016) but no details. 2 October 2015: two along a forest-lined road near Warafri (R. Tizard, eBird checklist S51365737).**Acknowledgements**

It is a pleasure to acknowledge our debt to the people of Biak and Supiori, in particular at Kuneff, as well as several drivers and guides on Biak who made our field work possible. Frank Antram, Mikael Bauer, Mark

van Beirs, Bruce Beehler (who accompanied SvB in January 1997), Ken Behrens, Phil Chaon, Nigel Collar, Guy Dutton, Derek Holmes, David Gold, Phil Gregory, Mehd Halaouate, Dion Hobcroft, Peter Lansley, Daniel Lopez-Velasco, Stephen Lorenz, Julien Mazenauer, Richard Noske, Tony Palliser, Thane Pratt, Frank Rheindt, Don Roberson, Rob Tizard, Nigel Voaden, Andy Walker and Iain Woxvold all contributed valuable records, photos and information; other observers contributed their records to eBird; Pak Politarius made logistic arrangements on later trips by KDB. KDB thanks Victor Emanuel for the opportunity to guide a couple of tours that included Biak. Sue Hacking kindly prepared the two maps. Jared Diamond made a number of excellent suggestions that greatly improved the manuscript, shared his unpublished observations from Biak and enthusiastically encouraged this paper's development. Ken Behrens was also kind enough to read and comment on the entire draft and at the last gasp added the remarkable record of Short-eared Owl to the Biak list. Two reviewers, Iain Woxvold and Thane Pratt, made numerous constructive and supportive comments which we appreciate. KDB extends special thanks to Nigel Collar who was instrumental in arranging International Council for Bird Preservation (now BirdLife International) funding for the initial 1982 expedition. Our editor, Guy Kirwan, made an important contribution to the accepted version of this paper. David Bishop dedicates this paper to the memory of his mother, Deborah Pauline Lois Bishop, who passed away at the point it was completed. She was a great source of inspiration and support throughout his 45-year-career in the field in New Guinea.

References:

- Ahlman, R. 1996. West Papua. Unpubl. report.
- Anon. 1938. *Atlas van Tropisch Nederland*. Koninklijk Nederlandsch Aardrijkskundig Genootschap, Amsterdam.
- Anon. 2020. [Biak Numfor regencies in figures]. Badan Pusat Statistik Kabupaten Biak Numfor. <https://biaknumforkab.bps.go.id/>. (In Indonesian.)
- Arndt, T. 1992. Die Papageien von Biak. *Papageien* 2: 61–65.
- Arndt, T. 1999. Anmerkungen zur Biologie des Schlegels Spechtpapageis (*Micropsitta geelvinkiana*). *Papageienkunde* 3: 199–216.
- van Balen, S. 2008. Family Zosteropidae (white-eyes). Pp. 402–485 in del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the birds of the world*, vol. 13. Lynx Edicions, Barcelona.
- van Balen, S. & Irawan, F. 2014. First record of Grey Heron *Ardea cinerea* in Flores. *Kukila* 17: 139–141.
- Baptista, L. F., Trail, P. W., Horblit, H. M. & Garcia, E. F. J. 2020. White-breasted Fruit-Dove (*Ptilinopus rivoli*), 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.whbfrd1.01>.
- de Beaufort, L. F. 1909. Birds from Dutch New Guinea. *Nova Guinea, Zool.* 5: 389–420.
- Beehler, B. M. 2007. Papuan terrestrial biogeography, with special reference to birds. Pp. 196–206 in Marshall, A. J. & Beehler, B. M. (eds.) *The ecology of Papua*. Periplus, Singapore.
- Beehler B. M. & Pratt, T. K. 2016. *Birds of New Guinea: distribution, taxonomy, and systematics*. Princeton Univ. Press.
- Beehler, B. M., Pratt, T. K. & Zimmerman, D. A. 1986. *Birds of New Guinea*. Princeton Univ. Press.
- van Beirs, M. 2007. West Papua. Unpubl. report.
- van Beirs, M. 2008. West Papua. Unpubl. report.
- van Beirs, M. 2012. West Papua. Unpubl. report.
- Bengtsson, D. 2008. West Papua. August 2008. Unpubl. report.
- Bishop, K. D. 1983. Some notes on non-passerine birds of West New Britain. *Emu* 83: 235–241.
- Bishop, K. D. 2006. Shorebirds in New Guinea: their status, conservation and distribution. *Stilt* 50: 103–134.
- Bishop, K. D. & Hacking, S. M. 2020. The birds of the Ninigo, Hermit, Sae and Kaniet Islands and adjacent seas, Papua New Guinea. *Bull. Brit. Orn. Cl.* 140: 404–422.
- Boles, W. 2020a. Little Shrikethrush (*Colluricincla megarrhyncha*), 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.rufsht1.01>.
- Boles, W. 2020b. Biak Whistler (*Pachycephala melanorhyncha*), version 1.0. In Billerman, S. M., Keeney, B. K., Rodewald, P. G. & Schulenberg, T. S. (eds.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. <https://doi.org/10.2173/bow.biawhi1.01>.
- Brickle, N. & Wilson, G. 2008. Papua. Raja Ampat, Arfak, Biak, March 2008. Unpubl. report.
- Brickle, N. & Tizard, R. 2009. Papua. Nimbokrang, Wamena, Biak & Wasur, June–July 2009. Unpubl. report.
- Christidis, L. & Boles, W. E. 2008. *Systematics and taxonomy of Australian birds*. CSIRO Publishing, Collingwood.
- Coates, B. J. 1985. *The birds of Papua New Guinea, including the Bismarck archipelago and Bougainville*, vol. 1. Dove Publications, Alderley.
- Coates, B. J. & Bishop, K. D. 1997. *A field guide to the birds of Wallacea: Sulawesi, Moluccas and Lesser Sundas*. Dove Publications, Brisbane.
- Collar, N. J., Crosby, M. J. & Stattersfield, A. J. 1994. *Birds to watch 2: the world list of threatened birds*. BirdLife International, Cambridge, UK.
- Beckers, G., Jacobs, M., Raymaekers, S. & Janssen, K. 2011. West-Papua 22/06–31/07/2011. Unpubl. report.

- Deiner, K., Lemmon, A. R., Mack, A. L., Fleischer, R. C. & Dumbacher, J. P. 2011. A passerine bird's evolution corroborates the geologic history of the island of New Guinea. *PLoS ONE* 6(5): e19479.
- Diamond, J. M. 1972. *Avifauna of the eastern highlands of New Guinea*. Publ. Nuttall Orn. Cl. 12.
- Diamond, J. 1987. Flocks of brown and black New Guinean birds: a bicoloured mixed-species foraging association. *Emu* 87: 201–211.
- Diamond, J. M. & Bishop, K. D. 1994. New records and observations from the Aru Islands, New Guinea region. *Emu* 94: 41–45.
- Diamond, J. M. & Bishop, K. D. 2020. Origins of the upland avifauna of Yapen Island, New Guinea region. *Bull. Brit. Orn. Cl.* 140: 423–448.
- Diamond, J., Mauro, I., Bishop, K. D. & Wijaya, L. 2009. The avifauna of Kofiau Island, Indonesia. *Bull. Brit. Orn. Cl.* 129: 165–181.
- Dickinson, E. C., Kennedy, R. S. & Parkes, K. C. 1991. *The birds of the Philippines: an annotated check-list*. BOU Check-list No. 12. British Ornithologists' Union, Tring.
- Dutson, G. 2006. West Papua and Halmahera 3rd–28th April 2006. Unpubl. report.
- Dutson, G. 2010. West Papua 30 July–28 August 2010. Unpubl. report.
- Eaton, J. A., van Balen, B., Brickle, N. W. & Rheindt, F. E. 2021. *Birds of the Indonesian archipelago: Greater Sundas and Wallacea*. Second edn. Lynx Edicions, Barcelona.
- Ericson, P. G. P., Qu, Y.-H., Rasmussen, P. C., Blom, M. P. K., Rheindt, F. E. & Irestedt, M. 2019. Genomic differentiation tracks earth-historic isolation in an Indo-Australasian archipelagic pitta (Pittidae; Aves) complex. *BMC Evol. Biol.* 19: 151.
- Feuilletau de Bruyn, W. K. H. 1920. *Schouten- en Padaido-eilanden*. Mededeelingen van het Bureau voor de Bestuurszaken van de Buitengewesten bewerkt voor het Encyclopaedisch Bureau, Batavia.
- Feuilletau de Bruyn, W. K. H. 1941. Iets over de fauna van de Schouten-eilanden en de jacht en vischvangst der Biaksi. *Nieuw Guinea* 5: 162–173.
- Forsshaw, J. M. 1989. *Parrots of the world*. Third edn. Lansdowne Editions, Willoughby.
- De Fretes, Y. 2006. The protected area system in Papua. Pp. 1251–1275 in Marshall, A. J. & Beehler, B. M. (eds.) *The ecology of Papua*. Singapore, Periplus Editions.
- Germi, F., Salim, A. & Minganti, A. 2013. First records of Chinese Sparrowhawk *Accipiter soloensis* wintering in Papua (Indonesian New Guinea). *Forktail* 29: 43–47.
- Gibbs, D. 1993. Irian Jaya 1991. Unpubl. report.
- Gibbs, D., Barnes, E. & Cox, J. 2001. *Pigeons and doves*. Christopher Helm, London.
- Gregory, P. 2017. *Birds of New Guinea including Bismarck archipelago and Bougainville*. Lynx Edicions, Barcelona.
- Gregory, P. 2020. Biak Gerygone (*Gerygone hypoxantha*), 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.biager1.01>.
- Hadden, D. 1981. *Birds of the North Solomons*. Wau Ecology Institute, Wau.
- Hartert, E. 1932. Liste der Vögel aus Neuguinea im Buitenzorger Museum in Java. *Nova Guinea* 15: 435–484.
- Henry, C. & Das, S. 2002. The M_w 8.2, 17 February 1996 Biak, Indonesia, earthquake: rupture history, aftershocks, and fault plane properties. *J. Geophys. Res. Solid Earth* 111(B11): 2312.
- Hill, K. C. & Hall, R. 2002. Mesozoic-Cainozoic evolution of Australia's New Guinea margin in a west Pacific context. Pp. 259–283 in Hillis, R. & Muller, R. D. (eds.) *Defining Australia: the Australian Plate as part of planet Earth*. Geological Society of America Special Paper/Geological Society of Australia Special Publication 22.
- Holmes, D. A. 1989. The Tree Sparrow reaches New Guinea. *Kukila* 4: 150.
- Holmes, D. A. 1997. Records of House Sparrows in Irian Jaya. *Kukila* 9: 182–183.
- Hoogerwerf, A. 1971. On a collection of birds from the Vogelkop near Manokwari, north-western New Guinea. *Emu* 71: 1–12.
- Hornbuckle, J. 1991. Irian Jaya 1991. A report of a birding trip to western New Guinea with general advice and a guide to sites. Unpubl. report.
- del Hoyo, J. & Collar, N. J. 2014. *HBW and BirdLife International illustrated checklist of the birds of the world*, vol. 1. Lynx Edicions, Barcelona.
- del Hoyo, J. & Collar, N. J. 2016. *HBW and BirdLife International illustrated checklist of the birds of the world*, vol. 2. Lynx Edicions, Barcelona.
- del Hoyo, J., Collar, N., Christie, D. A. & Kirwan, G. M. 2020. Biak Scrubfowl (*Megapodius geelvinkianus*), 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.dusscr3.01>.
- Jones, D. N., Dekker, R. W. R. J. & Roselaar, C. S. 1995. *The megapodes*. Oxford Univ. Press.
- Joseph, L., Merwin, J. & Smith, B. T. 2020. Improved systematics of lorikeets reflects their evolutionary history and frames conservation priorities. *Emu–Austral Orn.* 120: 201–215.
- Junge, G. C. A. 1956. New bird records from Biak Island. *Zool. Meded.* 34: 231–237.
- Juniper, T. & Parr, M. 1998. *Parrots. A guide to the parrots of the world*. Pica Press, Robertsbridge.
- King, B. 1979. New distributional records and field notes for some New Guinean birds. *Emu* 79: 146–148.
- König, C., Weick, F. & Becking, J.-H. 2008. *Owls of the world*. Second edn. Christopher Helm, London.

- Lane, J. 2002. A Grey Heron *Ardea cinerea* in Busselton, Western Australia: first record for Australia? *W. Austr. Bird Notes* 103: 1–4.
- Layton, L. 1991. *Songbirds in Singapore, the growth of a pastime*. Oxford Univ. Press.
- LeCroy, M. 1969. *Acrocephalus arundinaceus orientalis*, first record in New Guinea. *Emu* 69: 119–120.
- Lewis, M. P. (ed.) 2016. *Ethnologue: languages of the world*. SIL International, Dallas.
- Long, J. L. 1981. *Introduced birds of the world*. David & Charles, Newton Abbot & London.
- MacKinnon, J. & Artha, M. B. 1981. *National conservation plan for Indonesia*, vol. 7: Maluku and Irian Jaya. Field report of UNDP/FAO National Park Development Project INS/78/061. FAO, Bogor.
- Marki, P. Z., Fjelds , J., Irestedt, M. & J nsson, K. A. 2018. Molecular phylogenetics and species limits in a cryptically coloured radiation of Australo-Papuan passerine birds (Pachycephalidae: *Colluricincla*). *Mol. Phylo. & Evol.* 124: 100–105.
- Marshall, J. T. 1978. *Systematics of smaller Asian night birds based on voice*. Orn. Monogr. 25. American Ornithologists' Union, Washington DC.
- Mayr, E. & Meyer de Schauensee, R. 1939. Zoological results of the Denison-Crockett Expedition to the South Pacific for the Academy of Natural Sciences of Philadelphia, 1937–1938. Part I. The birds of the island of Biak. *Proc. Acad. Nat. Sci. Philadelphia* 91: 1–37.
- Mayr, E. 1941. *List of New Guinea birds*. Amer. Mus. Nat. Hist., New York.
- Mayr, E. & Diamond, J. 2001. *The birds of northern Melanesia*. Oxford Univ. Press.
- Mees, G. F. 1961. *A systematic revision of the Indo-Australian Zosteropidae (part II)*. Leiden, E. J. Brill.
- Mees, G. F. 1982. Birds from the lowlands of southern New Guinea (Merauke and Koembe). *Zool. Verhand.* 191: 1–188.
- Melville, D. 1979. Ornithological notes on a visit to Irian Jaya. *PNG Bird Soc. Newsl.* 161: 3–26.
- Melville, D. 1980. Some observations on birds in Irian Jaya, New Guinea. *Emu* 80: 89–91.
- Menkhorst, P., Rogers, D. & Clarke, R. 2017. *The Australian bird guide*. CSIRO Publishing, Clayton.
- Meyer, A. B. 1884. Ueber neue und ungen gend bekannte V gel, Nester und Eier aus dem Ostindischen Arch. im K nigl. Zoologischen Museum zu Dresden. *Abh. naturwiss. Ges. Isis*: 3–64.
- Mitchell, A. 1989. Nicobar nesting colonies in Irian Jaya. *Kukila* 4: 51–52.
- Myers, S. 1997. Trip report: Irian Jaya, September 4–14, 1995. Unpubl. report.
- Ng, E. Y. X., Eaton, J. A., Verbelen, P., Hutchinson, R. O. & Rheindt, F. E. 2016. Using bioacoustics data to test species limits in an Indo-Pacific Island radiation of *Macropygia* cuckoo-doves. *Biol. J. Linn. Soc.* 118: 786–812.
- Pratt, T. K. & Beehler, B. M. 2015. *Birds of New Guinea*. Second edn. Princeton Univ. Press.
- Poulsen, B. O. & Fr lander, A. 1994. Birding Irian Jaya, Indonesian New Guinea. Unpubl. report.
- Rand, A. L. 1942. Birds of the 1936–1937 New Guinea expedition. *Bull. Amer. Mus. Nat. Hist.* 79: 289–366.
- Rand, A. L. & Gilliard, E. T. 1967. *Handbook of New Guinea birds*. Weidenfeld & Nicolson, London.
- Rasmussen, P. C. 1998. A new scops-owl from Great Nicobar Island. *Bull. Brit. Orn. Cl.* 118: 141–152.
- Richardson, I. M. 1997. Biak, 26th–29th November 1996. *PNG Bird Soc. Newsl.* 289: 6.
- von Rosenberg, C. B. H. 1875. *Reisochten naar de Geelvinkbaai of Nieuw-Guinea in de Jaren 1869 en 1870*. Martinus Nijhoff, 's Gravenhage.
- Rothschild, W. & Hartert, E. 1901. Notes on Papuan birds. *Novit. Zool.* 8: 55–88, 102–162.
- Rothschild, W., Stresemann, E. & Paludan, K. 1932. Ornithologische Ergebnisse der Expedition Stein 1931–1932. 1. Waigeu, 2. Numfor, 3. Japen. *Novit. Zool.* 38: 127–247.
- Rowley, I. & Russell, E. 2020. White-breasted Woodswallow (*Artamus leucorhynchus*), 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.whbwoo4.01>.
- Salvadori, T. 1876. Descrizione di cinquantotto nuove specie di uccelli, ed osservazioni intorno ad altre poco note, della Nuova Guionea e altre Isole Papuane, raccolto dal Dr Odoardo Beccari e dai cacciatori del Sig. A. A. Bruijn. *Ann. Mus. Civ. Genova* 7: 896–990.
- Salvadori, T. 1878. Descrizione di trentuna species nuove di uccelli della sottoregione papuana, e note intorno ad altre poco conosciute. *Ann. Mus. Civ. Genova* 12: 317–347.
- Salvadori, T. 1880–82. *Ornitologia della Papuasias e delle Molucche*. 3 vols. G. B. Paravia di I. Vigliardi, Torino.
- Sandy, I. M. 1987. *Iklim regional Indonesia*. Universitas Indonesia, Jakarta.
- van der Schoor, D. 2009. West Papua 18/07–15/08/2009. Unpubl. report.
- Shirihai, H. 2008. Rediscovery of Beck's Petrel *Pseudobulweria becki*, and other observations of tubenoses from the Bismarck archipelago, Papua New Guinea. *Bull. Brit. Orn. Cl.* 128: 3–16.
- Soeparno. 1977. *Kamus Bahasa Biak-Indonesia*. Dept. of Education & Culture, Jakarta.
- Sorensen, M. D. & Payne, R. B. 2005. A molecular genetic analysis of cuckoo phylogeny. Pp. 68–94 in Payne, R. B. *The cuckoos*. Oxford Univ. Press.
- Stattersfield, A. J., Crosby, M. J., Long, A. J. & Wege, D. C. 1998. *Endemic Bird Areas of the world: priorities for biodiversity conservation*. BirdLife International, Cambridge, UK.
- Stresemann, E. 1925. Die V gel von Celebes. *J. Orn.* 73: 299–425.
- Taylor, B. & van Perlo, B. 1998. *Rails: a guide to the rails, crakes, gallinules and coots of the world*. Pica Press, Robertsbridge.

Wardill, J. C. & Nando, T. 2000. Concentrations of wintering Streaked Shearwater off the northern coast of West Papua. *Kukila* 11: 151.

Woxvold, I. & Bishop, K. D. 2020. Vocalizations. In Pratt, T. K. & Beehler, B. M. *Birds of New Guinea*. version 2020.05.2823. Birds in the Hand, LLC.

Addresses: K. David Bishop, P.O. Box 1234, Armidale, NSW 2350, Australia, e-mail: kdbishop@ozemail.com.au. S. (Bas) van Balen, Basilornis Consults, Muntendampad 15, 6835 BE Arnhem, the Netherlands, e-mail: bvanbalen001@hotmail.com

Appendix 1: checklist of the birds of Biak and Teluk Cenderawasih.

END = species endemic to Biak/Supiori or Numfor, end = subspecies endemic to Biak/Supiori or Numfor, TC END = species endemic to the islands of Teluk Cenderawasih excluding Yapen, TC end = subspecies endemic to the Geelvink Islands, PWV = Paelearctic winter visitor, Aus WV = austral winter visitor, R = resident, X = recorded, status unclear, V = vagrant, Intro = Introduced, \$ = same subspecies on Yapen and Biak, SI (final column) = small islands—for details see Table 2. Note: the only birds listed for Yapen are those that also occur on Biak or other Teluk Cenderawasih Islands.

		Biak	Supiori	Numfor	Num	Yapen	SI
Biak Scrubfowl	<i>Megapodius geelvinkianus</i>	TC END	TC END	TC END	TC END		X
Spotted Whistling Duck	<i>Dendrocygna guttata</i>	R					
Wandering Whistling Duck	<i>Dendrocygna arcuata</i>	V					
Raja Shelduck	<i>Tadorna radjah</i>	V					
Rock Dove	<i>Columba livia</i>	Feral					
Spotted Dove	<i>Streptopelia chinensis</i>	Intro					
Great Cuckoo-Dove	<i>Reinwardtoena reinwardti brevis</i>	end	end				
Brown Cuckoo-Dove	<i>Macropygia amboinensis cinereiceps</i>	R				\$	
Brown Cuckoo-Dove	<i>Macropygia amboinensis maforensis</i>			end			
Brown Cuckoo-Dove	<i>Macropygia amboinensis griseimucha</i>				end		
Victoria Crowned Pigeon	<i>Goura v. victoria</i>	R	R			\$	
Nicobar Pigeon	<i>Caloenas n. nicobarica</i>	X		X?	X?		X
Common Emerald Dove	<i>Chalcophaps indica minima</i>	end	end	end	end		
Superb Fruit Dove	<i>Ptilinopus s. superb</i>	R		R		\$	
Moluccan Fruit Dove	<i>Ptilinopus prasinorrhous</i>						X
White-bibbed Fruit Dove	<i>Ptilinopus rivoli miquelii</i>				X	X	
Yellow-bibbed Fruit Dove	<i>Ptilinopus solomonensis speciosus</i>	end	end	end			X
Claret-breasted Fruit Dove	<i>Ptilinopus viridis geelvinkianus</i>	end	end	end	end	X	X
						<i>salvadorii</i>	
Geelvink Imperial Pigeon	<i>Ducula geelvinkiana</i>	TC END	TC END	TC END	TC END		X
Torresian Imperial Pigeon	<i>Ducula spilorrhoea</i>	R	R		X	\$	X
Petrel sp.	<i>Pterodroma rostrata / P. becki</i>	X					
Wedge-tailed Shearwater	<i>Ardenna puffinus</i>	Aus WV	Aus WV		Aus WV		
Streaked Shearwater	<i>Puffinus leucomelas</i>	PWV	PWV	X		X	
Yellow Bittern	<i>Ixobrychus sinensis</i>		PWV				
Black Bittern	<i>Ixobrychus flavicollis</i>	V					
Nankeen Night Heron	<i>Nycticorax caledonicus australasiae</i>	X			X	X	
Striated Heron	<i>Butorides striata papuensis</i>	R	R	X	X	\$	

Cattle Egret	<i>Ardea ibis</i>	X		X	X	
Grey Heron	<i>Ardea cinerea</i>	V				
Great-billed Heron	<i>Ardea sumatrana</i>	X	?			X
Great Egret	<i>Ardea alba</i>	Aus WV				
Intermediate Egret	<i>Ardea intermedia plumifera</i>	X subsp?		X		
Little Egret	<i>Egretta garzetta</i>	Aus WV				X?
Eastern Reef Egret	<i>Egretta sacra</i>	R	X	X		\$
Great Frigatebird	<i>Fregata minor</i>	X				
Lesser Frigatebird	<i>Fregata a. ariel</i>	X	X			X X
Red-footed Booby	<i>Sula sula</i>	X				
Brown Booby	<i>Sula leucogaster</i>	X	X			
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	V		V		
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	V				
Bare-eyed Rail	<i>Gymnocrex plumbeiventris</i>	V				
Rufous-tailed Bush-hen	<i>Amaurornis m. moluccana</i>	R	R			
Biak Coucal	<i>Centropus chalybeus</i>	END	END			
Eastern Koel	<i>Eudynamis orientalis subcyanocephalus</i>					X
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	R? Aus WV				Aus WV
Little Bronze Cuckoo	<i>Chrysococcyx minutillus misoriensis</i>	end				
Brush Cuckoo	<i>Cacomantis variolosus infaustus</i>	R	R	R		\$
Oriental / Himalayan Cuckoo	<i>Cuculus optatus / C saturatus</i>	PWV				PWV
Marbled Frogmouth	<i>Podargus o. ocellatus</i>				X	R
Papuan Frogmouth	<i>Podargus papuensis</i>	R	R	R		\$
Large-tailed Nightjar	<i>Caprimulgus macrurus schlegelii</i>	R	R			\$
Moustached Treeswift	<i>Hemiprocne m. mystacea</i>	R	R	R		\$
Glossy Swiftlet	<i>Collocalia e. esculenta</i>	R	R	R	R	\$
Uniform Swiftlet	<i>Aerodramus vanikorensis yorki</i>	R	R	R		\$
White-throated Needletail	<i>Hirundapus caudacutus</i>			PWV		
Fork-tailed Swift	<i>Apus pacificus</i>	X		PWV		
Beach Thick-knee	<i>Esacus magnirostris</i>	X				X
Black-winged Stilt	<i>Himantopus himantopus</i>	V				
Pacific Golden Plover	<i>Pluvialis fulva</i>	PWV	PWV			PWV
Grey Plover	<i>Pluvialis squatarola</i>	PWV				
Lesser Sand Plover	<i>Charadrius mongolus cf. mongolus</i>	PWV				
Greater Sand Plover	<i>Charadrius l. leschenaultii</i>	PWV				
Swinhoe's Snipe	<i>Gallinago megala</i>	?	PWV			
Little Curlew	<i>Numenius minutus</i>	PWV				
Whimbrel	<i>Numenius phaeopus variegatus</i>	PWV	PWV			PWV
Far Eastern Curlew	<i>Numenius madagascariensis</i>	PWV rare				
Common Redshank	<i>Tringa totanus</i>	PWV rare				

Marsh Sandpiper	<i>Tringa stagnatilis</i>	PWV				
Common Greenshank	<i>Tringa nebularia</i>	PWV				
Wood Sandpiper	<i>Tringa glareola</i>	PWV				
Grey-tailed Tattler	<i>Tringa brevipes</i>	PWV				
Wandering Tattler	<i>Tringa incana</i>	PWV	PWV			
Common Sandpiper	<i>Actitis hypoleucos</i>	PWV	PWV	PWV		PWV
Ruddy Turnstone	<i>Arenaria interpres</i>	PWV				X
Great Knot	<i>Calidris tenuirostris</i>	PWV				
Red-necked Stint	<i>Calidris ruficollis</i>	PWV				
Long-toed Stint	<i>Calidris subminuta</i>	PWV				
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	PWV				
Red-necked Phalarope	<i>Phalaropus lobatus</i>	PWV				
Brown Noddy	<i>Anous stolidus pileatus</i>	X	X			X
Black Noddy	<i>Anous minutus</i>					X
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	V				
Crested Tern	<i>Thalasseus bergii cristatus</i>	X	X			X X
Little Tern	<i>Sterna albifrons</i>					X
Bridled Tern	<i>Onychoprion anaethetus</i>	X		X		
Sooty Tern	<i>Onychoprion fuscatus</i>	V		V		
Black-naped Tern	<i>Sterna sumatrana</i>					X
Common Tern	<i>Sterna hirundo</i>	X				X
Whiskered Tern	<i>Chlidonias hybrida</i>	Aus WV				
Jaeger sp.	<i>Stercorarius</i> sp.	PWV				
Osprey	<i>Pandion haliaetus cristatus</i>	R	R	X		X
Pacific Baza	<i>Aviceda subcristata obscura</i>	end	end			<i>X megala</i>
Long-tailed Buzzard	<i>Henicopernis longicauda</i>	R	R			\$
Gurney's Eagle	<i>Aquila gurneyi</i>	R	R			\$
Brahminy Kite	<i>Haliastur indus girrenera</i>	R	R	R		\$ X
White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	X				X X
Chinese Sparrowhawk	<i>Accipiter soloensis</i>	PWV				
Variable Goshawk	<i>Accipiter hiogaster misoriensis</i>	end	end			
Variable Goshawk	<i>Accipiter hiogaster leucosomus</i>			R		R
Owl sp.	<i>Tyto</i> sp.	?				
Biak Scops Owl	<i>Otus beccarii</i>	END	END			
Short-eared Owl	<i>Asio flammeus</i>	V				
Blyth's Hornbill	<i>Rhyticeros plicatus</i>	X		X		X
Rainbow Bee-eater	<i>Merops ornatus</i>	Aus WV	Aus WV	X		
Dollarbird	<i>Eurystomus orientalis pacificus</i>	Aus WV	Aus WV			
Biak Paradise Kingfisher	<i>Tanysiptera riedelii</i>	END	END			
Numfor Paradise Kingfisher	<i>Tanysiptera caroliniae</i>					END

Beach Kingfisher	<i>Todiramphus s. saurophagus</i>	R	R	X		\$	
Sacred Kingfisher	<i>Todiramphus sanctus</i>	Aus WV	Aus WV	Aus WV		Aus WV	X
Papuan Dwarf Kingfisher	<i>Ceyx solitarius</i>		R			R	
Azure Kingfisher	<i>Alcedo azurea ochrogaster</i>	R	R	R		\$	
Oriental Hobby	<i>Falco severus</i>	V				X	
Australian Hobby	<i>Falco longipennis</i>	Aus WV					
Peregrine Falcon	<i>Falco peregrinus ernesti</i>	X				X	
Peregrine Falcon	<i>Falco peregrinus cf. calidus</i>	PWV					
Sulphur-crested Cockatoo	<i>Cacatua galerita triton</i>	R	R	R		\$	
Red-fronted Lorikeet	<i>Charmosyna rubronotata kordoana</i>	end	end				
Black-capped Lory	<i>Lorius lory cyanauchen</i>	end	end				
Black-capped Lory	<i>Lorius lory jobiensis</i>				R	R	
Rainbow Lorikeet	<i>Trichoglossus haematodus rosenbergii</i>	end	end				
Rainbow Lorikeet	<i>Trichoglossus h. haematodus</i>				R	R	
Black-winged Lory	<i>Eos cyanogenia</i>	TC END	TC END	TC END	TC END		X
Eclectus Parrot	<i>Eclectus roratus polychloros</i>	R	R	R		\$	
Red-cheeked Parrot	<i>Geoffroyus geoffroyi mysorensis</i>	e	e	e			
Red-cheeked Parrot	<i>Geoffroyus geoffroyi jobiensis</i>				R	R	
Geelvink Pygmy Parrot	<i>Micropsitta geelvinkiana misoriensis</i>	TC END	TC END				
Geelvink Pygmy Parrot	<i>Micropsitta geelvinkiana geelvinkiana</i>				TC END		
Hooded Pitta	<i>Pitta sordida rosenbergii</i>	end	end				
Hooded Pitta	<i>Pitta sordida mefoorana</i>				end		
Emperor Fairy Wren	<i>Malurus cyanocephalus mysorensis</i>	end	end				
Emperor Fairy Wren	<i>Malurus cyanocephalus cf. cyanocephalus</i>					R	
Dusky Myzomela	<i>Myzomela obscura rubrobrunnea</i>	end	end				
Helmeted Friarbird	<i>Philemon buceroides</i>	X				R	
Puff-backed Meliphaga	<i>Meliphaga aruensis</i>					R	X
Yellow-bellied Gerygone	<i>Gerygone c. chrysogaster</i>				X	R	
Large-billed Gerygone	<i>Gerygone magnirostris hypoxantha</i>	end	end				
Large-billed Gerygone	<i>Gerygone magnirostris affinis</i>					R	
Hooded Butcherbird	<i>Cracticus c. cassicus</i>	R	R	R		\$	X
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	X					
Barred Cuckooshrike	<i>Coracina lineata maforensis</i>				end		
Black-faced Cuckooshrike	<i>Coracina novaehollandiae melanops</i>	Aus WV				Aus WV	
Biak Triller	<i>Lalage leucoptera</i>	END	END				
Papuan Cicadabird	<i>Edolisoma incertum meyerii</i>				X	R	
Common Cicadabird	<i>Edolisoma tenuirostre meyerii</i>	end	end				
Common Cicadabird	<i>Edolisoma tenuirostre numforanum</i>				end		

Little Shrikethrush	<i>Colluricincla megarhyncha melanorhyncha</i>	end	end				
Little Shrikethrush	<i>Colluricincla megarhyncha obscura</i>					end	
Island Whistler	<i>Pachycephala phaionota</i>						X
Willie Wagtail	<i>Rhipidura leucophrys melaleuca</i>	R	R	R		R	X
Northern Fantail	<i>Rhipidura rufiventris kordensis</i>	end	end				
Northern Fantail	<i>Rhipidura rufiventris gularis</i>					X	X
Spangled Drongo	<i>Dicrurus bracteatus carbonarius</i>	R	R	X		X	
Shining Flycatcher	<i>Myiagra alecto chalybeocephala</i>	R	R	R		\$	X
Biak Black Flycatcher	<i>Myiagra atra</i>	TC END	TC END	TC END			X
Spot-winged Monarch	<i>Symposiachrus guttula</i>					X	X
Biak Monarch	<i>Symposiachrus brehmii</i>	END	END				
Golden Monarch	<i>Carterornis chrysomela kordensis</i>	end	end				
Islet Monarch	<i>Monarcha cinerascens geelvinkianus</i>	?				X—islet?	X
Islet Monarch	<i>Monarcha cinerascens steini</i>				end		
Torresian Crow	<i>Corvus o. orru</i>	R	R	R		R	X
Barn Swallow	<i>Hirundo rustica</i>	PWV					
Pacific Swallow	<i>Hirundo tahitica frontalis</i>	R	R	X		\$	
Sooty-headed Bulbul	<i>Pycnonotus aurigaster</i>	Intro					
Biak Leaf Warbler	<i>Seicercus misoriensis</i>	END	END				
Numfor Leaf Warbler	<i>Seicercus maforensis</i>				END		
Biak White-eye	<i>Zosterops mysorensis</i>	END	END				
Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	?					
Gray's Grasshopper Warbler	<i>Locustella fasciolata</i>	PWV				PWV	
Metallic Starling	<i>Aplonis metallica inornata</i>	R	R	R			X
Metallic Starling	<i>Aplonis m. metallica</i>					X	R
Long-tailed Starling	<i>Aplonis m. magna</i>	TC END	TC END				X
Long-tailed Starling	<i>Aplonis magna brevicauda</i>				TC END		
Yellow-faced Myna	<i>Mino dumontii</i>	X					
Grey-streaked Flycatcher	<i>Muscicapa griseisticta</i>	PWV					
Red-capped Flowerpecker	<i>Dicaeum geelvinkianum misoriense</i>	end	end				
Red-capped Flowerpecker	<i>Dicaeum geelvinkianum maforense</i>				end		
Black Sunbird	<i>Leptocoma aspasia mysorensis</i>	end	end				
Black Sunbird	<i>Leptocoma aspasia maforensis</i>				end		
Black Sunbird	<i>Leptocoma a. aspasia</i>					R	X
Black Sunbird	<i>Leptocoma aspasia nigriscapularis</i>				end		X
Olive-backed Sunbird	<i>Cinnyris jugularis frenatus</i>	R	R	R		\$	
House Sparrow	<i>Passer domesticus</i>	Intro					
Eurasian Tree Sparrow	<i>Passer montanus</i>	Intro					
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	PWV					
Grey Wagtail	<i>Motacilla cinerea</i>	PWV					