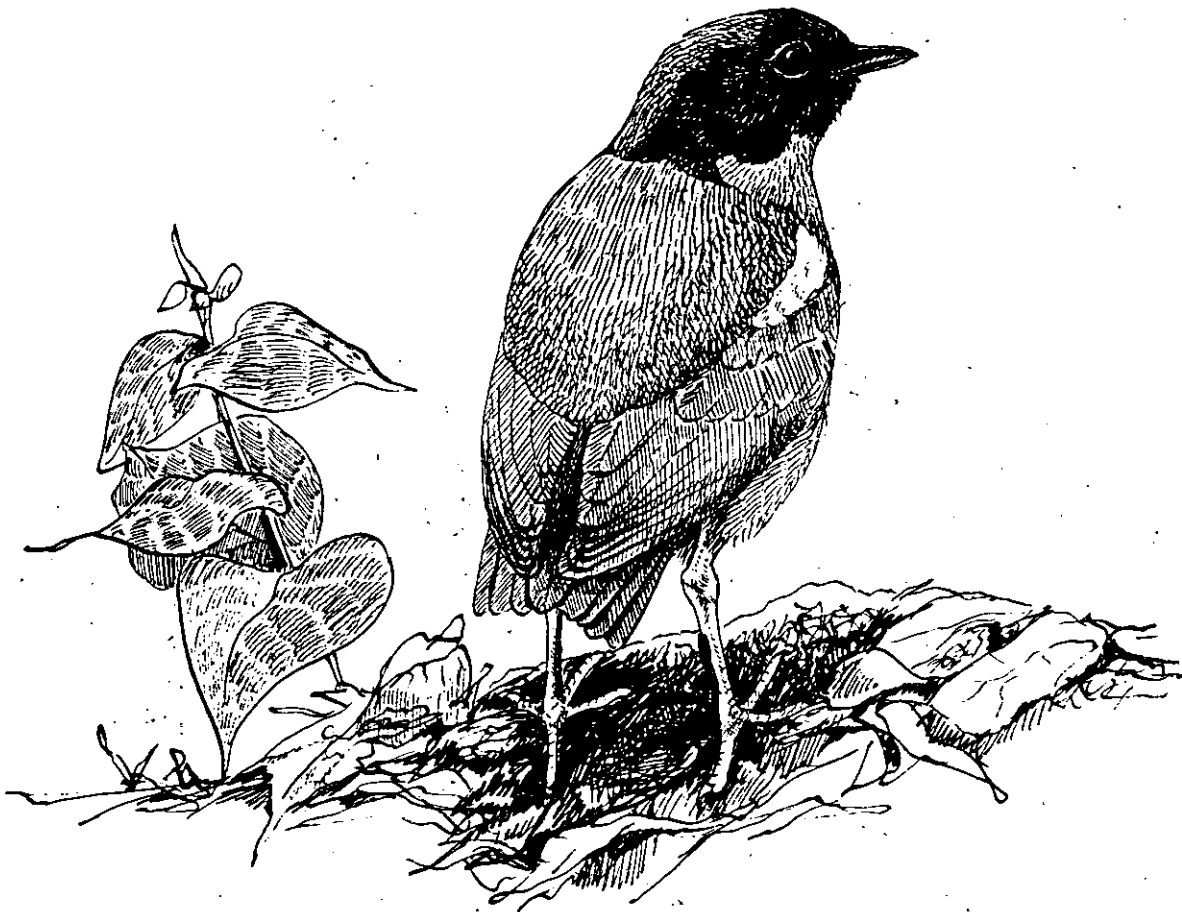


**Birds of Manus, Kolombangara and Makira (San Cristobal) with
notes on mammals and records from other Solomon Islands.**

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Report of the Cambridge Solomons Rainforest Project 1990

Official Cambridge Expedition Charity no. 311460

Contents

Summary	2
Introduction.....	3
Acknowledgements.....	4
Accounts	5
Methods	6
Threats	7
Habitat.....	8
Manus	10
Kolombangara	11
Ghizo.....	12
Guadalcanal	13
Makira.....	14
Three Sisters.....	14
Rennell	14
Bellona	14
Results.....	15
Completeness of the results.....	15
Breeding and the annual cycle	16
Tolerance of disturbed habitats.....	16
Island summaries	18
Red data book species summaries	20
Threatened species.....	23
Near-threatened species	24
Candidate species.....	25
Recommendations.....	25
Priority list for field surveys: habitats and islands.....	26
Priority species for survey	26
Species recovery plans	26
Research on harvested species.....	26
Actions within the Solomon Islands.....	27
Systematic lists: Birds	28
Solomon Islands	60
Manus.....	66
Systematic lists: Other groups.....	68
Mammals	69
Reptiles.....	69
Amphibians	69
Butterflies.....	71
Other insects.....	72
References	75
Appendix 1 Species recorded by the expedition on and around each island group.....	79
Appendix 2 Landbird species previously recorded on the islands visited but not observed during the expedition	80
Appendix 3 Breeding records	81
Appendix 4 Bird densities in forest habitats.....	

Summary

During 1990, a three-man expedition studied rainforest birds on a selection of islands in North Melanesia. Priority was given to islands with concentrations of threatened endemic bird species which had not been studied in recent years. To help land-use planners to conserve their rare and endemic species, data were collected on geographical and altitudinal distribution, population densities and habitat requirements.

Two members of the team spent July exploring Manus in the Admiralty Islands of Papua New Guinea. They succeeded in locating the threatened endemic Superb Pitta *Pitta superba*, demonstrating that it occurred at low densities in the still plentiful primary rainforest. The once common Manus Rufous Fantail *Rhipidura semirubra* was shown to have undergone a major decline. Manus Masked Owl *Tyto manusi* was probably overlooked. Both of these newly split species must be regarded as threatened. Small numbers of the threatened Nicobar Pigeon *Caloenas nicobarica* were present. Healthy populations of the four remaining endemic species were found.

During August and September the Solomon Islands were visited. The islands of Kolombangara and Makira (San Cristobal) received the most thorough attention. Shorter visits were made to the islands of Ghizo, Guadalcanal, Rennell and The Three Sisters (Olu Malau). Of the thirteen bird species believed threatened and 57 species endemic to the Solomons (the biogeographical region including Bougainville) were known to have and known from the islands visited, eight were observed and another threatened species, Christmas Frigatebird *Fregata andrewsi*, was recorded in the Solomons for the first time. The threatened species not observed were San Cristobal Moorhen *Gallinula silvestris*, Moustached Kingfisher *Actenoides bougainvillei*, Thick-billed Ground-dove *Gallicolumba salamonis*, Beck's Petrel *Pseudobulweria becki* and Woodford's Rail *Nesoclopeus woodfordi* along with the newly described Roviana Rail *Gallirallus roviae*. Two near threatened species were found. A total of 45 of the expected 57 Solomons endemics known from these islands was seen. Seven migrant species were recorded for the first time in the Solomon Islands and new evidence was obtained of altitudinal migration by montane species, notably the Melanesian Cuckooshrike *Coracina caledonica*.

On Kolombangara intensive studies were made at all altitudes during August. Most of the forests below 500 m have been logged but extensive tall secondary forest has developed. Five threatened species were found. Small numbers of Sanford's Fish-eagle *Haliaeetus sanfordi* and Nicobar Pigeons were found around the coast and Heinroth's Shearwaters *Puffinus heinrothi* were seen offshore. The montane forests inhabited by the Sombre (Kolombangara) Leaf-warbler *Phylloscopus amoenus* were found to be intact although the warbler was rare. A single Black-faced Pitta *Pitta anerythra* was seen, the first to be recorded on the island. A number of cuckooshrikes *Coracina* of an undescribed form were observed in hill forests.

Extensive areas of primary forest inland along the River Ravo, in northern East Bauro District were studied closely for two weeks in September. Two threatened species were found. Only a single Sanford's Fish-eagle was seen and this species was reported to be hunted by villagers. Yellow-legged Pigeon *Columba pallidiceps* was an uncommon forest species but occurred over a wider altitude range than was previously recorded. Populations of this and other pigeon species are likely to be of conservation significance despite increasing hunting pressure. Chestnut-bellied Pigeon *Ducula brenchleyi* was considered to be globally threatened, whilst a number of other endemic species were potentially threatened by extensive forest clearance.

During visits to Ghizo, small numbers of the threatened endemic Splendid (Ghizo) White-eye *Zosterops luteirostris* were found. The scarcity of this species gives cause for concern as the island is largely deforested. White-eyed Starlings *Aplonis brunneicapilla* were seen on Guadalcanal and were believed to be vulnerable. Large concentrations of seabirds were observed around the New Georgia archipelago and Russell Islands. Populations of terns *Sterna*, noddies *Anous*, Brown Boobies *Sula leucogaster* and Lesser Frigatebirds *Fregata ariel* may be of conservation importance.

Field observations of reptiles, mammals and butterflies were also recorded. No systematic study was made as the specialised methods required were beyond the scope of the expedition. Attention is drawn to an apparently undescribed form of rat *Rattus* on the mountain of Kolombangara.

Introduction

The avifauna of North Melanesia is recognised for its great scientific and conservation importance. A wide range of insular species has evolved on the numerous islands, inspiring the development of a number of biogeographic theories. The majority of the endemic species are forest species with small ranges, many known only from one island. A recent analysis (ICBP 1992) highlighted the importance of the region to the protection of global biodiversity. Statistical methods were used to identify concentrations, dubbed Endemic Bird Areas (EBAs), of restricted-range species. Restricted-range species were defined as having global ranges smaller than 50 000 km². The territory of the Solomon Islands overlaps four EBAs: the Solomon Islands EBA (from Bougainville to Malaita and Guadalcanal), the San Cristobal EBA (comprising Makira-Ulawa Province), the Rennell EBA and the Vanuatu and Santa Cruz EBA. The Solomon Islands EBA alone has 67 restricted-range species, the largest number in any EBA. Some restricted-range species are shared between EBAs but the study clearly demonstrates the global significance of the Solomon Islands. Manus, together with its satellite islands, forms the Admiralty Islands EBA which holds 15 restricted-range species in a relatively small area. The region is still relatively poorly known ornithologically; the discovery of new species and further taxonomic revisions may yet increase its importance. The Roviana Rail *Gallirallus roivanae* was first described to science after our fieldwork finished (Diamond 1991).

Species endemic to small islands are particularly vulnerable to external threats. In Melanesia the main threats are loss of forest habitats and introduced predators. Many of the endemic species are dependent on primary or old growth forests. The rapid clearance and disturbance of forests in recent decades for timber and agriculture is probably the most immediate threat in the region. Rats, cats and pigs are believed to be the main introduced predators. However, the initial introductions of rats (e.g. Pacific Rat *Rattus exulans*) and pigs date back thousands of years and some islands have indigenous rats. Under these historical conditions, birds have either evolved to withstand their depredations or have become extinct. New introductions may be more damaging; native birds have not had to cope with carnivorous predators and so may be particularly vulnerable to cats. Recent deterioration of forest habitats may also reduce breeding success making populations more vulnerable to predators. Terrestrial birds, particularly the Columbidae, Rallidae and Megapodidae are very vulnerable to new predators. Sub-fossil remains demonstrate that a number of megapodes and terrestrial pigeons have disappeared from Fiji since man colonised the Pacific (Watling 1986). More recently, the endemic Choiseul Pigeon *Microgoura meeki*, has probably become extinct and another terrestrial pigeon endemic to the Solomon Islands, the Thick-billed Ground-dove *Gallicolumba salamonis*, has not been seen since around the time of its discovery.

The high concentration of restricted species with imminent threats singles out North Melanesia as a conservation priority. Knowledge of the recent status of many of the endemic species is very limited. Without this information it may not be possible to direct efforts to protect the most urgently threatened species. Full assessment of population trends and the factors influencing them requires years of careful scientific work. Unfortunately, neither the resources, nor the time are available to perform the research. Instead, a habitat based approach may be adopted as a first step to secure species for the future. Basic information on species ranges and habitat preferences can be gathered relatively efficiently to identify areas holding key populations of the species of interest. Such key areas form a basis for the preservation of not only the rare bird species, but, it is now believed that the same areas are likely to be of importance to other animals and plants (ICBP 1992).

Much of the recent ornithological exploration in the Solomon Islands was undertaken by Professor Jared Diamond between 1972 and 1976 (e.g. Diamond 1975, 1987, 1991). Since then, the Maruia Society has built on his work, producing more detailed recommendations for conservation areas (Lees 1991). The island of Manus holds another important concentration of restricted-range species and was even less well known than the Solomon Islands, with only a few visits by birdwatchers in recent years. Therefore, the Cambridge Solomons Rainforest Project set out to augment existing knowledge of birds of the Solomon Islands and Manus. The aim was to collect information on range and habitat, an appropriate and achievable approach for ornithological expeditions.

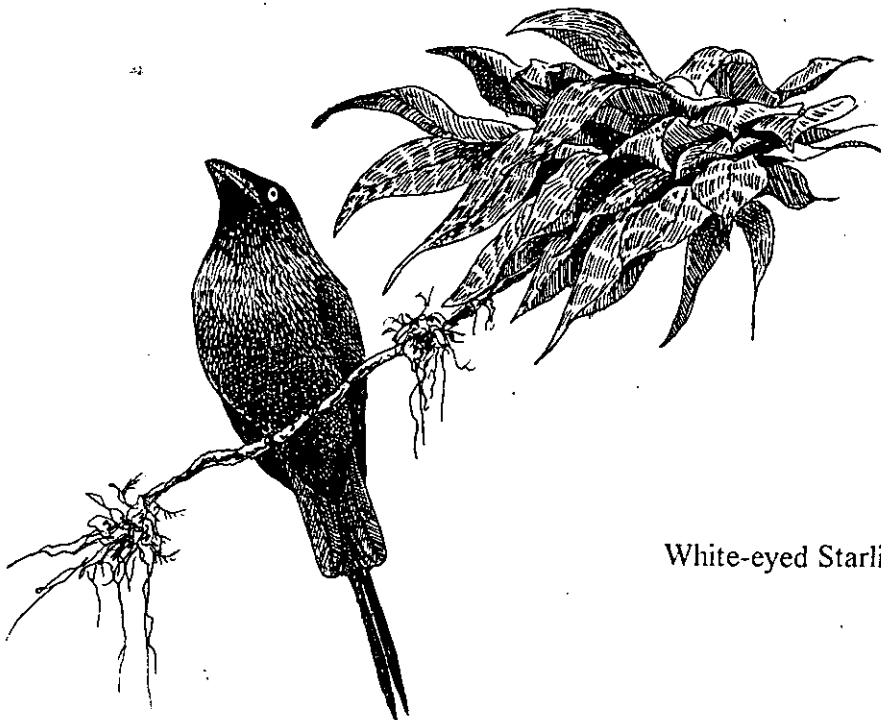
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White-eyed Starling *Aplonis brunneicapilla*

Accounts

Income	£	Outgoings	£
Cable and Wireless plc	1000	International Flights	3600
BirdLife International/FFPS	1000	Internal Flights	680
Cotton Trust	800	Other costs Solomons/PNG	2260
New York Explorers' Club	750	Equipment	385
Selwyn College	500	Administration	335
BOU	350	Loss on exchange rate	220
Peoples' Trust for Endangered Species	350	Left for report production	137
A. J. Burton Charitable Settlement	250		
Condor Conservation Trust	250		
Godinton Charitable Trust	250		
Ernest Kleinwort Charitable Trust	250		
Radley Charitable Trust	250		
Bartle-Frere Exhibition	220		
Cambridge Expeditions Fund	200		
Mary Euphrasia Moseley Fund	200		
Trinity Hall	200		
Vincent Trust	150		
L. A. Cadbury Charitable Trust	100		
Rayne Foundation	100		
Spicers plc	100		
The Wall Charitable Trust	100		
A. S. Butler Charitable Trust	50		
D. M. Charitable Trust	50		
Russell and Mary Foreman Charitable Trust	50		
Dorset LEA	50		
Interpet	50		
King's School Birmingham	50		
E. J. Delahey Esq.	25		
Whitley Animal Protection Trust	25		
Cupal ltd	20		
B. A. Coe Esq.	10		
Total	7750	Total	7750

METHODS

The majority of observations were made from forest paths, known locally as 'roads'. Observations off the path did not suggest that any species avoided the vicinity of paths. As less ground could be covered away from paths and shy birds were able to avoid detection, paths were used wherever they were available. Far more birds were heard than were seen. Inexperience of the calls hampered the collection of systematic data (on Kolombangara we felt moderately competent only after about three weeks of fieldwork).

Transect counts.

Counts made along the paths were treated as transect counts to produce estimates of population densities. The density results should only be regarded as first estimates. The methods used are discussed in more detail with the results in Appendix 4. Island population sizes could, in theory, be derived from the extent of available habitat. This data is not available except in a few special cases (e.g. Sombre Leaf-warbler *Phylloscopus amoenus*).

Point counts

Point counts were not attempted due to the low bird encounter rate. In view of the large variations in habitat over short distances in the predominantly hilly or volcanic ridge/valley landscapes, point counts would have been preferred for identifying habitat preferences had the time been available.

Nocturnal observations.

These were given a low priority as few mammals were identifiable in the field and the calling activity of night birds was low, preventing easy detection (possibly a seasonal phenomenon).

Observations at sea.

Useful observations were made during canoe trips between islands and during voyages on the MV Iuminao. Seawatching from land was occasionally productive.

Other groups.

Other identifiable animals were recorded; these mainly comprised mammals, reptiles and butterflies. These were identified from field notes and photographs: no specimens were taken.

Local knowledge

Villagers were questioned on their knowledge of birds. This was often exceptional. This line of research was hampered by our inability to speak Neo-Melanesian pijin, the regional lingua franca. Also, a set of good bird pictures would have been a distinct advantage for this purpose.

Mist-netting.

We did not apply for permits to trap birds and did not bring mist-nets with us.. This significantly reduced the data collected on moult and breeding activity.

Timing of the survey

The detectability of birds changes according to whether they are breeding or moulting (e.g. territorial species are easily found when they are defending a breeding territory). Current knowledge links the annual cycle of tropical forest birds to the availability of food. Periods of stress, especially moults and breeding attempts, coincide with periods of readily available food (Keast 1985). Often, in practice, food availability is determined by seasonal variations in rainfall. The flush of new plant growth at the start of the rainy season supports increased insect populations which insectivorous birds (e.g. monarchs *Monarcha*) utilise by breeding in the late dry and early wet seasons. Fruit availability varies less predictably and over longer periods. Frugivorous species (e.g. imperial pigeons *Ducula*) wander widely and breed when and where they find sufficient fruit. Raptors tend to breed during the dry season. While the majority of birds will follow these patterns, smaller numbers may breed at any time of the year as the opportunity arises. Similarly, the onset of breeding can alter in response to fluctuations in the timing of the rainy season. For adult birds, the main (full) moult tends to follow the breeding season but it is affected by a number of other factors so the timing may be

less clearly seasonal. Less demanding partial moults (in which the large flight feathers are not replaced) often precede the breeding season in birds of all ages. Very little is known about how closely Melanesian birds follow these patterns but evidence from Papua New Guinea (Beehler *et al* 1986, Coates 1985) suggests that they do.

Birds may also migrate to take advantage of seasonal food abundance. Species such as the Sacred Kingfisher *Todirhamphus sancta* breed in Australia and spend the austral winter in Melanesia. Another strategy, unrecorded in the Solomons, is altitudinal migration. This usually involves birds moving to higher altitudes to breed while conditions are suitable, descending to the lowlands in the meantime.

The Solomon Islands experience a relatively dry season between April and November. This may vary in extent and timing with year and local geography (Harcombe 1988, Blaber 1990).

The expedition fieldwork took place from July to late September, covering the latter half of the dry season. The conventional model predicts the following. Insectivorous species would be leaving mixed species feeding flocks (mainly a non-breeding strategy) to breed, thereby becoming more detectable as they displayed and defended territories. The raptor breeding season would be well advanced. Evidence of breeding and moult was collected to evaluate these hypotheses.

THREATS

The threats to wildlife encountered are as diverse as the islands and their fauna. They are treated in more detail under the site accounts in the Habitat section. The main threat is loss of primary and old growth forests, particularly the vulnerable lowland forms which are naturally restricted in extent on small islands. Causes include commercial and traditional (subsistence) timber extraction. Commercial logging ranges from local industries to large clear felling operations by Korean and other companies. Current rates of logging are estimated to be eight times the sustainable yield, giving the Solomon Islands about a decade before all remaining merchantable timber is logged over (A. Lees *in litt.* 1994). The human population of the Solomon Islands is currently one of the fastest growing in the world (United Nations 1986). Clearance for subsistence farming (shifting cultivation) is a problem due to increasing demands for land. The fallow period between successive gardens is reduced to increase the availability of land. This prevents secondary forests from becoming old growth forest which is of more value to wildlife.

Mineral extraction could become a problem. On Makira a number of newly identified mineral resources, including uranium, are now attracting attention (James Moorea, verbally 1990). Bauxite mining on Rennell may have been averted (South Pacific Commission 1989).

The Melanesian land tenure system is an important limiting factor affecting both conservation legislation and larger development threats. Most land (87%, South Pacific Commission, 1989) in the Solomon Islands is held by customary land owners. The rights of the owners are protected by law and include free and unimpeded use of their land and all the resources it contains. The latter point is an challenge to conservation legislation. Species or habitat based schemes have to be agreed piecemeal by negotiation with the traditional owners. This as been solution has been successfully employed by the Maruia Society in Isabel Province (A. Lees *in litt.* 1994). This process is labour intensive and is further complicated by a frequent lack of agreement over who actually owns which land. While this inertia restricts conservation action it can have its advantages as damaging large scale developments such as plantations or mines are also hindered. Government owned land has no restrictions of this nature and is more vulnerable to large scale developments aimed at earning foreign currency. Much of the impetus for mining proposals on Makira is said to come from the capital, Honiara.

Exploitation of birds for food, an important source of dietary protein for bush inhabitants, is probably sustainable in some areas. However, evidence of increasing commercial hunting was found on Makira. Forest pigeons, particularly imperial pigeons *Ducula* but also ground-doves, *Gallicolumba* and *Chalcophaps*, are taken from the inland forests and traded on the relatively affluent coast. Firearms have superseded traditional hunting techniques and large numbers are now shot. Firearm licensing provides a limited check on over exploitation. Inhabitants of bush-villages see little benefit from either the crop or the trade so they were

exerting political pressure to make gun licenses more readily available. A more considered approach could involve establishing providing scientific advice to landowners to allow them to establish their own sustainable quotas on customary land (Lees *in litt.* 1994). We predict that similar situations exist on Guadalcanal and Malaita. Melanesian Scrubfowl *Megapodius eremita* eggs are over-exploited and villagers in all parts of the Solomons reported a decline in the species.

There is a small pet trade in wild caught parrots within the Solomon Islands. The Yellow-bibbed Lory *Lorius chlorocercus* appears to be the most popular species. Ducorp's Cockatoo *Cacatua ducorpsi* was also popular. This trade is probably sustainable but cannot be expected to remain so if export markets are developed. There is only limited political opposition to trade in native fauna and flora and there are already thriving markets. Legislative measures with stringent enforcement will be necessary to keep the trade sustainable (A. Lees *in litt.* 1994).

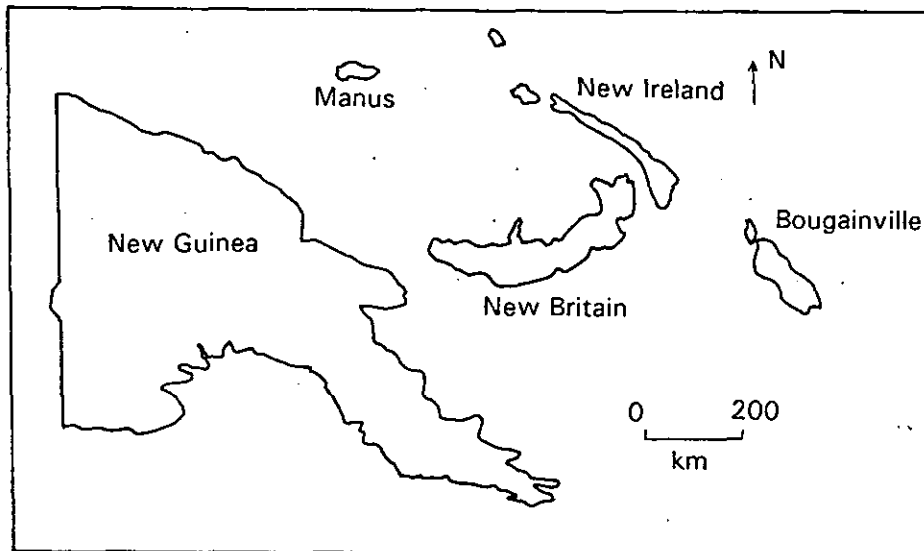
The short duration of the visit precluded any study on the impact of introduced predators but the feral pig *Sus scrofa* appears to be common on Makira and may be a problem. Feral pigs are present on all large islands and introduced rats and feral cats are also widespread (Diamond *in litt.* 1991).

HABITAT

SITE DESCRIPTIONS

The areas visited are described. Information is included on the habitats present and the land use. Trends in land use, including any local threats to wildlife, are described where we have been able to identify them. The dates of the visits and the amount of fieldwork undertaken are given. Distances are given in kilometres (km) and altitudes in metres (m).

Figure 1 Regional map showing the islands visited.



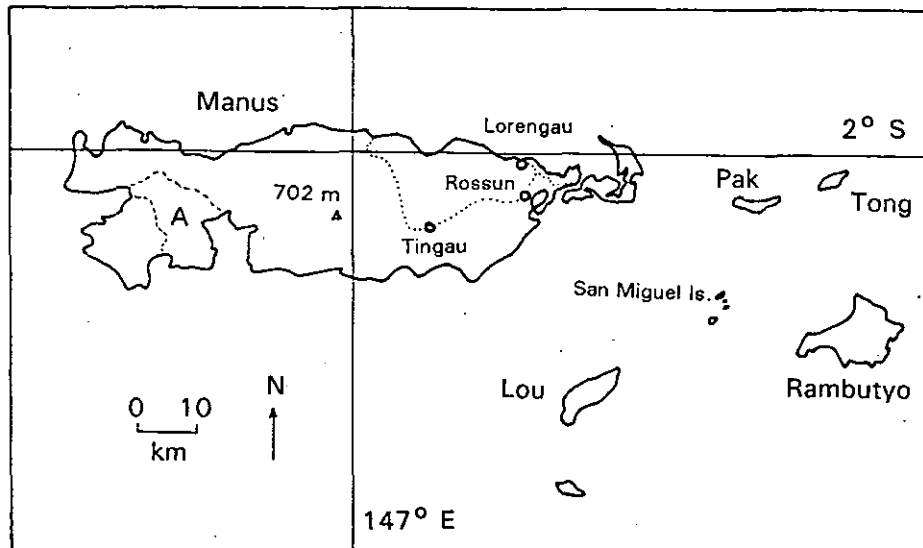
MANUS

24 days

28 June to 21 July

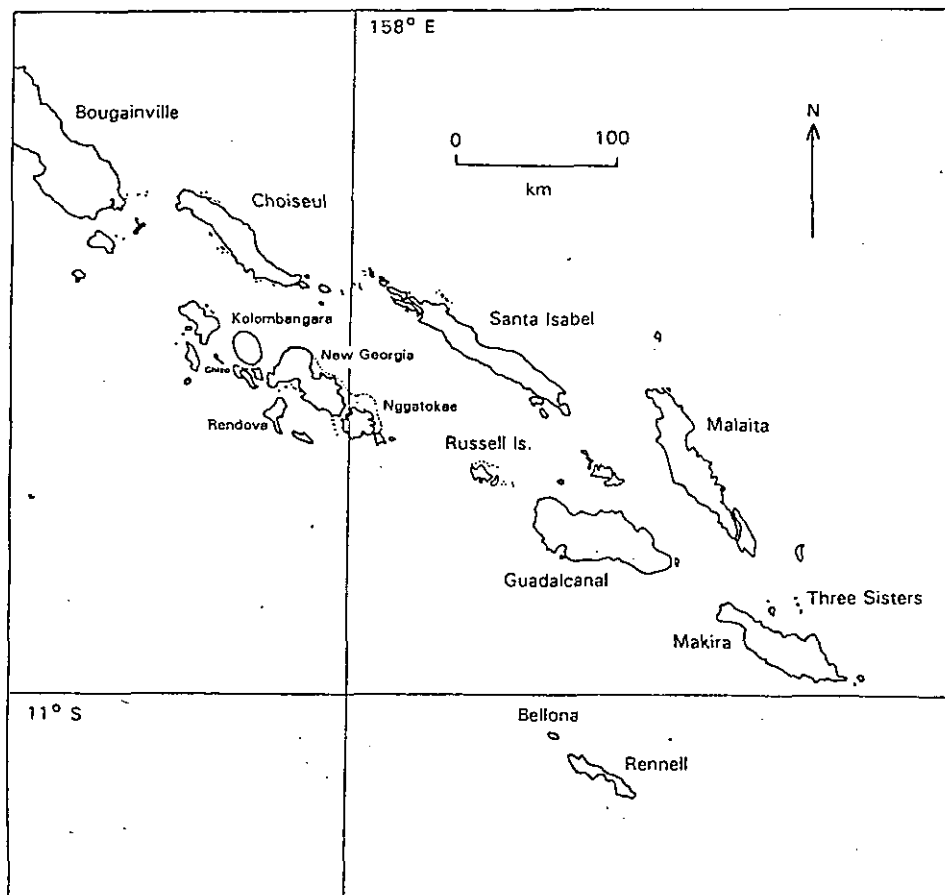
Manus is an isolated island of 1,943 km² which, together with a scatter of small satellite islands, comprise the Admiralty Islands, administered as Manus Province by Papua New Guinea (Figure 1). The hilly terrain is covered in rainforest up to the maximum altitude of 702 m. The majority of the population, estimated at 26,000 in 1980 (Kula *et al.* undated), is concentrated along the coast and the one inland road. Around 80% of the island was primary forest in 1987 (Kula *et al.* undated). The forest was being eroded by shifting cultivation, albeit on a relatively small scale. A number of villages were using portable ("walk-about") sawmills, taking selected trees for domestic use and the sale of planks. There was a 211 km² logging concession in the west of the island. About 20 km² of lowland forest between 0 and 210 m was surveyed. Roughly 5 km² of this area was primary forest.

Figure 2 Study sites on Manus (A: logging concession).



The study area was centred on the village of Rossun (Warembu) and the provincial capital Lorengau in the east of the island (Figure 2). The study area met the sea at Lomuchei Inlet, an area of mangroves at the estuary of the River Luis. Patamu, a small coralline island lay just offshore from Lomuchei Inlet. The larger island of Baluan was visited on 1 July. The main island road was followed west as far as Tingau and the nearby Polomou Mine on 19 July. The western end of the island was not visited.

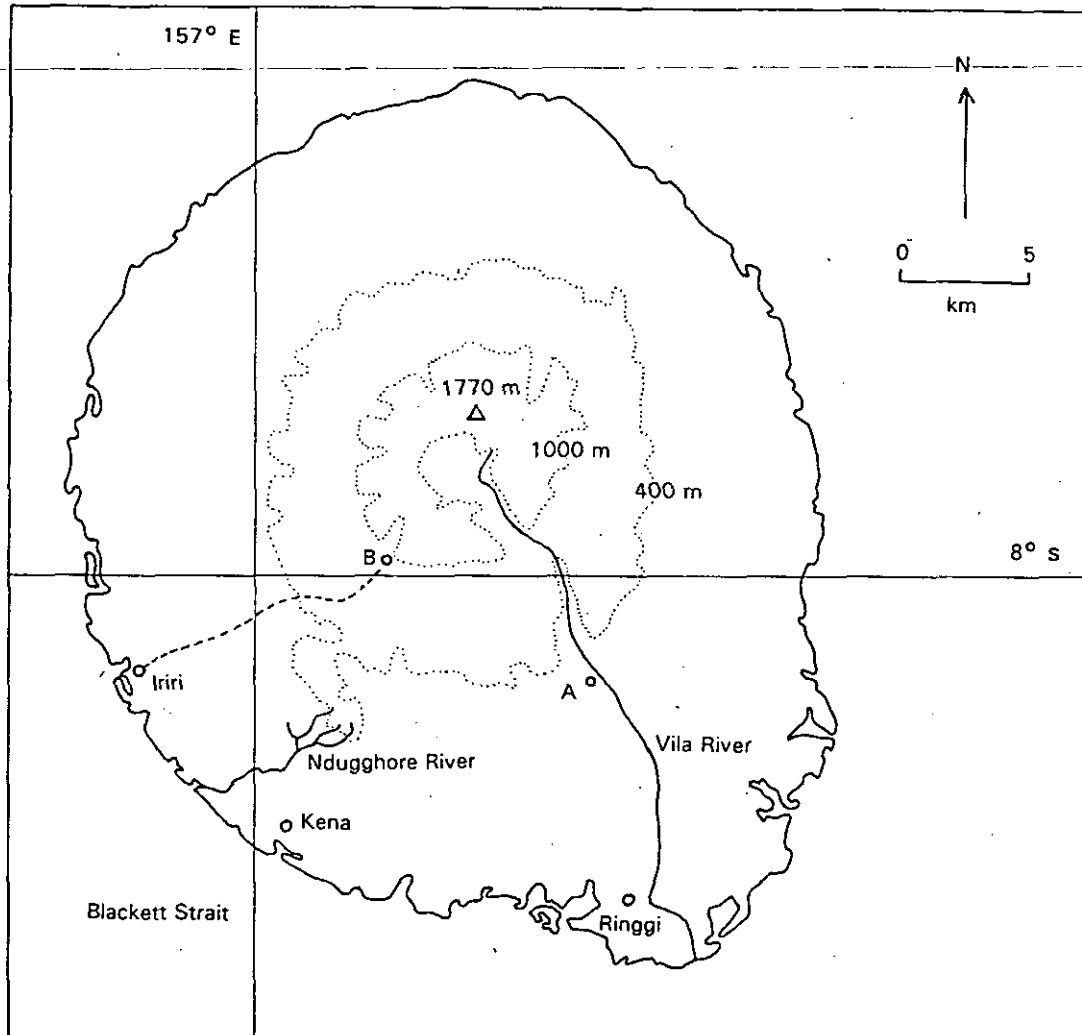
Figure 3 Islands visited in the Solomon Islands.



KOLOMBANGARA 1-25 August

The island comprises an extinct volcano with a large central crater. The crater has an almost continuous rim, rising to 1770 m, which largely prevents access to the primary forests within. Approximately three quarters of the coastal forests below 500 m have been logged. The most extensive surviving primary forest extends down to sea-level on the south-west side of the island, around Irii. There is considerable opposition to further logging both from islanders and the provincial government. The reasons given included the scale of concession payments and the resulting environmental damage. Korean logging operations on nearby New Georgia were described by villagers as significantly worse on both counts. Human impact on the forests is limited by the exclusively coastal distribution of villages. Four areas were visited: Kena, Ringgi, Irii and the mountain above Irii (Figure 4)

Figure 4 Study sites on Kolombangara. (A: forested ridge at 350 m B: camp at 940 m).



Kena. 8 days 1-25 August

A tall spur nearly meets the coast at Kena, dividing the catchments of the Rivers Ndugghore and Malanga. The spur ends at Hipera Mountain (local name) at about 300 m above sea-level and 2.5 km inland. Streams flowing off the spur are small allowing easy access to the surrounding area. The narrow (under 1 km) coastal plain, derived from reef sand and silt deposition, is low-lying and swampy. To the west of Kena, areas surrounding small villages are mainly planted with coconuts. Limited patches of littoral and mangrove survive around lagoons. The coastline comprises reef flats and beaches of sand and silt. The low, rounded foothills (up to 160 m) hold secondary forest following the logging operations of Levers Pacific Timbers in the 1970s. Canoe trees (*Arakoko Gmelina moluccana*) were retained for customary use by agreement during logging operations. Most of the land adjacent to Kena supports active gardens; only one recently abandoned

garden was noted. This indicates a growth in subsistence farming to feed the rapidly expanding population. To the west of Kena there is young secondary growth, under 10 m tall, with dense fern growth in clearings. West facing slopes, in the lee of prevailing winds, are damper with lush vegetation, including more palms and plantains. Older secondary forest lies to the east of Kena. The Nduggshore Valley has old growth forest, historically under cultivation, but now resembling tall, lowland primary forest. Above Kena, narrow ridges and deeply dissected valleys flank Hipera Mountain. This area is forested and has a history of sustainable use. Near the village, increasing use is degrading the forest understorey. The forests include numerous old, large-girth trees up to 25 m tall, with a well-developed understorey and relatively sparse undergrowth. Tree stems are denser in the valleys than on the top of the spur. A natural secondary succession including dense palms, creepers and strangler figs occupies the exposed, narrow ridge tops.

Ringgi

2.5 days 10-13 August

This was the base for Lever's logging operations on Kolombangara. An extensive area below 500 m altitude has been logged. This has now been taken over by KFPL (Kolombangara Forestry Project Ltd), a joint Overseas Development Agency/Solomon Islands government venture. KFPL are establishing various experimental forestry plots and a large commercial plantations of fast-growing trees including non native Eucalypts and *Molinaea arboresca*. A narrow reserve, following the River Vila, supports secondary forest. Near Ringgi Cove, much of this has been lost to unsanctioned gardens, a symptom of a (politically sensitive) lack of land for subsistence farming within the old plantation. These gardens were to be closed down in 1990. The River Vila is fast flowing with banks of gravel and it becomes braided where it passes the village. Areas of old secondary or selectively logged forests surround the airstrip. Secondary growth, swampy in places, lines the road to the wharf. Mangroves occur south of the wharf and there are black sand beaches on Point Vila. Ringgi Cove, now the KFPL residential campus, has an open plan with large areas of lawns and scattered trees. Inland, swampy valleys and areas more distant from Ringgi escaped heavy logging and retain tall trees and tree ferns. The lowest surviving primary forest occurs at 350 m on a broad ridge. A nature trail was being cut by KFPL employees from this ridge to the mountain top.

Iri.

1 part day 13 August

This is another thriving village with extensive gardens, coconut plantations and areas of secondary forest extending along the coast and inland to 80 m altitude. The coast near the village comprises reefs, black sand beaches and small areas of mangrove. There is a lagoon by the village. Inland there are extensive primary forests. A small scale local timber industry was exploiting the forest.

Mountain above Iri

11 days 14-24 August

All the forests here are primary or old growth forest. On the exposed ridge tops from 470 m upwards, mist forest appears. Here, mosses and the Pandanale *Freycinetia* replace the sparse leaf litter and palms found in the lowland forests. Canopy trees become sparser and shorter with altitude. Above 1300 m ridge tops hold moss forest with closed, stunted scrub, heavily laden with moss and some patches of bamboo. Areas of secondary growth were seen on what appeared to be old landslides.

GHIZO

2.5 days 30 July-27 August

This is the largest island in a small archipelago. It is less than one tenth the size of Kolombangara and rises to 180 m at its highest point. The provincial capital, Gizo, is situated on the east end of the island (N.B. the spelling of the town and island names). No substantial primary forest survives. Approximately 0.5 km² of customary land to the north of Gizo appears to be forested but this may be mangrove. Most of the island is under coconut and commercial tree plantations. Semi-natural forest is restricted to swampy valleys, small groves and strips along roads and boundaries. The swampy valley to the west of the town of Gizo has scattered tall trees holding rich epiphyte communities; these may be remnants of old growth forest. Pastures have been established beneath plantations by a land development agency project, many have become fern infested. The coastline consists of reefs and sandy beaches with restricted areas of mangrove. Most observations were made in the east of the island, between Titiana and Gizo. One expedition member walked the full length of the island using each of the two roads to Sagheraghi.

Three smaller islands to the east of Gizo were visited. Mbambanga (or Long Island) is dominated by coconuts. J.F.Kennedy Island is a flat, sandy islet covered in *Casuarina* and *Barringtonia* trees. Sagharughombe lies just to the east of J. F. Kennedy Island: it is a tiny raised block of reef covered in coral debris and a few small trees.

GUADALCANAL

26 July-28 September

This is the largest island in the Solomon Islands. A range of mountains runs from north-west to south-east along the whole length of the island, climbing to 2447 m on Mount Makarakombu. There is a marked rain shadow effect, the mountainous south of the island (the weather coast) receiving most of the rain. The lower hills and plains of the north are more extensively settled and hold old grasslands created by dry season burning. Recently, the fertile coastal plains have been used for rice growing and, following the disastrous Cyclone Namu, for large oil-palm plantations. Cattle farming is increasing despite low yields and trials are in progress (at Dodo Creek Research Station by the Department of Agriculture and Lands) to introduce rabbit rearing. Short visits were made to five areas. Four of these were near the capital, Honiara. These were the Botanical Gardens, Henderson Airport, the new Selwyn College and Mount Austen. The fifth area was Avuavu/Hailali (Mount Sinoli) on the weather coast.

Botanical gardens 8 visits 27 July-26 September

The gardens are mature parkland of native species set in a wooded valley between Honiara and Rove. Degraded forest fragments along the valley link the gardens to forests inland. Housing development around Rove has replaced habitats which previously held Melanesian scrubfowl (Harcombe 1988). Dry grasslands cover the foothills above Rove and Honiara.

Henderson Airport 13 visits 25 July-28 September

The airport is on the coast to the east of Honiara. It has large areas of mown grass and is surrounded by plains grassland, up to 1.5 m tall. The River Lungga flows past the airport. Its flood plain contains gardens with a few small oxbow pools, fringed by reedswamp.

Selwyn College 1 visit 26 July

The new College is being built on the coast road to the west of Honiara. It is set in cultivated land and is backed by hilly secondary forest.

Mount Austen 3 days 28 August, 1 and 27 September

Mount Austen is next to the River Lungga about 10 km inland. An access road was built for an hydroelectric project in the Lungga Valley which was abandoned. This has enabled local entrepreneurs to remove most of the timber, leaving scattered trees amongst dense secondary growth. An experimental plantation by the road includes a large variety of species but undergrowth is suppressed. At the end of the road, the Lungga Valley is deep and steep sided with limestone cliffs. The river is rocky with shoals of gravel. Secondary forest grows on low berms where it is vulnerable to flood damage. Most of the upper Lungga catchment appears to hold primary forest. The area is part of the Queen Elizabeth II Park. Due to a lack of protection, only about 1000 km² of the 6000 km² of forest originally designated remains (SPREP 1989).

Avuavu/Hailali 2.5 days 24-26 September

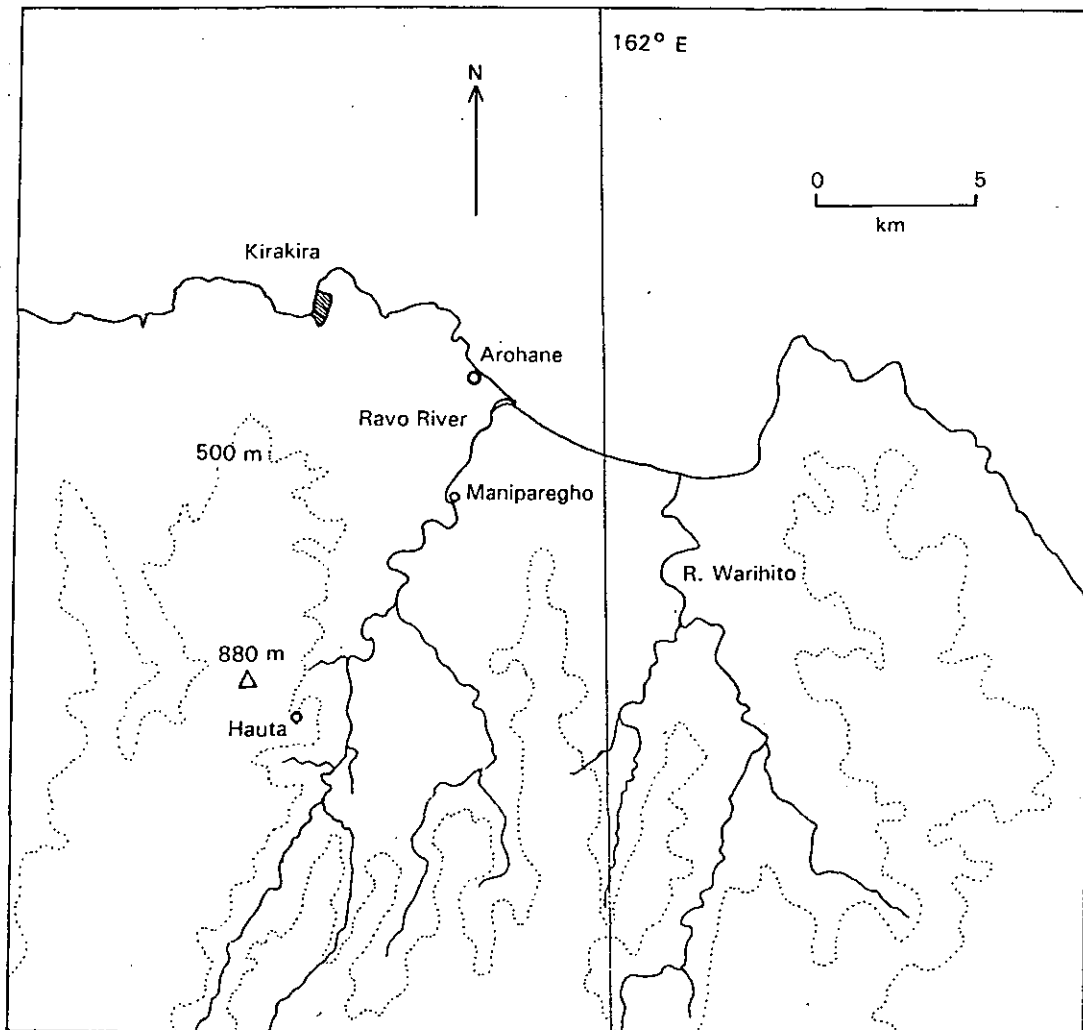
The south coast from Avuavu to the Lauvi Lagoon consists of a shallow ridge of coarse sand, above a steep beach, dividing a band of shallow swamps from the sea. The swamps hold reedswamp, ferns and low swamp forest. Lauvi Lagoon is a larger area of open water, linked to the sea. Coconuts are grown along most of the sandy ridge. Large areas of foothill forest around Avuavu have been cleared for gardens but much forest remains further inland. The River Bolavu flows down from the mountains at Avuavu. It is a typical large, weather coast river, having a constantly changing braided structure, flowing over rocky gravel beds. Secondary *Casuarina* forest colonises these flats between successive debris flows caused by cyclones. As on Kolombangara, the forests are taller and denser in the valleys than on the ridges where they are sparser with mosses and *Freycinetia* in the undergrowth. Cyclone damage to trees is common. The village of Hailali was visited. The village gardens and areas of secondary growth occupy a sheltered valley at 1000 m, near the summit of Mount Sinoli.

Viewed from the air, large landslides, started by earthquakes, are a prominent feature in the mountains, and large fans of sediment issue from the weather coast rivers. There is extensive deforestation on the northern foothills. At higher altitudes, damage is more restricted. The forests around Gold Ridge are devastated and the rivers flowing from here indicate severe erosion. Mining here was suspended in 1990 pending an assessment of its effects (to be made by Dominic Fanning, Taronga Zoo, Sydney, Australia).

MAKIRA **2-16 September**

This is the easternmost large island in the Solomons. It has an east-west mountain range but this is lower than on Guadalcanal, rising to just 1040 m. The southern coast (weather coast) is almost unpopulated. We visited East Bauro District, on the north coast, centred on Kirakira the island capital (Figure 5). Here the population has shifted to the more prosperous coast, abandoning many bush villages. Demand for land on the coast has increased its value, forcing poorer Makirans to recolonise the interior as populations grow. We visited one of the new bush villages, Hauta. This is about 10 km inland, above the valley of the River Ravo.

Figure 5 Study sites on Makira.



Hauta **6 days** **5-12 September**

To the west of Hauta the Ravo Valley is bordered by a 900 m high ridge. The village of Hauta is on the north side of a 600-700 m high spur, surrounded by deep, narrow valleys, which lead off the ridge. Stunted montane forest with moss and *Freycinetia* occurs at the top of the ridge above 850 m but it is not as well developed as on Kolombangara. There are extensive gardens around Hauta and its neighbouring villages. The adjacent forests show evidence of exploitation for timber and forest products along the paths. Tall primary forests remain, notably on the south side of the Hauta spur. Continuous primary forests stretch south

from roughly 15 km inland into Ravo District. The forests here are wet and land snails are common (none was observed on other islands).

Ravo Valley 3 days 4-14 September

The River Ravo is broad with rocky flats and rapids. The limited areas of flood plain hold secondary forests showing evidence of frequent flood damage. Small riverside settlements at Hunari, 5 km inland, and Maniparegho, at the end of the valley, were visited. In the foothills above Maniparegho there are superb old growth forests including stands of trees up to 40 m tall. Denser patches of undergrowth here indicate abandoned settlements but most of the forest floor is open, more typical of primary forest interior.

The North Coast 3.5 days 14-16 September

Below Maniparegho the flood plain is wholly under gardens and secondary growth. Coconut plantations cover most of the coastal plain and there is little secondary growth. The adjacent foothills are cleared for gardens. A cattle breeding enterprise near Arohane owns an area of rough grassland. The beaches are sandy and long-shore drift sandbars cut off most streams. The River Ravo has a small estuary at Arohane with small areas of sago swamp, mangrove, sand and mud flats.

THE THREE SISTERS (Olu Malau) 3 September

The southern (Malaupaina) and central (Malaulalo) islands have changed little since they were described in the 1950s (French 1957). Malaupaina has a large lagoon surrounded by coconut plantations on the east and south sides. The north end of the island holds dry, littoral forest on coral talus, with abundant *Pandanus* and several sedge swamps. There is a coconut plantation in the centre of Malaulalo, surrounded by shallow swamps. The swamps hold scrub, ferns and sedges. The island is grazed by cattle so grassland replaces undergrowth beneath the coconut palms and an area of secondary growth within the plantation. Only Malaupaina is inhabited. The northern island Ali'ite was not visited.

RENNELL 3.5 days 18-21 September

This island is a raised coral atoll. The surface of the island is nearly flat. The ground is comprised of rugged coral talus, covered in moss. It is too porous to hold standing water or streams. Due to the rugged terrain, logging is restricted to small scale operations (using a portable sawmill) along the road. Gardens and villages are scattered along the road in the more fertile areas. Primary forest occupies most of the island. This is not very tall (up to 20 m), possibly due to wind damage. We visited Lavanggu and the airstrip at Tinggoa. Due to bad weather and a lack of boat transport we could not visit Lake Te'Nggano. The village of Lavanggu contains coconut palms with grassland beneath. There are gardens a short distance into the forest. Japan Mountain, a forested rocky outcrop, 150 m tall, lies next to the village. The inhabitants of Lavanggu had an above average knowledge of the wildlife of the island, even by the high standards common in the Solomons. At Tinggoa, there are extensive gardens and areas of secondary growth surrounding the grass airstrip.

BELLONA 2 visits 18-21 September

This is a small version of Rennell with next to no surviving forest. We visited the grass airstrip, en route to Rennell.

RESULTS

Completeness of the results

A checklist of the species we recorded on (or near) each island group is presented in Appendix 1. Periods of fieldwork were undertaken on six islands, the numbers of species observed on these islands are summarised in Table 1. Of these, Kolombangara, Makira and Manus received the most thorough attention and almost all the species of landbirds previously recorded upon these islands (Mayr 1945) were found.

Table 1 Summary of species recorded on the islands visited.

Number of species	Total	Landbirds (% total)	Landbird migrants	Landbirds missed	Seabirds	Waders
Kolombangara	89	79 (92)	5	7	6	4
Ghizo	58	44 (80)	1	11	7	7
Guadalcanal	88	67 (63)	3	39	12	9
Makira	81	73 (90)	2	8	2	6
Three Sisters	36	21 (45)	1	26	8	7
Rennell	36	27 (69)	1	12	7	2
Manus	69	53 (91)	3	5	10	3

The number of landbird species (including migrants) recorded previously on each island but missed by us is included in Table 1 and the unrecorded species are listed in Appendix 2. Many are shy, cryptic species which one could not reasonably expect to find during a short visit. Rails *Rallidae*, small herons *Ardeidae*, nightbirds and terrestrial species are known to be elusive. Similarly, one cannot expect to find all the scarce migrants like Fan-tailed Cuckoo *Cacomantis pyrrhophamus*. Most of the remaining unrecorded species occur in habitats which were not visited. These include 13 montane species on Guadalcanal and four aquatic species known from Lake TeNggano, Rennell.

In the Solomon Islands, the most notable omissions were the four threatened species Woodford's Rail *Nesoclopeus woodfordi*, San Cristobal Moorhen *Gallinula silvestris*, Thick-billed Ground-dove *Gallicolumba salamonis* and Moustached Kingfisher *Actenoides bougainvillei* along with the newly described Roviana Rail *Gallirallus rovianae*. Given the time spent on Kolombangara, it is surprising that we failed to record Roviana or Woodford's Rails, suggesting that they are uncommon. Neither species is confirmed to be present here although there are possible sightings and reports from villagers (Finch 1985, Diamond 1991). Weather coast primary forests were not examined extensively on Guadalcanal and Makira, reducing our chances of finding Moustached Kingfisher, Woodford's Rail and San Cristobal Moorhen. One of the two known specimens of Thick-billed Ground-dove was taken on Makira. It is now either very rare or does not occur in the habitats we visited. Ian MacAllan (verbally 1990) suggested that the unexplored swamps of Makira may hold the species. The paucity of records of large landbirds, particularly Sanford's Fish-eagle *Haliaeetus sanfordi*, Osprey *Pandion haliaetus* and Melanesian Scrubfowl, from the larger, more developed islands was noteworthy.

On Manus, two threatened species were not recorded. Manus Masked Owl *Tyto manusi* has not been recorded recently though one may predict that it is difficult to find in the field, like its Australian congener Masked Owl *T. novaehollandiae*. Manus Rufous Fantail *Rhipidura semirubra* has only been recorded in recent years on the small offshore island of Tong, suggesting that it has declined (Dutson and Newman 1991).

Breeding and the annual cycle

Records of breeding activity are presented in Appendix 3. A few insectivorous species were observed breeding but mixed species feeding flocks were still a prominent feature at this time. These included

numerous young monarchs *Monarcha*, some of which were still being fed by adults although the post juvenile moult was well advanced. Our records suggest that we arrived as the insectivore breeding season was beginning but that the start was not as clearly defined as in Northern Europe. Several raptors were also breeding. These observations fit the accepted seasonal model. The nests of four species, Sanford's Fish-eagle, Pied Goshawk *Accipiter albogularis*, Meek's Lorikeet *Charmosyna meeki* and Cardinal Lory *Chalcopsitta cardinalis* are described for the first time.

Little evidence of moult was obtained. Near complete descendant tail moult was seen in some adult Kolombangara Monarchs *Monarcha browni*. These were probably near the end of the annual full moult prior to the next breeding season. The post juvenile moult in some species, particularly the White-capped Monarch *Monarcha richardsii*, was very protracted. This is a recognised adaptation to poor food availability in tropical forests.

Evidence was obtained indicating altitudinal migration. The Melanesian Cuckooshrike *Coracina caledonica* was previously described as a rare, montane species in the Solomons (Cain and Galbraith 1956). We found it to be widespread, locally common at sea level and found evidence of breeding, at altitude, in September. While this is consistent with altitudinal migration, the data is still too scanty to prove it occurs. Similar observations were made for the Grey-throated White-eye *Zosterops rendovae*. Daily foraging movements to lower altitudes were made by Pale Mountain Pigeons *Gymnophaps solomonensis*, Meek's and Duchess Lorikeets *Charmosyna margarethae*. We suspected that breeding birds returned daily to the mountain tops while non-breeders spent longer periods at lower altitudes.

The only long distance migrants observed regularly on the Solomon Islands were Sacred Kingfisher and Shining Bronze cuckoo *Chrysococcyx lucidus*. Both species became scarce by the start of September, a little in advance of normal departure dates from Bougainville (Hadden 1981). These species were usually in disturbed, secondary habitats. In Africa, there is believed to be less competition from specialised resident forest species in secondary habitats (Thiollay 1985). Rainbow Bee-eaters *Merops ornatus* were common on Manus in July but none were seen subsequently on the Solomon Islands. Five presumed vagrants were recorded on the Solomon Islands. Of these, Forest Kingfisher *Todirhamphus macleayi* could be a regular visitor or even a scarce breeder. Australian Pelican *Pelecanus conspicillatus*, Plumed Whistling-duck *Dendrocygna eytoni* and Little Black Cormorant *Phalacrocorax sulcirostris* are likely to have been displaced by cyclones. One vagrant, Great Egret *Casmerodius (Egretta) albus* was observed on Manus

Tolerance of disturbed habitats

Some species are dependent upon primary or old growth forest. Others use secondary or cleared habitats sparingly but are probably still dependent on primary forests or at least on surviving tall trees. Others are dependent on primary forests for breeding but not necessarily for feeding. Such species are vulnerable to degradation or clearance of forests. Of these, species with small ranges, especially those endemic to single islands, are particularly vulnerable and are a priority for conservation action. On the basis of field observations and transect data, species falling in these categories are presented in Table 2. This is by no means a comprehensive list as it based on relatively few islands. There are contradictory reports from other islands: Kolombangara Monarch and White-winged Fantail *Rhipidura cockerelli* are common in secondary forests on New Georgia (Blaber 1990) but dependent on primary forest on Kolombangara.

Lowland forests are particularly vulnerable to clearance or alteration. Species dependent on this habitat are likely to be threatened or vulnerable. Transect data and field observations suggested that there were few true lowland specialists on the Solomon Islands. Table 3 lists species which were either lowland specialists (below about 500 m) or made limited use of hill forests. As noted above, this list should not be regarded as comprehensive. While all of the lowland specialists identified by the expedition were tolerant of secondary and disturbed habitats, at least for feeding, there is no evidence that they would survive all year round in disturbed habitats. They include a number of migrants, both from abroad and putative altitudinal migrants.

Table 2 Forest species intolerant of disturbed habitat. Note that these categorisations are tentative, refer to the systematic list for more details. (E) indicates species endemic to the Solomon Islands (including Bougainville) or Manus.

	Primary /old growth forest only	Sparing use of secondary forest
Feeding and breeding	<i>Micropsitta bruijnii</i> <i>Columba pallidiceps</i> <i>Reinwardtoena crassirostris</i> (E) <i>Ducula brenchleyi</i> (E) <i>Pitta superba</i> (E) <i>Pitta anerythra</i> (E) <i>Petroica multicolor</i> <i>Corvus woodfordi</i> (E) <i>Rhipidura tenebrosa</i> (E) <i>Clytorhynchus hamlini</i> (E) <i>Monarcha browni</i> (E) <i>Monarcha infelix</i> (E) <i>Myiagra cervinicauda</i> (E) <i>Turdus poliocephalus</i> <i>Zosterops murphyi</i> (E) <i>Zosterops rennellianus</i> (E) <i>Cettia parens</i> (E) <i>Phylloscopus poliocephalus</i> <i>Phylloscopus amoenus</i> (E) <i>Erythrura trichroa</i>	<i>Aceros plicatus</i> <i>Lorius chlorocercus</i> (E) <i>Micropsitta finschii</i> (E) <i>Columba vitiensis</i> <i>Macropygia amboinensis</i> <i>Reinwardtoena browni</i> <i>Gallicolumba beccarii</i> <i>Ptilinopus solomonensis</i> <i>Haliaeetus sanfordi</i> (E) <i>Melidectes sclateri</i> (E) <i>Pachycephala pectoralis</i> <i>Rhipidura cockerelli</i> (E) <i>Rhipidura rennelliana</i> (E) <i>Rhipidura rufifrons</i> <i>Dicrurus bracteatus</i> <i>Monarcha viduus</i> (E) <i>Zoothera margarethae</i> (E) <i>Aplonis insularis</i> (E) <i>Aplonis dichroa</i> (E) <i>Phylloscopus makirensis</i> (E)
Breeding only	<i>Charmosyna meeki</i> (E) <i>Charmosyna margarethae</i> (E) <i>Cacatua ducorpsii</i> (E) <i>Accipiter albogularis</i> (E) <i>Coracina caledonica</i>	<i>Ceyx lepidus</i> <i>Todirhamphus chloris</i> <i>Chalcopsitta cardinalis</i> <i>Trichoglossus haematodus</i> <i>Eclectus roratus</i> <i>Ptilinopus superbus</i> <i>Haliastur indicus</i> <i>Accipiter fasciatus</i>

Table 3. Lowland specialist birds identified on the Solomon Islands.

Lowland specialist	Sparing use of hill forest
<i>Todirhamphus sanctus</i> <i>Chrysococcyx lucidus</i> <i>Eudynamis cyanocephala</i> <i>Chalcophaps stephani</i> <i>Aviceda subcristata</i> <i>Haliastur indus</i> <i>Coracina caledonica</i> (non-breeding only?) <i>Aplonis metallica</i> <i>Aplonis cantoroides</i> <i>Aplonis grandis</i> (E) <i>Nectarinia jungularis</i>	<i>Megapodius eremita</i> <i>Aceros plicatus</i> <i>Cacatua ducorpsii</i> (E) <i>Geoffroyus heteroclitus</i> <i>Eclectus roratus</i> <i>Gallirallus philippensis</i> <i>Porphyrio porphyrio</i> <i>Mino dumontii</i>

Island summaries

The most notable observations for each island visited are described briefly. The summary details records of threatened and near threatened species (Collar and Andrew 1988), species endemic to the Solomons (the zoogeographical unit comprising the Solomon Islands and Bougainville) or Manus, new information on ranges and wildlife threats.

Kolombangara

Three of the four Red Data Book species known from the island were observed. Woodford's Rail was not found, but previous claims of this species (Sibley 1951, Finch 1985) are unconfirmed. Small populations of Sanford's Fish-eagle, Nicobar Pigeon *Caloenas nicobarica* and Sombre (Kolombangara) Leaf-warbler were found. A fifth Red Data Book species, Black-faced Pitta *Pitta anerythra* was observed for the first time: a single bird was seen in the mountains. Sombre Leaf-warbler, wholly confined to this island, was found to be rare but its habitat was under no threat. Hermit White-eye *Zosterops murphyi*, the other species endemic to Kolombangara, was abundant in montane and submontane forests. A total of 19 species endemic to the Solomons were found and there were indications that Solomon Islands Hawk-owl *Ninox jacquinoti* was also present. Meek's Lorikeet was shown to be abundant and breeding was proved. Kolombangara Monarch and White-winged Fantail were uncommon and intolerant of secondary forest in contrast to neighbouring New Georgia (Blaber 1990). Perhaps significantly, all flycatchers were rare in logged areas around Ringgi. Grey Goshawk *Accipiter novaehollandiae* was observed for only the second time on the island and Meyer's Goshawk *A. meyerianus*, evidently a rare species, was also present. Melanesian Cuckooshrike was more common and present at lower altitudes than was previously suspected. Heinroth's Shearwaters *Puffinus heinrothi* were seen offshore, raising the possibility that they breed on the island. Blue-faced Parrotfinches *Erythrura trichroa*, only observed here once before, were still present but uncommon. The first Forest Kingfishers for the Solomons were found, probably as vagrants but possibly breeding. Two other vagrants were observed; Australian Pelican and Oriental Hobby *Falco severus* (12th Solomons record). An unidentified form of Cuckooshrike *Coracina* may be a migrant or an undescribed form. Rats observed on the mountain belong to no known form. The skink *Eugongylus albofasculatus* was recorded on the island for the first time.

Ghizo

Two Red Data Book threatened species were found; Sanford's Fish-eagle and Splendid (Ghizo) White-eye *Zosterops luteirostris*. The endemic white-eye is uncommon and is confined to restricted areas of secondary growth. Probably only a few Sanford's Fish-eagles are present. Roseate tern *Sterna dougallii* is described as near threatened (Collar and Andrew 1988). It was found breeding on a nearby islet. Nine species endemic to the Solomons were found.

New Georgia

Two large seabird gatherings, either roosts or colonies, were seen. The islands south of Seghe held numerous noddies *Anous* and terns, notably Roseate Terns. The Munda Bar also held large numbers of Lesser Frigatebirds *Fregata ariel* and Brown Boobies *Sula leucogaster*.

Russell Islands

Large numbers of terns, noddies and Lesser Frigatebirds were seen around the north of the island group. These included two Gull-billed Terns *Sterna (Gelocheidon) nilotica*, new to the Solomon Islands, but common in Papua New Guinea. A Blyth's Hornbill seen on one of the northern islands was the second record for the group.

Guadalcanal

No Red Data Book species were found. The absence of Sanford's Fish-eagle was surprising, although it has been recorded recently (Lees 1991). No Ospreys were recorded either. Twenty species endemic to the Solomons were found. These included the rarely recorded White-eyed Starling *Aplonis brunneicapilla*. Melanesian Cuckooshrike and Grey-throated White-eyes were seen at unusually low altitudes. Black-headed

Myzomela Myzomela melanocephala was uncommon although allospecies were more abundant in high altitude forests which were not visited on this island. Swinhoe's Snipe *Gallinago megala* was identified for the first time in the Solomons although unspecified snipe have been seen previously. A villager described an influx of black cormorants following a recent cyclone, possibly the first record of Little Black Cormorant for the Solomon Islands. A Swamp Harrier *Circus approximans* was the third record for the country. An experimental plantation on Mount Austen held surprisingly good numbers of birds, including three endemic species. However, no species believed to be dependent on primary forest were observed. It contained small groups of a wide range of tree species, not all indigenous. This demonstrates the value of mixed species plantings over monocultures such as those being established at Ringgi on Kolombangara.

Makira

Two Red Data Book threatened species were found. These were Sanford's Fish-eagle and Yellow-legged Pigeon *Columba pallidiceps*. Both may be subject to hunting pressure. One near-threatened species, Shade Warbler *Cettia (Vitia) parens*, was found to be common in hill and montane forest. San Cristobal Moorhen was not found and inquiries produced just one second-hand rumour of a recent sighting above Maniparegho. This could not be confirmed and a search was not successful. Nineteen species endemic to the Solomons were found. Dusky Fantail *Rhipidura tenebrosa*, endemic to this island, was found to be dependent on primary forest and to occur at rather low densities. Pigeon populations were high and could support hunting but there were indications that this was becoming excessive. In addition to small numbers of Yellow-legged Pigeons, there were good numbers of Chestnut-bellied Imperial Pigeon *Ducula brenchleyi*, Metallic Pigeon *Columba vitiensis* and Bronze Ground-dove *Gallicolumba beccarii*. All these are scarce or uncommon species and each may be present in important numbers. White-throated Pigeon is reported to be much reduced by hunting in Fiji (Clunie 1984). The terrestrial bird fauna was good compared to other parts of the Solomons both in numbers and range of species. However, there was much evidence of wild pigs in the forests and these may pose a threat. Melanesian Cuckooshrike was seen for the first time on the island, although this gap in its distribution was, perhaps, surprising. Peregrine Falcon *Falco peregrinus* and Spotless Crake *Porzana tabuensis* were also new records for the island. A vagrant Plumed Whistling-duck was the first for the Solomons. Singing starling *Aplonis cantoroides* may be extending its range as the island becomes more developed. Previously a vagrant to Makira, this species was found breeding in the island capital, Kirakira.

The Three Sisters

Buff-banded Rail *Gallirallus philippensis*, Moustached Treeswift *Hemiprocne mystacea* and Cardinal Lory were recorded for the first time on the islands. Beach Thick-knees *Burhinus giganteus* are still common, more so than on other islands visited. Imperial pigeons have evidently become scarce since the 1950s (French 1957). Silver-capped Fruit-doves *Ptilinopus richardsii*, endemic to these islands and Rennell, were moderately common. The Noisy Miner *Manorina melanocephala*, introduced in the 1950s, was not recorded and appears to be no longer present.

Rennell

Two Red Data Book threatened species were found. Small numbers of adult Christmas Frigatebirds *Fregata andrewsi* were seen with other frigatebirds along the coast. Immature birds may have been overlooked as they are less easily identified. Christmas Frigatebird is new to the Solomons. There is increasing evidence of this species wandering the tropical Pacific Ocean (Marchant and Higgins 1990). Rennell Shrikebill *Clytorhynchus hamlini* was only recorded at low densities in primary forest. Two other species endemic to Rennell were found to be uncommon; these were Rennell Starling *Aplonis insularis* and Rennell White-eye *Zosterops remellianus* (although the latter case may be due to local variations in abundance). Melanesian Flycatcher *Myiagra caledonica* was also uncommon. An *Ixobrychus* bittern was seen but could not be identified to species, it is the first record for Rennell. Bronze Ground-dove was seen for the first time since 1937. It was believed to be rare or even extinct on Rennell (J. Diamond *in litt* 1991, Lees 1991). A Red-tailed Tropicbird *Phaeton rubricauda* was seen off the coast. There are few published records of this species in Melanesia (I. McAllan verbally 1990).

Bellona

A stint seen on the airfield was probably a Long-toed Stint *Calidris subminuta* but Least Sandpiper *C. minutilla* could not be eliminated. Either species would be new to the Solomons.

Manus

Two Red Data Book threatened species were recorded. These were Superb Pitta *Pitta superba* and Nicobar Pigeon. Of the seven species endemic to the Admiralty Islands, five were observed. Manus Friarbird *Philemon albitorques* and Meek's Pygmy-parrot *Micropsitta meeki* were common and widespread in both primary and disturbed habitats. Manus Hawk-owl *Ninox meeki* was found at low densities in agricultural areas as well as all forest types. Manus Monarch *Monarcha infelix* was uncommon and may be restricted to primary forest. Superb Pitta was only found in one small area of primary forest. Manus Masked Owl and Manus Rufous Fantail were not found. Claret-breasted Fruit-doves *Ptilinopus viridis* were common and breeding was proved, this species was not recorded on Manus until recently (Hicks and Hicks in prep). Mackinlay's Cuckoo-dove *Macropygia mackinlayi* was recorded on Manus for the first time and additional sightings were made of Ebony Myzomela *Myzomela pammelaena*, infrequently recorded on Manus. Both are "tramp" species (Diamond 1975). Sightings of Meyer's Goshawk, Peregrine Falcon, Collared Kingfisher *Todirhamphus chloris* and Dollarbird *Eurystomus orientalis* (apparently breeding) were the first for Manus Province. New records of coastal vagrants include Great Egret, Striated Heron *Butorides striatus* and Little Black Cormorant. A *Cacomantis* cuckoo showing features of Chestnut-bellied Cuckoo *C. castaneiventris* was moderately common, although this species is not known away from the Sahul Shelf. Only two Pied Cuckoo-doves *Reinwardtoena browni* were recorded.

Red Data Book Species Summaries

Observations of species listed by Collar and Andrew (1988) as threatened or near threatened are reviewed. Our data have been incorporated into the updated edition Birds To Watch 2 (Collar *et al* 1994). Information is presented on the status and threats to each species known from the islands which we visited. Our observations are described in more detail in the Systematic Lists. The status of each species is tentatively categorised using the old IUCN criteria on the scale Endangered, Vulnerable, Susceptible, Near-Threatened, in order of decreasing threat, or Data deficient where there may be threats but knowledge is insufficient to categorise a species. The revised IUCN status codes (Collar *et al* 1994) are added in parentheses. Candidates for future Red Data Books are suggested.

Threatened species

<i>Actenoides bougainvillei</i>	Moustached Kingfisher	Data deficient (C2a?).
	Endemic to the Solomons.	
	<i>A. b. excelsa</i>	Guadalcanal: 550-1250 m.
	<i>A. b. bougainvillei</i>	Bougainville: lowland and hill forest.

This is a forest species, previously known from a wide altitudinal range (up to 1000 m). There are no confirmed records since 1953 (Diamond 1987) despite recent work on Bougainville by birdwatchers from Papua New Guinea. A brief visit to weather coast forest on Guadalcanal failed to locate the species. There are still substantial areas of primary forest in the south of Guadalcanal but logging companies are active to the north of the mountain range. Other *Actenoides* species are shy, quiet forest species that are easily overlooked. Gibbs (*in litt.* 1994) subsequently found several individuals in the central mountains of Guadalcanal, between 1100 and 1325 m, in 1994.

<i>Columba pallidiceps</i>	Yellow-legged Pigeon	Vulnerable (C2a, D).
	Monotypic	New Ireland to Makira.

This species has always been rare and poorly known. Our Makira records and an unpublished 1987 sighting on Guadalcanal (Blaber *in litt.* 1991) are the first sightings on the Solomon Islands since 1928. There is another recent record from New Ireland (Finch and McKean 1987). It is neither a lowland specialist nor entirely terrestrial (*contra* Collar and Andrew 1988). It occurs at a wide range of altitudes, at least in the dry

season, from sea level up to at least 600 m on Makira and at 1300 m on Guadalcanal. It is not wholly terrestrial as it was observed feeding in trees; indeed, terrestrial behaviour has only been inferred from tarsal structure (Goodwin, 1967). It appears to be largely dependent on primary forest making it vulnerable to logging. While it is uncommon in East Bauro district, Makira, it is not rare. Commercial pigeon hunting could become a threat near population centres on the coast.

<i>Caloenas nicobarica</i>	Nicobar Pigeon	Near threatened?
	Polytypic	Malay Peninsular to Solomon Islands.
	<i>C. n. nicobarica</i>	Manus and throughout Solomon Islands small wooded islands and adjacent coasts

A few birds were seen on the coasts of Kolombangara and Manus. The principal habitat, small wooded islands, is common in Western Province and the Admiralty Islands. We were unable to visit any islets and no pigeons were seen during boat trips. On Manus, villagers reported it to be locally common on offshore islets. Hunting pressure and populations could not be assessed.

<i>Gallicolumba salomonis</i>	Thick-billed Ground-dove	Data deficient (C2a?).
	Monotypic	Endemic to Makira and Ramos (=Malaita?).

This species has not been recorded since 1927 and is only known from two specimens (Collar and Andrew 1988). Like its congeners it is likely to be hard to find due to its retiring nature. It may be difficult to separate from the more abundant Bronze Ground-dove in brief views. On Makira, we found none in lowland forests containing Bronze Ground-doves. It is clearly very rare if it is still extant there. It is also possible that it inhabits a different habitat.

<i>Nesoclopeus woodfordi</i>	Woodford's Rail	Data deficient (C2a?).
	Endemic to the Solomons.	
	<i>N. w. tertius</i>	Bougainville
	<i>N. w. immaculatus</i>	Santa Isabel
	<i>N. w. woodfordi</i>	Guadalcanal

Woodford's Rail was recorded during the 1980s on Santa Isabel (Webb 1992), on Choiseul between 1974 and 1976 (Diamond 1991) and on Bougainville in 1985 (Kaestner 1987). The preferred habitat is evidently lowland primary forest which is under threat throughout its range. Unidentified large rails reported from New Georgia (Sibley 1951 and Blaber 1990) and Kolombangara (Finch 1985) may have been this species (Diamond 1991). There are no recent records on Guadalcanal (Diamond 1991).

<i>Gallinula silvestris</i>	San Cristobal Moorhen	Data deficient (C2b? D?).
	Monotypic	Endemic to Makira (San Cristobal).

None were found during the expedition in the forests of East Bauro District (near the north coast). Villagers here seemed to know the species which they called "kia". We were told, second hand, of a sighting made by a villager on the forested ridge near the north coast. We could not confirm the claims or find the rail there. We could not establish whether the species used to occur in East Bauro. The only specimen and one possible field observation (Cain and Galbraith 1956) were in hilly, weather (south) coast forests further south. These areas have not been visited by ornithologists since the 1950s. It is an urgent priority to search the southern forests of Makira and the unexplored freshwater marshes to establish whether a population still exists.

<i>Haliaeetus sanfordi</i>	Sanford's Fish-eagle	Vulnerable (B2b, B2c)
	Monotypic	Endemic to the Solomons from Buka to Makira.

The Western Province islands of New Georgia and Kolombangara appear to be a stronghold for this species. The species is also numerous over most of Santa Isabel (Webb 1992). On Kolombangara and Makira, birds hunted over primary or old growth forest, often well inland, although they appeared to nest close to the coast. In south-west Kolombangara, the range was large: one pair occupied at least 10 km². On New Georgia, Blaber (1990) reported a more coastal distribution and a tendency to scavenge on the coast, which we also observed on Ghizo. This may mean that the species can adapt to disturbed habitats but the Kolombangara

observations indicate that extensive forest are preferred. Overall densities appeared to be higher than White-bellied Fish-eagle *H. leucogaster* on Borneo, the Philippines and Manus, although only Manus is comparable as it still has extensive forests. Villagers on Makira reported that the species is hunted despite the protection of tabu law (Cain and Galbraith 1957). The threats of habitat loss and hunting could increase in Western Province as human populations grow. Sanford's Fish-eagle is now rare in north Guadalcanal, north Makira and Rennell. Loss of coastal forests and hunting may be problems on Guadalcanal and Makira.

Fregata andrewsi Christmas Frigatebird
 Monotypic Breeds on Christmas Island, Indian Ocean.

Small numbers were seen going to roost with Lesser and Great Frigatebirds on Rennell. An adult female was seen at sea in the Blanche Channel, Western Province. While these sightings represent a considerable expansion to the known range, they are in keeping with recent records of wandering non-breeding birds in the tropical Pacific Ocean (Marchant and Higgins 1990). The conservation of the species is still dependent on the protection of its one known breeding site, Christmas Island.

Pseudobulweria becki Beck's Petrel Data deficient (D?).
 Monotypic, was considered conspecific with Tahiti Petrel *Pterodroma rostrata*.

The only two records are of birds taken at sea in 1928 off Rendova and the North Solomons. The breeding sites are unknown. There are no recent reports other than possible sightings at sea off Wuvulu, NE New Guinea (Bourne and Dixon, 1973) and in the Admiralty Islands (I. McAllan verbally 1990).

Puffinus heinrothi Heinroth's Shearwater Data deficient (C2a/b?).
 Monotypic Seas around the Bismarcks and North Solomons.

This species has previously been recorded twice in Western Province, off Ghizo and Kolombangara in January (Greensmith 1975, Lees 1991) and again in 1994 (Gibbs *in litt.* 1994). Our sightings indicate a possibility that the species breeds on Kolombangara in August but no proof was obtained. The only breeding records are chance encounters of a young bird and an adult on nearby Bougainville (Hadden 1981). These suggest that the species nests in primary forest during August. Despite subsequent searches, no further evidence of breeding has been obtained. Breeding could easily have been overlooked on other islands. We did not find any at sea between Western Province and Guadalcanal. The remainder of the recent sightings have been at sea around New Britain and Bougainville (Coates 1985, Gardner 1987, Simpson *in press*) and adjacent parts of Papua New Guinea (Bailey 1992).

Pitta superba Superb Pitta Vulnerable (A1b).
 Monotypic Endemic to Manus.

Field records and reports from villagers indicate that Superb Pitta occurs in primary forest at low densities. There is some evidence that it prefers hillier areas, perhaps due to a need for stone anvils to crack open snails. There appear to be no immediate threats to the habitat. An estimated 80% of the island is still forested (Kula *et al* undated). There is local opposition to further logging on the island and clearance for subsistence agriculture is limited to the coast. It was not possible to assess whether introduced predators were responsible for its scarcity. A detailed discussion of our observations has already been published (Dutson and Newman 1991).

Pitta anerythra Black-faced Pitta Vulnerable (C2a).
 Endemic to the Solomons
P. a. anerythra Santa Isabel
P. a. nigrifrons Choiseul
P. a. pallida Bougainville

The sighting of one bird on Kolombangara is important. It is the first to be reported since 1936 and it extends the known range of the species. The bird was in a large block of submontane primary forest which is under no immediate threat. In contrast, Gibbs (*in litt.* 1994) noted a preference for secondary forest below

800 m. It appears to be rare and may have suffered from the declines noted since the early twentieth century (Collar and Andrew 1988).

<i>Clytorhynchus hamlini</i>	Rennell Shrikebill	Susceptible (SU).
	Monotypic	Endemic to Rennell.

This species was found to be uncommon, compared to similar sized monarchs *Monarcha*, and was largely restricted to primary forest. It occurs at similar densities to the Lesser Shrikebill *C. vitiensis* in Fiji, so low densities may be normal. Large areas of this habitat are still present. Small scale timber extraction using portable sawmills is limited by the rough terrain to the vicinity of the only road. A bauxite mining proposal seems to have been averted so there may be no current threat from habitat loss.

<i>Zosterops luteirostris</i>	Ghizo White-eye	Vulnerable (A1b, A2b).
	Monotypic	Endemic to Ghizo.

The Ghizo White-eye is numerically rare. The species is now confined to older secondary growth which is, in turn, limited by the demand for agricultural land on this densely populated island. Very little, if any, primary forest remains on the island so habitat preferences could not be assessed. Closely related *Zosterops* on Vella Lavella and Ranongga appear to show a preference for secondary forest, at least seasonally (Gibbs *in litt.* 1994). Specific action to protect and extend the habitat of Ghizo White-eye may be necessary.

<i>Phylloscopus amoemus</i>	Sombre Leaf-warbler (Kolombangara Warbler)	Susceptible (SU, D).
	Monotypic	Endemic to Kolombangara, above 1200 m.

Four sightings were made in five visits to the summit of Kolombangara. Alan Greensmith (*in litt* 1991) saw four birds in 1975 and Jared Diamond saw one in 1974. These are the only recent records. The species is confined to moss forest above about 1200 m on the rim of an extinct volcano. It is clearly scarce; first estimates of the population vary between 900 and 2100. The stunted forest it inhabits is under no threat from forestry. This habitat is often damaged by landslides and wind so the population can be expected to fluctuate with habitat availability. The nest is unknown but *Phylloscopus* warblers tend to nest on the ground where predation could be a problem. The species co-exists with at least two indigenous rats but feral pigs and cats, recorded on the island, could be a threat.

Near-threatened species

<i>Sterna dougallii</i>	Roseate Tern	Near threatened.
	<i>S. d. bangsi</i>	Arabian Sea to Polynesia

This species is still moderately common. A small breeding colony found between Ghizo and Kolombangara may be vulnerable to disturbance from people travelling between the islands by canoe. There are large roosts and possibly colonies at two sites in the Blanche Channel, New Georgia.

<i>Cettia parens</i>	Shade Warbler	Near threatened.
	Monotypic	Endemic to Makira (San Cristobal).

Common in hill and montane primary forests above about 600 m, occurring down to 500 m. Extensive suitable habitat remains to the south of the study site in East Bauro and Ravo districts. The species seems to be under little threat at present but large scale logging or mineral extraction could become a threat as it appears to be intolerant of secondary growth. Gibbs (*in litt.* 1994) observed greater use of secondary growth at the start of the year, but this may have been outside the breeding season.

Candidate species

The following species were proposed for the threatened or near-threatened categories of Birds to Watch.

Manus Masked Owl *Tyto manusi* Vulnerable (D).
Monotypic Endemic to Manus.

Manus Masked Owl has not been observed in the field recently. It is likely to be a shy forest species which is difficult to find. None of the villagers questioned knew of this species.

Chestnut-bellied Imperial Pigeon *Ducula brenchleyi* Vulnerable (C2a)
Monotypic Guadalcanal Malaita and Makira.

Chestnut-bellied Imperial Pigeon is not much more abundant than Yellow-legged Pigeon on Makira. It has a much smaller range and it is hunted on Makira.

Roviana Rail *Gallirallus rovianae* Data Deficient (C2a?).
Monotypic Endemic to the Solomon Islands.
New Georgia archipelago.

Roviana Rail has only recently been described (Diamond 1991). Our failure to record it on Kolombangara and the limited number of records suggest that it is uncommon. Gibbs (*in litt.* 1994) observed small number in the lowlands of Kolombangara. Further research is necessary to determine its habitat preferences and range.

Dusky Fantail *Rhipidura tenebrosa* Near-Threatened.
Monotypic Endemic to Makira (San Cristobal).

Dusky Fantail is wholly dependent on primary forest on Makira. It occurs at a wider altitudinal range than Shade Warbler but at very low densities so overall populations are likely to be small and vulnerable to widespread forest clearance.

Manus Rufous Fantail *Rhipidura semirubra* Endangered (A1b).
Monotypic Endemic to the Admiralty Islands.

Manus Rufous Fantail has apparently disappeared from the main island of Manus and has only been recorded on the small offshore island of Tong in recent years (Coates 1990, Gibbs *in litt.* 1994). The species was previously common on Manus (Dutson and Newman 1991) so the precipitous decline is a cause for concern.

Rennell Starling *Aplonis insularis* Near-Threatened
Monotypic Endemic to Rennell.

Rennell Starling is one of the least abundant passerines on Rennell and as a species endemic to just this island it is potentially vulnerable. It will feed in secondary growth but the degree of dependence on primary forest could not be determined.

White-eyed Starling *Aplonis brunneicapilla* Vulnerable (C2a).
Monotypic Endemic to the Solomon Islands.
Bougainville to Guadalcanal.

White-eyed Starling remains scarce and poorly known despite a recent series of sightings (Blaber 1990, Finch and McKean 1987, Kaestner 1987, Gibbs *in litt.* 1994). It is a colonial species and its colonies are vulnerable to exploitation for food (Cain and Galbraith 1956).

Rennell White-eye *Zosterops rennellianus* Susceptible (SU).
Monotypic Endemic to Rennell.

Rennell White-eye was found to be uncommon in the eastern part of Rennell (especially so for a *Zosterops* species) and dependent on the primary forests. It was not substantially more abundant than the Rennell

Shrikebill which is considered threatened. Lees (1991) states that the species is more abundant on the west of the island. This concentration on one end of the island may make the species vulnerable to forest clearance although this is not currently a problem.

Recommendations

Suggestions for future research work are described under the headings used by the South Pacific Bird Conservation Programme Plan For Action (South Pacific Regional Environmental Programme (SPREP) 1991). This document is concerned with the provision conservation and scientific expertise to the region. Additional suggestions involving actions and legislation within the Solomon Islands and upon eco-tourism are discussed at the end of the section. Much preliminary survey work remains to be done to assess priorities for in depth studies and surveys. Such exploratory work should have a high priority to make best use of limited resources. Furthermore, fieldwork techniques still need to be developed. Aims should include producing numerical results comparable between sites and habitats along with methods of estimating population parameters, especially population densities, productivity and survival in each habitat. It is likely that techniques will be time consuming and labour intensive. Priority list for field surveys: habitats and islands.

Kolombangara

Primary forests below 500 m, especially those adjacent to Iriri should be surveyed to support reserve recommendations. If possible, a preliminary survey of the forests within the volcanic crater should be undertaken. The inaccessibility of these forests may protect populations of rare forest species such as Black-faced Pitta and perhaps even breeding Heinroth's Shearwaters.

Guadalcanal

Surviving lowland forest to the north of the mountain range, such as the upper catchment of the River Lungga, should be the priority due to active logging and mining interests. The mountain range is still in need of exploration. Both the highest peak and the eastern end of the mountain chain have received little attention. While this is perhaps not a priority (there are no appreciable threats to the habitat) the range could still hold some surprises, e.g. Mayr (1945) suggested that Sombre Leaf-warbler and San Cristobal Moorhen could occur.

Makira

The swamps on this island have apparently not been visited by ornithologists. The weather coast primary forests have not been visited since the 1950s (Cain and Galbraith 1956). These two habitats should be a priority for preliminary survey work. There is a path between Wango agricultural station and the weather coast village of Bia which affords easy access to both these habitats. It is reported to take one day to walk the length of the path. Large surviving stands of primary forest to the south of East Bauro district deserve further survey work to support recommendations for a reserve here (Lees 1991).

Manus

Surveys of the endemic species Manus Masked Owl and Manus Rufous Fantail are the most urgent priority. For the owls, a combined tape-playback and lamping survey, starting at dusk, is likely to be the best method. Australian owl researchers have used this method successfully (Rod Kavanagh verbally 1990). Recordings of the Australian congener *Tyto novaehollandiae* could be used if recordings of *manusi* are not available. Similarly Superb Pitta could usefully be surveyed with similar methods. Searches for Manus Rufous Fantail should concentrate initially on offshore islets, such as San Miguel and Tong, but the location of extant mainland populations is also important. This could be combined with a search for Nicobar Pigeon sites. The western end of the main island was not visited during the expedition and comparative work would be useful in future.

Temotu Province

We agree with recommendations for surveying Temotu Province. The islands have not been visited recently by ornithologists and landbirds endemic to these islands, especially Nendo, urgently need to be surveyed. Islanders from Temotu Province (met in Honiara) reported very large populations of seabirds. They were

evidently familiar with the larger species so questionnaire surveys could be productive. However, field work would be necessary to assess populations of individual species due to difficulties with identification beyond the level of genus. Temotu Province is difficult to reach. Ferries are infrequent and we were unable to book seats on any of the few flights. We recommend that visitors book flights some months in advance or immediately upon arriving in the country. Since this expedition, a visiting ornithologist made an assessment of the landbirds, finding a new White-eye species on Vanikölo (Gibbs *in litt.* 1994).

Seabirds

Our observations indicate that there are likely to be large and significant colonies of seabirds in the Russell Islands and around New Georgia. Similarly, other archipelagos likely to hold colonies include the Nggela Islands and islands between Isabel and Choiseul. The comments on techniques in the Temotu Province entry apply here too.

Priority species for survey

The Red Data Book species not recorded in recent years are an urgent priority. These are Manus Masked Owl, Thick-billed Ground-dove and Makira Moorhen. In the first instance, preliminary attempts to locate populations are needed rather than large systematic surveys.

Red Data Book and rare species recorded recently but evidently rare or little known include Black-faced Pitta, Woodford's Rail, Roviana Rail, Ghizo White-eye, Fearful Owl *Nesasio solomonensis* and Sanford's Fish-eagle. All need to be surveyed to identify whether further specific action is required. Guadalcanal Thick-bird *Megalurulus whitneyi* is common on Vanuatu (Bregulla 1992) but its populations and taxonomic status on Guadalcanal need clarification.

The breeding grounds of Heinroth's Shearwater and Beck's Petrel *Pseudobulweria becki* are unknown and need to be discovered. Both species are evidently rare. The concentration of records of Heinroth's Shearwater in Western Province and small evening gatherings off Kolombangara suggest this area as a focus for searches. Heinroth's Shearwater probably breeds in primary forest. There are no clues to indicate where the breeding grounds of Beck's Petrel are. Suitable techniques may include nocturnal searches at possible nest sites using mist-nets and tapes. Recordings of closely related species (Audubon's Shearwater *P. lherminieri* and Tahiti Petrel *P. rostrata*) at breeding sites may attract these species and would incidentally provide useful information on their taxonomic status. SPREP is well placed to co-ordinate collection and dissemination of such recordings for seabird surveys.

Species recovery plans

The San Cristobal Moorhen has been proposed for such action when its status has been established. Moustached Kingfisher, Thick-billed Ground-dove, Sanford's and Nendo White-eyes fall into this same category.

We recommend that the Ghizo White-eye and Manus Rufous Fantail are made the subjects of species recovery plans. Ghizo White-eye is uncommon for a *Zosterops* white-eye. Both its presumably favoured habitat, primary forest, and its current habitat, secondary growth, are much reduced and likely to diminish further. The major range contraction of Manus Rufous Fantail has probably left it vulnerable to extinction. Both species urgently need habitat protection at their remaining sites and research into the causes and means of reversing their declines.

Research on harvested species

East Bauro District, Makira may be a useful study area for research into the harvesting of forest pigeons. Both subsistence and commercial hunting occur and these interests seem set to clash resulting in increased hunting pressure. Large pigeon populations are present and probably could support a sustainable harvest. A number of species are of conservation importance and are likely to be taken by hunters. Yellow-legged Pigeon, listed as threatened by Collar and Andrew (1988), is the most important species known to be present but the potential threat to San Cristobal Moorhen and Thick-billed Ground-dove is a cause for concern.

Actions within the Solomon Islands

In addition to the system of reserves proposed by Lees (1991) the following avenues may be worth consideration.

Legislation to protect individual species.

Sanford's Fish-eagle was previously protected by traditional tabu law (Cain and Galbraith 1957). It is now shot for food, perhaps resulting in reduced numbers in north Makira and north Guadalcanal. Protection of this species is likely to be respected due to the tabu precedent. In the future, legislation may become necessary to limit harvests of pigeons and scrubfowl eggs. Implementation of such measures may be difficult in the absence of an accepted precedent for protection. Such legislation is difficult to implement due to the traditional Melanesian system of land tenure which gives customary land owners the right to use their land (and the resources it contains) as they please. Subsequent *ad hoc* additions to a protection system could include White-eyed Starling colonies and restrictions on the trade in parrots.

Legislation that has not been designed in consultation with landowners is difficult to implement. Such legislation could only be enforced by the landowners at the village level so it is vital that legislation should reflect the concerns of the villagers themselves. This in turn depends upon education and raising the awareness of the issues. The tabu precedent and management of quarry species may be useful vehicles to achieve this.

Landuse planning

The availability of land for subsistence and cash crop agriculture is becoming a political issue due to increasing human populations and the need to earn foreign currency. The two demands are starting to clash on Kolombangara and can be expected to do so more widely in the future. At present, traditional land tenure effectively prevents centralised landuse planning. It is likely that some form of planning system, amending the traditional land tenure system, will have to be installed to resolve conflicting demands. This would provide an opportunity to legislate for habitat protection. At present, non-governmental organisations are successfully helping landowners to establish village-based resource management plans. Careful legislation in support of such initiatives could form the basis for a long term approach to resource management in Melanesia.

As an example: on Kolombangara, land is in much demand locally within the coastal lowlands. A presumption against developing primary forest and older secondary forest would protect the most important bird habitats in this area, younger secondary growth being of less value to indigenous forest birds. Additional measures could include extension of older forests such as the secondary forest reserve at Ringgi which is unlikely to be large enough to support significant bird populations. Linking surviving forests with forest corridors is another valuable technique which could be incorporated into plans. Currently all protection schemes are entirely voluntary, require considerable time and effort to establish and rely on the goodwill of traditional landowners for their survival.

The lack of comprehensive field guides for birds and other groups, such as butterflies, is a conspicuous problem. Sets of good illustrations, in particular, would be a valuable resource. These are likely to be the best medium for presentations to villagers, for publicity, for training Solomon Islanders as conservation staff and as a means to gather the knowledge of villagers. Field guides will also be essential to attract specialist tourism. In Europe, even relatively specialised guides have proven to be significant catalysts for further study. It should be noted that very high standards have come to be expected of modern field guides. We recommend that illustrations are obtained as an important step in extending conservation activities in the country. Also, the Solomon Islanders are worried about the lack of feedback from scientific and conservation research within their country and this should be a suitable and productive response to their concerns.

SYSTEMATIC LISTS

For each species information is presented on numbers recorded, habitat preferences, ecology and threats. Details of calls, behaviour and identification features are included in support of our observations and where they augment previous publications. Records for each island are presented in separate subsections. Ranges are summarised for endemic species, but not for widespread ones. Taxonomy and nomenclature follow Sibley and Monroe (1990), the current Birdlife International standard. However, this work is neither readily available nor universally accepted so differences from previously accepted practice are clarified in this section. The spellings of island names follow the modern forms in Lees (1991). Note that the name San Cristobal is still used in colloquial bird names rather than the modern name Makira. Distances are in kilometres (km) and metres (m). Altitudes are given in metres. Dates are abbreviated to the numerical format, day/month.

SOLOMON ISLANDS

Megapodius cremita

Melanesian Scrubfowl

Endemic to Melanesia, Admiralty to Solomon Islands.

Fairly common in Western Province but scarcer on the more populated islands. Villagers reported it to be much reduced. Transect counts indicate it is a lowland specialist, using all habitats with sufficient cover.

KOLOMBANGARA Common along the coast in mangroves, secondary growth and plantations where there was sufficient ground cover. About 20 found around Kena. At least 55 birds found around Ringgi. An egg ground covering about 4 hectares was seen on the landward side of mangroves near the wharf at Ringgi. Two people were collecting eggs on 11/8. About 100 burrows or dug-out nests were found. Two were seen at 350 m in primary forest near Kena and one was heard in primary forest 8 km inland from Ringgi at 350 m. None was found at higher altitudes.

GHIZO Two in swampy forest to the west of Gizo. Eight heard from roads between Gizo and Sagheraghi.

MAKIRA Only observed at Maniparegho. Up to five in secondary forest by the River Ravo and in adjacent primary forest up to 350 m. An inhabitant of Hunari, by the River Ravo, 8 km inland, showed us a rotting tree stump under which scrubfowl had nested.

GUADALCANAL None found in suitable habitat around Honiara, on Mount Austen or on the weather coast.

Opinions vary on the taxonomy of scrubfowl in Melanesia. All the birds in the Solomon Islands gave the same call (which we recorded). This was a loud, wailing, two or three syllable shriek, noted as "kay-row" or "kay-a-row". Nesting behaviour, described above, varies regionally and may be of taxonomic interest.

Dendrocygna cytoni

Plumed Whistling-duck

MAKIRA One in the Ravo Estuary, 14/9. This is the first record for the Solomon Islands. The body was mottled cinnamon with a dark back and reddish orange legs. It had three or four long white flank-plumes (slightly more than the length of the head and bill). It was smaller than the Pacific Black Ducks with it and it had typical whistling-duck structure. It was distinguished from Wandering Whistling-duck by its pale legs and long flank plumes. There are very few records away from Australia, the nearest vagrants being recorded in Papua New Guinea (Madge 1988).

Anas superciliosa

Pacific Black Duck

Uncommon, compared to Australia, possibly due to the scarcity of open freshwater. Most were seen on the coast, frequenting reefs, coastal creeks and mangroves.

KOLOMBANGARA Five on the River Vila at Ringgi and two on Vila Point. Up to three in Hunda harbour and four at Irii.

GHIZO One seen on 26/8.

GUADALCANAL Two on the River Lungga by Mount Austen, 28/8. No sightings around Honiara.

MAKIRA Seen only on the River Ravo with maxima of six in the estuary on 15/9 and two at Maniparegho.

THREE SISTERS An eggshell (successfully hatched) was identified by a villager on Malaulalo, 3/9.

Accros plicatus

Blyth's Hornbill

Mainly seen in the lowlands. Moderately common but local. Usually encountered in primary forest but also seen flying over open areas, occasionally crossing the sea. None of the birds observed were vocal which is unusual for a hornbill.

KOLOMBANGARA Up to nine seen around Kena, up to 300 m in primary or old growth forest around Kena and up to 800 m above Irii. At Ringgi wharf, four flew across the bay, heading towards an area of secondary growth. A single bird flew in off the sea at Point Vila. Transect densities were far greater in lowland primary forest than secondary forest, despite the inclusion of old growth secondary forest in this category. Lower densities were found in hill forest.

NEW GEORGIA One crossing the Marovo Lagoon, east of Chea.

RUSSELL ISLANDS One seen from the MV Iuminao at dusk on one of the northern islands, 29/7.

RENDOVA A pair seen over primary forest on the north coast, 28/8.

GUADALCANAL Ten in primary forest below Hailali up to about 900 m. None seen on the north coast.

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6 Jan 1996

M. Spalding Esq
WCMC
214 Huntingdon Road
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Dear Mark

Happy New Year! Enclosed, as promised, a couple of Solomons expedition reports for WCMC and Cambridge Expeditions Fund. Note that it also covers Manus in Papua New Guinea. Please let me know if any more are required - we didn't print many but should be able to find more if they will be used.

Had the pleasure of seeing Jules a couple of nights ago, on route to a job in Cornwall. He seems lively enough but a little burdened by family (and, moreover, dog-owning) duties.

Hoping to get back out to Melanesia later this year - I'll harass you for some contacts closer to the date. meanwhile, I'll be in Cambridge next week (6-7 January) staying with Joe Tobias (Nick Davies PhD man). Do you have a home phone number?

See you then or later

A handwritten signature in black ink, appearing to be the initials 'MS' or similar, written in a cursive style.

Eurystomus orientalis**Dollarbird**

Moderately common over open lowland habitats with a few in primary forest up to 600 m. None was identified to subspecies. **KOLOMBANGARA** Only seen near the coast around Kena. Seen singly, in pairs and, once, in a group of three. Not seen in primary forest.

GHIZO Two between Gizo and Sagheraghi.

GUADALCANAL A pair, seen occasionally in the Botanic Gardens, Honiara gave a diving display flight on 27/7. Two near Selwyn College and up to five on Mount Austen. One near Avuavu, 24/9.

MAKIRA Pairs and single birds in primary forest at three inland sites near Hauta (gardens), Baroghane and Maniparegho, between 400 and 600 m. One was seen inspecting a nest hole in an emergent tree on 9/9.

Alcedo atthis**Common (River) Kingfisher**

Widespread in the lowlands along large rivers and on reefs, around mangroves and in creeks (Appendix 1).

KOLOMBANGARA Ten between Ringgi and Iri, including four together on reefs near Kena amongst Sacred Kingfishers presumed to be on passage. One on the River Vila, 1 km inland near Ringgi Cove.

GHIZO One on a creek at Titiana.

GUADALCANAL Four within about 300 m by the River Lungga below Mount Austen.

MAKIRA Seven in about 6 km of the River Ravo plus two on the estuary. One by a stream at Kirakira.

Ceyx pusilla**Little Kingfisher**

KOLOMBANGARA Observed all along the coast from Ringgi to Iri, in mangroves and in small creeks. Uncommon due to the limited extent of mangrove present. The main concentrations were four south of Iri and three around Pine.

GHIZO One by a tidal river on west Ghizo.

Ceyx lepidus**Variable (Dwarf) Kingfisher**

Common in primary and closed secondary forests, mainly, but not exclusively, near streams. Transect densities indicated a slight preference for higher altitude forests. Not seen to dive into water.

KOLOMBANGARA Common up to about 500 m. Ten in 1 km of the Ndugghore Valley, below 100 m. Nearby at least six in dry secondary growth. A maximum of 14 per day around Kena. One in the secondary forest reserve at Ringgi. A nest was found on the mountain above Iri, at 1150 m. It was a burrow in soft clay, below the stump of a large fallen tree. The tree was on the north side of a steep ridge, with little undergrowth. Chicks were heard calling inside the nest on 18/8 and were heard near the nest, on 23/8.

MAKIRA Common in primary forest from the foothills up to at least 800 m. Occurred at higher densities than on Kolombangara. Up to nine per day around Hauta from 500 to 800 m and 18 per day near Maniparegho (50 to 450 m).

Todirhamphus (Halcyon) macleayii**Forest Kingfisher**

KOLOMBANGARA Three at Ringgi Cove throughout our visit, 10 to 13/8. This is the first record for the Solomons. They remained in the village, feeding from telegraph wires and isolated trees over open grassland. In prolonged close views, the white underparts (including the vent), white wing patches and collar were observed, eliminating all other *Todirhamphus* species. One bird had a green back, typical of the migratory race *incincta* from Australia. The other two were a uniform rich blue on the back. These were closest in appearance to the Papuan race *elisabeth*, observed in the field in Papua New Guinea. They were a deeper, richer blue above than a specimen of the brighter north Australian race *macleayii* examined in the Australian Museum. It has not, however, been established whether it is possible to rely on such racial plumage distinctions in the field. It seems more likely that these birds were non-breeding visitors rather than recent colonists. Large concentrations of Sacred Kingfishers present at this time were presumed to be on passage. The possibility that *elisabeth* is visiting the Solomons is remarkable as it is not known to migrate, unlike *incincta*. Stephen Blaber (*in litt* 1991) has confirmed that the *Todirhamphus* kingfisher he observed on Kolombangara (Blaber 1990) was not Forest Kingfisher.

Todirhamphus (Halcyon) leucopygius**Ultramarine Kingfisher**

Endemic to the Solomons; northern island chain, Bougainville to Guadalcanal (monotypic).

GUADALCANAL Moderately common on the north side of the island. All sightings were in disturbed habitats. At least eight were on Mount Austen. Most were in closed secondary forest, with one in the experimental plantation. A pair in the Botanic Gardens, Honiara and one in the suburbs at the Rifle Ranges. Not encountered on the weather coast.

The species is vocal. Its call is a loud, mechanical, disyllabic note transcribed as "ki-tau" or "kitchyau". The first note of this call is louder and very abrupt. It may be less active than its congeners, using vantage points roughly halfway up tall trees.

Todirhamphus (Halcyon) chloris**Collared Kingfisher**

Moderately common on and near the coast, in the lowlands and foothills. Found in gardens, secondary growth and primary forest. Smaller numbers recorded inland and at higher altitudes. Most found in primary forest were singing males, suggesting that breeding birds prefer primary forest. Published nest records appear to confirm this (Coates 1985).

KOLOMBANGARA Four singing in forest around Kena, including one in secondary growth. Up to five were seen on nearby reefs where Beach Kingfishers, which are thought to exclude this species (Coates 1985), were absent. One singing in the secondary forest reserve at Ringgi. Two singing on the mountain at 1015 and 1100 m and one seen at 1250 m.

GHIZO Twenty-four seen from the roads between Gizo and Sagheraghi, 26/8.

RUSSELL ISLANDS One seen on Mbanika.

GUADALCANAL Up to ten, including four singing, on Mount Austen. One or two seen occasionally on the plains at Henderson Airport. On the weather coast, three in the Bolavu Valley but only one in primary forest below Hailali.

MAKIRA Most common in the lowlands. At least 23 between Kirakira and the Ravo Estuary and seven along the River Ravo inland to Hunari. Less common inland; a maximum of five per day around Hauta. from 500 to 700 m.

THREE SISTERS Three on Malaulalo.

RENNELL Mostly seen in cleared areas. About ten at Tinggoa airstrip and up to seven at Lavanggu in gardens and the village.

Todirhamphus (Halcyon) saurophaga**Beach Kingfisher**

Widely, but sparsely, distributed along the coasts. Mainly on reefs or beaches with reefs offshore.

KOLOMBANGARA One just to the south of Iriri and one near Pine.

GHIZO Five between Gizo and Titiana (0.8 per km). Six in about 3 km of coastline (2 per km) in the northern part of the island. Two on J. F. Kennedy Island on 31/7 only.

NEW GEORGIA Two seen from the MV Iuminao, one near Buru and one on Bangga Island.

RENDOVA Singles on the north coast on two dates.

RUSSELL ISLANDS Three on islands to the north of Mbanika.

GUADALCANAL Single birds at Bishopsdale, Honiara and on a weather coast beach near Avuavu. The latter was the only bird seen in an area lacking offshore reefs.

MAKIRA Up to three heard between Kirakira and Arohane.

Todirhamphus (Halcyon) sanctus**Sacred Kingfisher**

More abundant than Collared Kingfisher before the majority departed in late August. Last seen on 12/9. Only in disturbed and open areas, not encountered away from the coast or in primary forest.

KOLOMBANGARA About 25 in the Ringgi area. At least five in gardens at Kena and 15 on nearby reefs. The species is scarce in New Georgia (Blaber 1990) so these large concentrations may have been passage migrants.

GHIZO Up to six seen around Gizo. Three on reefs between Gizo and New Maura. Only seven seen from roads between Gizo and Sagheraghi on 26/8 (cf. 24 Collared Kingfishers) suggesting that most had left.

GUADALCANAL One at Henderson Airport, 2/9.

MAKIRA One by the River Ravo, 4/9 and two at Maniparegho, 12/9.

THREE SISTERS One on Malaulalo, 3/9.

Cacomantis variolosus**Brush Cuckoo**

Common but highly inconspicuous, usually only singing males were heard. Uses primary forest and secondary forest from sea level up to 1300 m. Not encountered in moss forest. Transect counts, largely of singing males, showed montane forest was by far the preferred habitat, with the bulk of the remainder in hill forest.

KOLOMBANGARA At least six singing males around Kena and one singing in the secondary forest reserve at Ringgi. Seven singing between 1050 and 1300 m near the camp above Iriri.

GUADALCANAL Up to five singing around Mount Austen. One singing at 900 m in primary forest near Hailali.

MAKIRA At least 24 singing around Hauta between 500 and 900 m. None were found in the foothills or on the coast.

Chrysococcyx lucidus**Shining Bronze-cuckoo**

Locally common up until mid August. Only seen in disturbed, lowland habitats. Last recorded 13/9. On Bougainville most depart in late September (Coates 1985).

KOLOMBANGARA A maximum of four together at Kena school, frequenting *Hibiscus* bushes and low secondary growth along an old logging track. Last observed here on 8/8. Two at Ringgi on 10/8.

GUADALCANAL One in riverside scrub by the River Lungga, 1/9.

MAKIRA One by the River Ravo near Maniparegho on 13/9, in open scrub developing on a rocky berm.

RENNELL One at Tinggoa on 21/9 was being chased from scrub by a Fan-tailed Gerygone *Gerygone flavolateralis*. The cuckoo was presumed to be a breeding bird of the resident race *citrina*.

Eudynamys cyanocephala**Australian Koel**

Common on Guadalcanal and Makira, but only in disturbed habitats, usually with tall trees present. Most singing occurred at sunset, overnight and at dawn. Occasional bursts of song were heard during the day where the species was common.

GUADALCANAL Three singing on Mount Austen and one singing at Haimarao on the weather coast.

MAKIRA Four singing at Kirakira and five more near the road to Arohane. A male and a female were seen near Arohane. Few inland: two singing at Hauta in secondary growth and three singing at Maniparegho, with single birds seen at both sites.

THREE SISTERS Two singing on Malaulalo.

Centropus milo**Buff-headed Coucal**

Endemic to the New Georgia group (*albidiventris*), Nggela and Guadalcanal (*milo*).

Common in secondary forest, scrub and primary forest in the lowlands and foothills. The highest densities were recorded in secondary forest. Not seen in coconut plantations. Recorded from near sea level to 1100 m.

KOLOMBANGARA Numerous around Kena, maximum daily counts of ten in secondary growth and scrub below 100 m and 12 in primary forest up to 350 m. Juveniles were seen on 6/8 and 8/8. Less common between 800 and 1100 m; a maximum two per day around the 940 m camp. Not found in moss forest.

GHIZO Up to four in secondary growth and degraded forest west of Gizo and three on the roads from Gizo to Sagheraghi. Relatively low densities compared to Kolombangara, perhaps due to more limited cover.

GUADALCANAL Six calling at Selwyn College. Up to five on Mount Austen including a juvenile on 27/9. One or two occasionally in the Botanic Gardens, Honiara. One pair in the Bolavu Valley near the weather coast.

A bird seen on Kolombangara was observed in the canopy of primary forest giving a booming call, presumed to be the song. The head was pumped forwards and down during the call. The same bird then caught a large skink (*Corucia* or *Eugongylus*) in the canopy. The skink was taken into denser foliage to be eaten. All were very vocal, usually giving a loud, raucous, rasping shriek..

Chalcopsitta cardinalis**Cardinal Lory**

Endemic to Melanesia; Nissan to Makira.

Abundant and widespread. More common than Rainbow Lorikeet except in towns and in disturbed habitats. Common from sea level up to 1200 m with the highest densities in lowland habitats. Occurs more sparingly in primary forest, though a relatively high density in montane forest may represent a breeding area. Readily crossed the sea between islands, to feed and roost.

KOLOMBANGARA The largest numbers were seen in single species flocks going to roost. These included 100 past Kena, 39 + moving inland at Ringgi and 120 flying south from Point Vila, crossing the sea to roost on Vonavona. Up to 59 per day in the lowlands and up to six per day from 900-1200 m. Not seen in moss forest. One nest (described below) was found on the mountain above Irii.

GHIZO Similar densities to lowland Kolombangara, though less common than Rainbow Lorikeet. Coconuts were abundant but the lack of primary forest for nesting may limit numbers. A peak of 37 between Gizo and Sagheraghi, most in a pre-roost gathering in a plantation. Around Gizo, the species is captured by winging adults with a catapult. They are kept as pets.

NEW GEORGIA Two crossing the Marovo Lagoon from forested islets to the mainland, 28/8. About 30 seen along the coastline between Noro and Munda from the MV Iuminao, 30/7.

RENDOVA A flock of 40 was seen over tall primary forest on the north coast shoreline.

GUADALCANAL Counts of 100 near Henderson Airport and in coconuts near Selwyn College. Up to 19 seen on Mount Austen in degraded forest. Seen irregularly in the Botanic Gardens, Honiara with a peak of 15. Only four seen on the weather coast, all in coconut groves by the beach.

MAKIRA Scarce, just three seen between Kirakira and Arohane, 14/9.

THREE SISTERS One on Malaupaina in a coconut plantation. This is the first record for the island.

The nest has not been described before. The nest on Kolombangara was at 1150 m in primary forest. Two adults were entering the nest hole on 17/8 and 18/8. The nest was a hollow, 1 m long, near-vertical branch stump near the base of a 10 m tall, stunted, ridgetop tree. The chamber was at least 1 m below the entrance hole which was 3 m above the ground. When the tree was approached, the birds scolded the observers. It often feeds on coconut inflorescences but is also attracted to red flowers. Noisy and aggressive while feeding; dominant over smaller species. The screeching calls were lower pitched, on average, than Rainbow Lorikeet but the two species overlapped and calls could not be consistently separated.

Trichoglossus haematodus**Rainbow Lorikeet**

Not quite as abundant as Cardinal Lory in the lowlands but more common in towns and secondary growth and also at higher altitudes. Also attracted to red flowers:

KOLOMBANGARA Transect densities show a preference for upland habitats, especially montane forest, in contrast to Cardinal Lory. Up to 18 per day between 900 and 1200 m, but no records higher up in the moss forest. Birds were seen to eat something from the base of ant-plants *Myrmecodion* on several occasions. Up to 15 found during the day in the lowlands. Larger roost counts included 99 gathering near Ringgi on 10/8 and 90 from Point Vila heading for the inland roost rather than crossing the sea with Cardinal Lories. Two nests were found in primary forest on the mountain above Irii. Both were typical parrot nests, high above the ground in holes in tree trunks. Small chicks were heard calling in one nest, 8 m up a tree at 350 m

on 8/8. The other nest, at 1010 m, had a north-facing entrance hole, 8 m above the ground. Two adults were enlarging the hole on 16/8. A pair was observed copulating after courtship feeding on 27/8.

GHIZO More numerous than Cardinal Lory, even in coconut plantations; up to 88 seen per day.

GUADALCANAL Up to 50 per day around Honiara. Seen more frequently than Cardinal Lory in the Botanic Gardens; maximum 20 per visit. About 29 at Selwyn College, 26/7. None was found on the weather coast.

MAKIRA Usually only small numbers in coastal coconut plantations but occasionally up to 40 per day. Scarce inland in forest where it may be replaced by Yellow-bibbed Lory. Six at Hunari, next to primary forests.

Lorius chlorocercus

Yellow-bibbed Lory

Endemic to the Solomon Islands; Guadalcanal and Malaita to Makira and Rennell.

Common in primary forests where it is the most abundant large parrot. It also visits large trees in cleared areas. Not seen in coconut plantations. This is a popular species in captivity: chicks are taken from the nest and kept tethered in villages. Captives were seen outside their natural range on Kolombangara and Ghizo; the latter bird had escaped.

GUADALCANAL Common on Mount Austen in degraded and primary forest, up to 12 seen per visit. Also common in weather coast primary forest: 16 below Hailali. Regular in the Botanic Gardens, Honiara with a maximum of seven birds.

MAKIRA Transect densities showed hill forests were preferred and that lowland and montane primary forests were better than disturbed habitats. The species was moderately common in all habitats. Up to 33 seen per day in primary forest and visiting tall trees by gardens near Hauta. Similar numbers in the foothills; up to 17 per day around Maniparegho. A set of flight feathers found among feathers plucked from pigeons indicates that this species is occasionally shot for food.

RENNELL Uncommon, just two birds in primary forest near Lavanggu, 19/9. Islanders also report it to be rare (Lees 1991).

Makiran birds, in particular, were very vocal. Calls averaged lower in pitch and rougher than in Cardinal Lory. The most frequent calls were a creaking, nasal "hau...hau" and a shriller, rough screech "waeek" rising in pitch. A variety of shrill, wheezy squeals is given. Each call consists of haphazard, slurred phrases of up to four syllables. One form resembled a miaowing cat.

Charmosyna meeki

Meek's Lorikeet

Endemic to the Solomons; Bougainville to Guadalcanal but only on mountainous islands.

KOLOMBANGARA Abundant in the moss forest from 1300 m to the summit where it is one of the three most abundant bird species. Up to 50 found per day including noisy parties foraging through the stunted montane forests. A nest was found on the mountain top (described below). Birds flew down the mountain to forage. They were attracted to red flowers by the camp at 940 m within a few hours of the flowers opening. Transect densities decreased towards lower altitudes, with few foraging birds reaching the coast. Seven were seen feeding on coconut inflorescences by the sea near Iriri, 13/8. A proportion of the lorikeets fly back up the mountain late in the day, these may be breeding birds. Some may remain at low altitudes; two were seen at 500 m flying downhill at 1500 hours.

GUADALCANAL One feeding in a tall tree in degraded forest on Mount Austen on 1/9. Not encountered on the weather coast up to at least 1000 m.

The nest has not been described before. The calls of small young were heard from within a large clump of moss on a tree trunk, 6 m above the ground in stunted moss forest at 1550 m on 23/8. The calls died out piecemeal suggesting that the chicks were being fed. The nests of three other *Charmosyna* lorikeets are known, these nest in similar situations (Coates 1985, Bregulla 1992). The nesting habits of the remaining *Charmosyna* species, including Duchess Lorikeet, remain undescribed. The calls are thin, high-pitched "tseek" notes, similar to Yellow-bellied Myzomela calls. These are sometimes given as a series "zeet-eet-eet-eet-eet" and a flock makes an incessant high-pitched chatter.

Charmosyna margarethae

Duchess Lorikeet

Endemic to the Solomons; Bougainville to Makira.

Mainly a montane or hill forest species. Lower densities were recorded in all lowland habitats, including primary forest.

KOLOMBANGARA Moderately common; flocks of up to ten were seen in all habitats from coastal coconut groves up to the moss forest. Small numbers were seen flying up to the moss forest late in the day. These may have been breeding.

MAKIRA Common, perhaps due to the absence of Meek's Lorikeet. Mostly seen in primary forest and tall trees by gardens around Hauta, between 500 and 700 m. They fed in flocks of up to 15 on fruit and flowers, often in association with Yellow-bibbed Lories. Daily maxima of 29 around Hauta, five in foothill primary forest and eight in coastal coconut plantations.

On Kolombangara, the call was series of two or three quiet, thin, high-pitched squeaks, e.g. "tzeep-tzeep". On Makira, short but disyllabic shrieks, falling in pitch, "ki-leek", "k-leek", "klee-a" or "klee-u" were uttered singly or as a series.

Cacatua ducorpsii**Ducorp's Cockatoo**

Endemic to the Solomons; Bougainville to Guadalcanal.

Common on most islands. Usually seen over primary forest or areas with tall trees and feeding in gardens where these were available. Transect counts suggest it is a lowland specialist.

KOLOMBANGARA Recorded from sea level up to 600 m, but most commonly at lower altitudes. Less common than on other islands with a maximum daily count of seven. Around Kena they tended to avoid areas without tall trees. The highest densities were found in lowland secondary forest.

GHIZO A loose flock of 40 was disturbed from coconuts near Pailongge by a Sanford's Fish-eagle. Up to 16 seen in degraded forest and gardens near Gizo and 33 along the roads between Gizo and Sagheraghi.

RENDOVA Sixty-three were counted along the north coast from the MV Iuminao on 30/7. They were loafing in treetops in primary forest up to about 200 m.

GUADALCANAL Uncommon in the plains around Honiara with only occasional birds near Henderson Airport. Thirty in primary forest near Selwyn College. Up to ten per visit on Mount Austen, including an agitated pair on 27/9 which may have had a young fledgling hidden in scrub. A fledgling was captured by villagers in undergrowth below primary forest at about 200 m near Hailali on 25/9. It was kept as a pet.

Micropsitta finschii**Finsch's Pygmy-parrot**

Almost completely dependent on primary forest probably due to its specialised diet, but occasionally seen in older secondary growth or on shade trees in villages. This contrasts with observations on Manus, where Meek's Pygmy-parrot *M. meeki* was more tolerant of habitat disturbance. They fed on tree trunks, grazing on small epiphytic plants including lichens. Others appeared to be following slower-moving mixed species feeding flocks.

KOLOMBANGARA Much higher densities in lowland primary forest than secondary forest, including old stands of secondary forest. Moderately common from near sea level to 490 m. A maximum of six per day near Kena with up to four together. One female seen at 1050 m was the only definite record at high altitude.

GUADALCANAL Three records of up to four birds in the Botanic Gardens, Honiara. Three on one visit to Mount Austen and two at Selwyn College. One at roughly 600 m in primary forest below Hailali on the weather coast.

MAKIRA Found at similar densities to Kolombangara but occupying primary forest up to 900 m. Lowland secondary forest was the least preferred habitat but was used more frequently than on Kolombangara. Transect densities show a slight preference for montane forest. Daily maxima of seven between 500 and 900 m and five in the foothills forest. Fewer on the coast but occasionally up to five between Arohane and Kirakira.

RENELL Up to seven per day in primary and secondary forest around Lavanggu.

Micropsitta bruijnii**Red-breasted Pygmy-parrot**

KOLOMBANGARA Common in hill and montane forest. Observed between 900 and 1300 m in tall primary forest but not in stunted moss forests above this range. Parties of three to five seen around the camp at 940 m fed on small epiphytic plants including lichens and mosses. Up to three found per day in the surrounding forests. They were vocal and appeared to follow mixed species feeding flocks. Feeding birds spent a lot of time looking up for predators compared to Finsch's Pygmy-parrots, perhaps because montane forests provide less cover than the lowland forms. Nine pygmy-parrots heard at 350 m in primary forest, 8 km inland from Ringgi, were not identified to species but may have been this species as the calls seemed weak for Finsch's Pygmy-parrot.

Geoffroyus heteroclitus**Singing Parrot**

Moderately common but very unobtrusive when not calling. Generally prefers primary forest and tall trees but also enters towns, coconut plantations and secondary growth.

KOLOMBANGARA Recorded up to 490 m. The highest densities were found in a small patch of low lying moss forest on a ridge at 490 m and in coastal coconuts with secondary growth. Up to ten per day near Kena. A female was seen feeding a juvenile on 25/8.

GHIZO A maximum of ten (most in a flock of nine) in degraded swampy forest west of Gizo. Only one seen from the roads between Gizo and Sagheraghi. One in a *Casuarina* in Gizo.

GUADALCANAL Up to 12 on Mount Austen including one in the experimental plantation. Up to three seen regularly in the Botanic Gardens, Honiara. Two on the weather coast below Hailali, including one at 900 m.

MAKIRA Common in primary forest between 50 and 900 m, preferring hill forest. Lower densities in secondary forest. Maximum daily counts of ten in the foothills (below 450 m) and ten around Hauta (above 500 m). Uncommon on the coast, maximum of four per day between Kirakira and Arohane in coconut plantations and villages. Birds sang intermittently throughout the night at Hauta.

RENELL Maximum counts of seven near Lavanggu and four at Tinggoa.

Eclectus (Larius) roratus**Eclectus Parrot**

Abundant in Western Province but less common on the larger, more populated islands. Transects counts indicate that it may be a lowland specialist. Uses primary and secondary forest, gardens and plantations. It is well known as a pest in gardens. Readily crosses the sea between islands.

KOLOMBANGARA Most abundant below 100 m in disturbed habitats. The highest density was in open moss forest on a ridge at 490 m. Daily maxima of 32 at Kena and 66 at Ringgi. Roosts communally: 24 emerged at dawn from a tree near Kena on 10/8. At Ringgi, at least 50 flew south across the sea from Point Vila to roost on islands on 11/8 and 34 flew to an inland roost on 10/8. Two heard in primary forest at 500 m and a male seen at 1150 m above Iriri were the highest recorded. Eclectus Parrots are said to have started raiding gardens at Kena following extensive logging of lowland forests. This may also be due to the recent expansion in the area under cultivation by the increasing human population.

GHIZO Common in degraded swampy forest near Gizo with up to 28 seen per day. Thirty-two seen from the roads between Gizo and Sagheraghi; the highest density recorded. The latter included a female entering a hole in a dead tree on 26/8.

GUADALCANAL Uncommon on the north coast, just two on Mount Austen and one at Selwyn College. Persecution is unlikely to prevent this species raiding gardens so a lack of tall nesting trees may be limiting numbers. On the weather coast, three inland and four on the coast including two eating papayas in a garden.

MAKIRA Recorded from the coast up to 600 m, mainly near gardens but also over primary forest. Similar numbers at all altitudes with daily maxima of 6 to 12 in all areas.

Large imbalances in the sex ratio were often observed. Coates (1985) suggests that this is because the females spend most of the day on the nest. Roughly equal numbers of males and females visited gardens in the evening. Males predominated in gardens at other times and amongst birds flying over forests. However, groups of females were found in primary forest during the day so females may simply be less willing to leave the forest than the larger and, perhaps, bolder males, as proposed by Forshaw (1989).

Collocalia esculenta**Glossy Swiftlet**

Common and more uniformly distributed than Uniform Swiftlet. Rarely more than two together. Scarce away from forests.

KOLOMBANGARA Up to 20 seen per day around Kena. Less common at higher altitudes; ones and twos seen regularly over the forest at 1200 m. At least two seen over moss forest at 1510 m.

GUADALCANAL Eight at Hailali between 900 and 1000 m, in gardens set in primary forest. Five along the River Lungga and five along the road over Mount Austen. One amongst 1200 Uniform Swiftlets at Henderson Airport on was the only one seen in the plains.

MAKIRA Common from the coast up to at least 700 m. Numbers peaked at 37 around Hauta, on a rainy day. Twenty along 4 km of the River Ravo. A party of 15 fed around an isolated flowering tree, full of Sooty Myzomelas, early one morning at Hauta.

RENNELL Common all along the road. At least 50 along 5 km of the road near Lavanggu.

Collocalia spodygius**White-rumped Swiftlet**

Rarely seen compared to Uniform Swiftlet and overall numbers apparently lower.

KOLOMBANGARA Three sightings at Ringgi included 20 passing over the secondary forest reserve during rain and a flock of 60 further inland, over secondary forest. Three flew past the camp at 940 m.

GUADALCANAL One over Mount Austen, 1/9 and just one amongst 1200 Uniform Swiftlets at Henderson Airport on 23/9.

Collocalia vanikorensis**Uniform Swiftlet**

Common but only occurring locally in response to local food concentrations or weather. More abundant on the larger islands and Rennell, perhaps due to the availability of limestone caves for breeding. Less abundant on smaller or volcanic islands. They fed above the forest and in gardens, usually further from the ground than the Glossy Swiftlets.

KOLOMBANGARA Relatively uncommon. Observed from sea level up to the mountain top. Up to 20 seen per day above 1100 m. Maximum counts of ten at Kena and 50 at Ringgi (30/7 only) but usually four or fewer each day.

GHIZO One record only, 19 between Gizo and Sagheraghi.

NEW GEORGIA Many hundreds over islands near Noro on 30/7.

GUADALCANAL At least 1200 feeding low over Henderson Airport on 23/9 but only one the following day. Maxima of 50 regularly over Honiara and Mount Austen. Fewer on the weather coast.

MAKIRA Flocks totalling 200 over the River Ravo, 4 and 5/9. Ten at Hauta on 11/9, otherwise three or fewer per day. Only one seen on the coast, at Kirakira.

THREE SISTERS One over Malaulalo, 3/9.

RENNELL Common; 80 between Tinggoa and Lavanggu on 18/9.

Hemiprocne mystacea**Moustached Treeswift**

KOLOMBANGARA Common near the coast in partially cleared areas. Maxima of 15 at Kena in an evening feeding flock and a flock of seven at Ringgi. One in mangroves near Kena. One inland at the top of a steep ridgeside in primary forest at 510 m.

GHIZO Five along the roads between Gizo and Sagheraghi. One pair in degraded swampy forest to the west of Gizo.

GUADALCANAL Maximum evening count of ten over the Botanic Gardens, Honiara. Up to seven at Mount Austen including two in the experimental plantation and up to six over the River Lungga. Two at Selwyn College.

MAKIRA Groups of one to three on the coast and around gardens from the foothills up to 600 m near Hauta. A group of six over Hunari by the River Ravo.

RENNELL Five between Lavanggu and Tinggoa.

THREE SISTERS Two on Malaupaina. This is the first record for the group (J. Diamond *in litt.* 1994).

Ninox jacquinoti

Solomon Islands Hawk-owl

Endemic to the Solomons; Bougainville to Makira.

KOLOMBANGARA Circumstantial evidence suggests that *Ninox* owls may be present on this island, but this needs to be confirmed. Pellets typical of *Asio* owls were found at 1300 m on a ridgetop just below the moss forest. The five pellets were between 3 and 4 cm long and contained the undigested bones of small rodents. KFPL employees reported an owl, possibly *Ninox*, seen in secondary growth near the wharf at Ringgi. A calling bird was pointed out by villagers at Kena on 1/8 but not seen. Villagers called it an "owl" but the call was not recognised and no record of it was obtained. There are no previous records of *Ninox* owls on Kolombangara.

GUADALCANAL Two calling birds seen by torch light, perched together in Bishopsdale, a western suburb of Honiara on 16/9.

MAKIRA Two sightings during the day, both in primary forest. One was at 600 m, near Hauta, the other at 100 m, near Maniparegho. The former bird was being chased through understorey trees by a group of Chestnut-bellied Monarchs. Villagers pointed out a calling bird at about 100 m in forest near Hunari.

RENNELL Inhabitants of Lavanggu who were very knowledgeable recognised the picture an unknown Hawk-owl species in Mayr (1945) and described it as a shy bird of the forest interior which avoided people. Their descriptions ruled out Barn Owl (*Tyto alba*) which they had not seen on Rennell. Hawk-owls have not been recorded on Rennell.

The calls were quiet "ho" notes, given in pairs on Guadalcanal (two duetting birds) and as a continuous series of one note per second on Makira. The latter bird had dark irides (normally yellow to orange in this species).

Columba vitiensis

Metallic (White-throated) Pigeon

Occurs in primary forest, preferring hill forest to lowland forms.

KOLOMBANGARA Three sightings of single birds. Two in primary forest above Iriri, at 600 m and 1100 m, and one at sea level in secondary growth among coconut palms near Kena.

MAKIRA Moderately common around Hauta in primary forest and in forest edge between 500 and 700 m. Ones and twos seen almost daily and a group of four once. One in primary forest at 100 m near Maniparegho.

Feeding on the ground seemed to be common; birds were flushed from the ground on both islands. Disturbed birds displayed anxiety by flicking their heads forwards horizontally, like the head movement made by feeding ground-birds (e.g. ground-doves *Gallicolumba*). Numbers appear to be unusually high on Makira but could be reduced by hunting as in Fiji (Clunie 1984).

Columba pallidiceps

Yellow-legged Pigeon

Endemic to Melanesia; New Ireland to Makira.

MAKIRA Transect densities were particularly low compared to the other large pigeons. Hill forest was preferred. Five sightings of one to three birds in primary forests between 500 and 650 m around Hauta. One flew across the River Ravo, between two areas of primary forest at 50 m near Maniparegho. All sightings were of birds in flight or perched in trees. One bird, seen twice, appeared to have been flushed from the ground just before it was seen. The relatively long, stout tarsus and stance suggest it is adapted to feed on the ground at least part of the time; this was also proposed by Goodwin (1967). Three were seen taking large (4 cm diameter) fruits from an understorey sapling, 6 m above the ground at 650 m, so the species is not exclusively terrestrial as was previously believed (Collar and Andrew 1988). No calls were heard.

Our records are among the first from the Solomons since 1928. Stephen Blaber (*in litt* 1991) encountered one on Guadalcanal on 24/3, 1987. This was at 1300 m in cyclone-damaged primary forest above Gold Ridge. Another was seen on New Ireland (Finch and McKean 1987). The species is evidently uncommon and probably dependent upon primary forest. Makira appears to be a favoured island although hunting may be increasing in the area where we found it. Compared to other large pigeons, this species is easily distinguished when perched or in flight by the combination of dark grey body/wings and pale grey-white head/neck. It is slimmer in build than the superficially similar, dark green-bodied imperial pigeons *Ducula*. In closer views, the lower neck and breast had a strong turquoise gloss; the bill, loreal skin and skin around the eye were red, the iris and bill tip were yellow.

Macropygia mackinlayi**Mackinlay's Cuckoo-dove**

Widespread (Appendix 1) but only locally common. Transect densities showed slight preferences for lowland habitats and disturbed, dense vegetation. However the only singing birds were in primary forest, perhaps indicating a breeding preference. Usually seen singly.

KOLOMBANGARA Regularly seen around Kena and Ringgi in secondary growth, garden edges and on the logged foothills. Two records of singing birds in primary forest; one at 350 m, 8 km inland from Ringgi, 12/8, and one at 940 m above Irii, 18/8. One bird was seen in a young *Molinaea* plantation at Ringgi.

GUADALCANAL Common in secondary growth on Mount Austen. Also seen in the experimental plantation nearby despite the lack of a shrub layer.

MAKIRA Several records along the River Ravo including four together. Most were in flood damaged secondary forest. One singing in primary forest at 600 m.

RENNELL Particularly common on this island. Observed mainly along the road in the narrow band of secondary growth. Up to seven per day near Lavanggu and 13 between Lavanggu and Tinggoa. Single birds appeared to be following passerine flocks on two occasions.

The song of Rennell birds sounded distinctly muffled compared to birds on other islands. They also gave a number of different muffled coo notes. The two forms of the song were transcribed "*kwoo-fwoo*" for Rennell and "*cuc-koo*" elsewhere. Rennell birds were generally more vocal, perhaps because of a higher density of birds there.

Reinwardtoena crassirostris**Crested Cuckoo-dove**

Endemic to the Solomons; Bougainville to Guadalcanal.

Shy but quite common. Most birds were located by their loud calls. Only encountered in primary forest, usually in the understorey or shrub layer, rarely flying above the canopy. Hill and montane forest held the highest densities.

KOLOMBANGARA Common inland from Irii. At least eight singing around the campsite between 900 and 1100 m and five in lowland primary forest below 470 m. One feeding on flowers in old growth forest in the Ndugghore Valley, near Kena.

GUADALCANAL Three in cyclone-damaged primary forest below Hailali at 700-800 m.

MAKIRA At least seven singing birds around Häuta between 500 and 900 m and two near Maniparegho, between 50 and 200 m. One bird repeatedly visited a fruit-bearing umbrella tree *Schefflera* to feed.

The call is not well documented. It consists of two double notes, transcribed as "*foo-woot foo-woooo*". The pitch rises in the first pair of notes and falls back between the second pair. The last note is drawn out, sometimes sounding faintly disyllabic. The notes are fairly deep, loud whistles. One singing bird on Makira, modified its song gradually at each repetition. The pause between the two pairs of notes increased and the first pair was reduced to a dull "*woo*." This modified form was heard on Kolombangara once. Imperial pigeons *Ducula* mimicked this call. Red-knobbed Imperial Pigeon impersonations are lifeless and slurred in comparison. Island Imperial Pigeon calls lack the volume and are higher pitched. The wings are sometimes closed between beats while flying, in the manner of a dove *Streptopelia*.

Chalcophaps stephani**Stephan's Dove**

A lowland specialist, moderately common in secondary growth near the coast but less frequent in primary and older secondary forests. Few singing birds were encountered.

KOLOMBANGARA Single birds seen regularly in disturbed habitats up to 100 m near Kena. A family party of at least three was feeding on the ground in primary forest at 330 m, near Kena, 10/8.

GHIZO Only one recorded; in thick secondary scrub between Gizo and Sagheraghi.

THREE SISTERS Three in short grassland below coconut palms on Malaulalo.

MAKIRA Common in secondary growth, coconut plantations and villages along the north coast between Kirakira and Arohane. One juvenile here on 4/9. Up to eight around Maniparegho in secondary growth and nearby in primary forests including one singing at 100 m. Feathers from pigeons shot by hunters indicate that this species is shot regularly.

GUADALCANAL Two on Mount Austen, 1/9, were the only ones encountered.

Caloenas nicobarica**Nicobar Pigeon**

KOLOMBANGARA One adult at 20 m in old growth forest in the Ndugghore Valley near Kena. One immature bird flying over Ringgi Cove towards the coast, early one morning.

None were seen from the MV Iuminao while passing suitable small wooded islets on the New Georgia coast (especially around the Marovo Lagoon) at either dawn or dusk.

Gallicolumba beccarii**Bronze Ground-dove**

MAKIRA Moderately common in primary forest up to 600 m, preferring areas with little ground vegetation. Transect counts indicate a slight preference for hill forests. Four sightings of at least three birds, including two together near Hauta. These included an adult male foraging at sunset and then roosting on an horizontal creeper, 4 m above the ground. Four around Maniparegho including a female in flood damaged forest next to the River Ravo.

RENNELL One flying through secondary growth, heading for primary forest at Lavanggu, 20/9. It was identified by its typical *Gallicolumba* structure; plump bodied with a short tail, its flight, with a slight whirring of the wings and warm mid-brown plumage.

Along with a record from Choiseul and a 1980s specimen from Makira (in the Australian Museum, Ian McAllan *in litt.* 1994) these are the first definite records from the Solomon Islands in 37 years. The species is much reduced on Rennell, with no recent records (Lees 1991, Diamond *in litt.* 1991).

Ptilinopus superbis

Superb Fruit-dove

KOLOMBANGARA All sightings were in tall primary and old growth forests. Three single birds including one juvenile near Kena, between 20 and 100 m. At least seven in primary forest at 350 m, 8 km inland from Ringgi. Only one record at altitude, a single female seen with Yellow-bibbed Fruit-doves at 1000 m, above Irii. Transect counts suggest a preference for hill forest. **GUADALCANAL** Up to five singing in degraded forests on Mount Austen, these only used surviving tall trees. One pair nesting in the Botanic Gardens, Honiara. This was the commonest fruit-dove on the weather coast; four singing in primary forest below Hailali.

The Honiara nest was 7 m up a tall tree in closed, parkland woodland. It was situated at the end of a branch against an ant-plant *Myrmecodion*. Both adults shared the incubation (of either an egg or a small chick) between 16/9 and 22/9.

Ptilinopus richardsii

Silver-capped Fruit-dove

Endemic to Rennell, the Three Sisters Ugi and Santa Anna.

THREE SISTERS Two on Malaupaina and seven on Malaulalo, preferring secondary scrub and littoral forest to coconut plantations.

RENNELL Common in secondary growth along the road where they fed. Also numerous over primary forest. Peak counts of 42 between Tinggoa and Lavanggu, 21/9. Twenty-four emerging at dawn from a pigeon roost on Japan Mountain, Lavanggu were attacked by waiting Brown Goshawks. A fledgling was seen near Lavanggu on 19/9 and the fresh remains of another were found near a Brown Goshawk nest on 20/9.

(**MAKIRA** A fruit-dove, possibly this species, glided over Hauta on 11/9. It had a pale grey head, neck and breast, sharply divided from the chestnut belly. The belly of this species is orange-chestnut but looks darker from below. This would constitute the first record for Makira but is best regarded as not entirely certain.)

The calls of the species are undescribed. The basic call is a slurred whoop, rising in pitch and with the end emphasised, "ooOOOP" or "oowooop". This is uttered singly or repeated as a series. The song consists of a repeated phrase, starting with the long basic whoop and followed by a varying number of short, soft "wp" notes. At each repetition the number of "wp"s increases by one. On the Three Sisters, three phrases comprised the song, starting with one "wp" and ending with three: "oowooop wp, oowooop wp-wp, oowooop wp-wp-wp." On Rennell we noted three "wp"s, rising to five and occasionally the last phrase ended with a frenzied series of up to 15 "wp"s. A similar song was also heard on the Three Sisters, the basic whoop was followed by a rapid, accelerating series of "pu" notes, falling in pitch. A soft, growling "gwor-r-r-r" was probably made by this species on Rennell. Pacific Imperial Pigeons on Rennell made a similar, but deeper and more grating, call. Parachuting glides on raised wings, like domestic pigeons, were seen occasionally. The wing is unusually broad for this genus.

The juvenile plumage of a young fledgling on Rennell is like the adult except for the following points. The pale grey head and neck feathers all have very thin lemon tips, giving it a greenish tinge. The chin is pale lemon, not whitish. The belly and vent are lemon with blotches of rufous-orange on the edges of the belly, lower flanks and rear vent. The tail tips were white, not pale grey as adults. The wing was fresher with thin yellow fringes to the remiges and greater coverts and a stronger blue tinge at the wrist.

Ptilinopus solomonensis

Yellow-bibbed Fruit-dove

This was the commonest fruit-dove at higher altitudes. It did occur down to sea level but mainly in primary forest.

KOLOMBANGARA Most abundant between 700 and 1400 m, where up to 11 found per day. Scarcer in the moss forest; just one heard at 1520 m. Also scarcer in the lowlands with just three in a large area of lowland primary forest and one in tall secondary forest near Irii. One juvenile was seen on 17/8.

GUADALCANAL Not encountered on the weather coast in primary forest up to 1000 m despite familiarity with the calls.

MAKIRA Abundant at all altitudes in primary forest. Up to 38 per day around Hauta (500-700 m) and 24 per day at Maniparegho (50-450 m). Disputes over feeding sites were seen daily at Hauta. The Hauta birds used secondary growth more readily and were more vocal, perhaps indicating a high population density. Quite common in fragments of primary forest along the coast with up to six found between Kirakira and Arohane. Not seen in secondary growth at sea level.

Birds sang intermittently all through the night on both islands. An alternative song was heard on Makira and Kolombangara; the muffled phrase "pook, fwoorp" was uttered singly or as a series. Single "fwoo" notes were also given. A bird on Makira, presumably displaying, was gliding downwards in a spiral path with its wings extended and pressed forwards and down. Sometimes they appeared to associate with mixed species feeding flocks.

Ptilinopus viridis

Claret-breasted Fruit-dove

This was the most widespread fruit-dove, perhaps due to its ability to use disturbed habitats where some tall trees are retained.

KOLOMBANGARA Common in all habitats, including villages, from sea level to 350 m near Kena and Ringgi. Usually up to five found per day but at least 20 gathered in a fruit tree at 150 m near Kena. The highest altitude reached was 600 m where three were found in primary forest inland from Irii. It was less abundant in upland habitats where it was replaced by Yellow-bibbed Fruit-dove.

GHIZO Up to nine in swampy forest behind Gizo and 14 along the roads between Gizo and Sagheraghi. The latter included one displaying on 26/8. The display consisted of a steep ascent with clattering wings, followed by a dive.

GUADALCANAL Up to nine in the Botanic Gardens, Honiara including one juvenile on 22/9. Up to 17 in degraded forests on Mount Austen. Uncommon on the weather coast, just one heard in primary forest below Hailali.

Ptilinopus eugeniae

White-headed Fruit-dove

Endemic to Makira; recently split from Claret-breasted Fruit-dove (Sibley and Monroe 1991)

MAKIRA Moderately common around Hauta up to about 700 m. Up to four found per day, but only in primary forest, not in secondary growth. Transect counts showed it to be much less common than Yellow-bibbed Fruit-dove where the two occur together. Similar numbers on the coast, but possibly more abundant in the foothills. Twelve between 300 and 450 m, above Maniparegho on 13/9. One juvenile seen on 10/9.

White-headed Fruit-dove is very different in pattern and coloration from Claret-breasted Fruit-dove, but its song is the same with perhaps only minor differences in pitch and timbre.

Ducula pacifica

Pacific Imperial Pigeon

RENNELL Moderately common in primary forest, feeding down to 3 m above ground. Maximum counts of three near Lavanggu and Tinggoa. Only one emerged from the pigeon roost on Japan Mountain, Lavanggu, 20/9.

Ducula rubricera

Red-knobbed Imperial Pigeon

This is the most abundant large pigeon in all inland habitats with tall trees, from sea level up to least 1100 m. Transect counts indicate a preference for lowlands although it is common in hill forest. Birds occasionally crossed the sea but not so readily as Island Imperial Pigeons which were more abundant on coasts and small islands.

KOLOMBANGARA A flock of 34 flying to roost past Kena was the largest gathering. Otherwise up to 27 seen per day around Kena in primary and tall secondary forests and in trees amongst coconut plantations. They visited flowering and fruiting trees. Twenty-three observed in lowland primary forest behind Iriri. Less common on the mountain, no more than two seen per day between 1000 and 1100 m. A freshly predated pigeon egg found in tall primary forest at 1100 m on 22/8 probably belonged to this species.

GHIZO One seen flying from Mbambanga island, 31/7. None seen on the main island.

NEW GEORGIA Only one seen along the coast from the MV Iuminao on two voyages.

GUADALCANAL Ten at Selwyn College. Up to three in degraded forest on Mount Austen. Common on the weather coast; 12 below Hailali in primary forest but only two on the coast nearby.

MAKIRA Abundant in primary forest from the foothills up to 900 m but not in disturbed habitats unlike other islands. Possibly less abundant at higher altitudes. The largest concentration was a loose flock of at least 40, moving through the canopy of primary forest at 200 m near Maniparegho. Up to 26 per day around Hauta. This is the most commonly shot pigeon. Plucked feathers from 14 individuals were found on the path from the River Ravo up to Hauta on 5/8.

This species was suspected of mimicry. A version of the song of the Crested Cuckoo-dove was given frequently where the cuckoo-dove occurs. This was noted at Iriri (mountain and lowland forest), Hauta and Hailali. The chestnut patch appeared to extend further up the breast on Makira birds than on Kolombangara, although the two are believed to be the same subspecies *rufigula*.

Ducula pistrinaria

Island Imperial Pigeon

Moderately common along the coasts of Western Province and the Russell Islands. Transect counts confirm it is a lowland specialist. Frequently seen crossing the sea between islands. Scarce on the larger islands with cultivated and built-up coasts. Highly mobile and able to utilise disturbed habitats with surviving trees.

KOLOMBANGARA Flocks of up to 15 at Kena and eight at Ringgi, up to 2 km inland. Observed up to 4 km inland near Iriri; three in lowland primary forest and two in tall secondary forest. One tame individual in Iriri village. Much less abundant than Red-knobbed Imperial Pigeon

GHIZO The swampy valley west of Gizo held up to eight birds. This may have been a roost as the birds were vocal, did not feed and were usually seen late in the day. Smaller numbers around the rest of the island. More frequent than Red-knobbed Imperial Pigeon.

NEW GEORGIA Fourteen seen from the MV Iuminao on 28/8, between Noro and Munda and in the Marovo Lagoon.

RENDOVA Common along the north coast in primary forest, 30 seen on 30/7.

RUSSELL ISLANDS Two flying between islets north of Mbanika, 29/7.

(THREE SISTERS A group of six imperial pigeons flying over Malaulalo were probably this species.)

Island Imperial Pigeons roosting near Gizo were very vocal and two instances of mimicry were heard. The songs of Crested Cuckoo-dove and Claret-breasted Fruit-dove were copied, the latter in response to a singing fruit-dove. The normal song was that described by Virtue (1947) which sounds like a deep, booming burst of laughter. Another common call resembles the first two notes of the song of the Woodpigeon *Columba palumbus*.

Ducula brenchleyi**Chestnut-bellied Imperial pigeon**

Endemic to the Solomon Islands; Guadalcanal to Makira.

MAKIRA Moderately common but much outnumbered by Red-knobbed Imperial Pigeon. Mainly encountered in or over primary forest and lowland habitats with the highest densities in hill forest. One to five recorded daily around Hauta. Similar densities in primary forest and coastal secondary growth, in contrast to Red-knobbed Imperial Pigeon. One of the plucked pigeons on the track to Hauta may have been this species.

Dark-headed individuals comprised 30% of those seen, the remainder having white-topped heads. Female Purple-tailed *D. rufigaster* and Finsch's Imperial Pigeons *D. finschii* in Papua New Guinea have darker heads (Coates 1985). This suggests that sexual dimorphism occurs in this species too, although polymorphism and a juvenile plumage cannot be ruled out. The call has not been described before. It was a deep, smooth, drawn-out coo, rising and then falling in pitch; "ooLOOoo." Both dark- and light-headed individuals called but, overall, calling was infrequent compared with Red-knobbed Imperial Pigeon.

Gymnophaps solomonensis**Pale Mountain-pigeon**

Endemic to the Solomons; Bougainville to Guadalcanal and Malaita.

KOLOMBANGARA Moderately common and usually gregarious. The foraging behaviour is similar to Papuan Mountain-pigeon *G. albertisii* (Coates 1985). During the day flocks descend the mountain in rapid swooping glides, some reaching the coast. The flocks return to the mountain tops late in the afternoon to roost. Flocks were seen (or heard in the mist) daily passing the camp at 940 m, above Iriiri. The largest flocks were 23 in degraded forests around Ringgi airstrip and flocks of 26 and 21 over primary forest at 350 m, 8 km inland from Ringgi. Smaller flocks around Kena: a maximum of four per flock. A group of four was seen feeding in the understorey of old growth forest at 100 m in the Ndugghore Valley. Transect counts were highest in lowland primary forest which was the main feeding habitat. No calls were heard.

GUADALCANAL Five flying over primary forest below Hailali on the weather coast. No calls were heard.

Gallirallus philippensis**Buff-banded Rail**

Observations and transect counts show this species to be a lowland specialist.

GUADALCANAL Common in damp grassland around Henderson Airport; a maximum of eight on 22/9. One in dry grassland above the Botanic Gardens, Honiara.

MAKIRA Common in secondary growth, grasslands and overgrown coconut plantations on the north coast. Up to 10 seen along the road between Kirakira and Arohane. Similar numbers of Bush-hens were reported, perhaps in error, along the same track by Lees (1991). At Kirakira, a 5 hectare dry grassland, with evidence of burning, held about 20 birds on 16/9. These included four young differing in age by several weeks. One in gardens at 500 m at Hauta on 6/9.

THREE SISTERS Three on Malaulalo in a coconut plantation, feeding in the open in low grass below the palms. This is the first record for the Three Sisters. Buff-banded Rail was not found by a resident ornithologist in the 1940s and 1950s (French 1957) so it is likely to be a subsequent colonist, as no landuse changes are apparent.

Rallidae sp**unspecified Rail**

KOLOMBANGARA A rail was flushed by dogs from a ridgetop at 810 m on 15/8. It was in stunted ridge forest, rich in *Freycinetia*. It flew, giving a call subsequently heard from Buff-banded Rails. A rail in secondary growth by gardens near Kena was of a similar size. Insufficient detail was noted to identify either bird to species. Buff-banded Rail is believed to be replaced or excluded by the newly described Roviana Rail which is flightless or only able to fly weakly (Diamond 1991). No rails were found in extensive suitable habitat around Ringgi.

Amaurornis moluccanus**Bush-hen**

MAKIRA One flushed during the day (after rain) from sweet potatoes in a garden, located in primary forest at 400 m, in a sheltered valley, south of Hauta. This species was not seen on the coast where it was recorded, maybe in error, as common by Lees (1991).

Porzana tabuensis**Spotless Crane**

MAKIRA One in a dry coastal coconut plantation near Kirakira on 15/9. It had a dark grey head and body and a plain chestnut wing and back. The legs were coral red and the bold white eye-ring suggests that it was a young bird. This is the first record for Makira. The only other records for the Solomon Islands are from Rennell (Lees 1991 and Diamond *in litt* 1991) and Guadalcanal (Stevens and Tedder 1973) although it has, like the following species, probably been overlooked in the past.

Porzana cinerea**White-browed Crane**

MAKIRA Three along a tiny stream at Kirakira, 15/9. At least one was an immature bird. Deep, damp grass was preferred to the adjacent dry grassland which was favoured by Buff-banded Rails. This is the second record for the island (Diamond *in litt* 1991).

Porzana sp**unspecified Crake**

MAKIRA A small dark crake was seen in secondary forest next to the River Ravo at Maniparegho, 12/9. Villagers described a similar bird which visited the village. These were possibly Spotless Crakes.

Porphyrio porphyrio**Purple Swamphen**

Transect counts indicate that this species is a lowland specialist using primary forest as well as more disturbed habitats. They are renowned throughout the Solomons as a pest on bananas.

KOLOMBANGARA Common along the coast in gardens, secondary growth (both dry and wet areas) and overgrown plantations at up to 100 m altitude. Less abundant than scrubfowl: daily maxima included 16 at Ringgi and three around Kena. One seen at 280 m in primary forest on the side of a narrow ridge near Kena. Young and chicks (at least two broods) were seen at Ringgi 10/8 and 11/8.

GHIZO At least three in damp grassland on the edge of Gizo, 26/8.

GUADALCANAL Seven in reedswamp and gardens by Henderson Airport, 22/9.

MAKIRA Relatively uncommon along the coast, just seven at Kirakira with Buff-banded Rails and two at Arohane. Inland, one at 80 m in primary forest and another at 600 m in a garden near Hauta.

RENNELL Villagers reported the presence of "the bird that eats bananas" but we found none.

Gallinago mekala**Swinhoe's Snipe**

GUADALCANAL One seen very well on Henderson Airport, 23/9. This is the first record for the Solomons. Its occurrence is no surprise as snipe (*Gallinago* sp) have been seen previously but not identified to species (Hadden 1981).

The bird was identified by the call, relative proportions of the wing, body, legs and bill and overall plumage colour. Flight views are the most useful; the bird was flushed four times, twice at close range permitting close study. The dark, heavily-barred underwings and underparts, reduced (barely visible) white trailing edge to the secondaries and slightly paler median covert patch identify it as one of a group of three very similar species. The observer involved has seen all three species (and heard all but one), the remainder being Japanese *G hardwickii* and Pintail *G. stenura*. The call and structure were distinct from Japanese Snipe observed in Australia and Pintail Snipe in Thailand. It resembled Swinhoe's Snipe seen in Malaysia. This snipe was a large, dark bird with broad, rounded wings (recalling a Woodcock *Scolopax rusticola*), a very long bill and toes which projected just beyond the tail in flight. Japanese Snipe has longer, thinner-based, more pointed wings, a slimmer head and neck and a shorter, higher-pitched, more rasping call. With experience, these three species are relatively easy to separate given good flight views. Perched birds (occasionally birds in the hand, too) are difficult to separate and the literature has concentrated on this rather than recognising the value of flight views. Additional supporting evidence for Swinhoe's Snipe is the dry habitat it was found in, the difficulty experienced in flushing it, the habit of only calling once if at all, the low, ponderous and relatively short escape flight and the small amount of white visible on the outer edge of the tail (Carey 1993, Hayman *et al* 1986).

Limosa lapponica**Bar-tailed Godwit**

MAKIRA One in the Ravo Estuary, 13/9.

THREE SISTERS One on Malaupaina, 3/9.

Numenius phaeopus**Whimbrel**

Widespread on reefs, beaches and shorter grasslands (Appendix 1). Small groups were seen from 31/7 onwards. All showed features of the race *variegatus*, namely a wholly barred rump with white confined to the lower back and heavily barred underwings.

THREE SISTERS Thirteen on 3/9 was the only group exceeding five birds. These were feeding on a silty beach in the lagoon of Malaupaina and the grasslands on Malaulalo.

Tringa (Actitis) hypoleucos**Common Sandpiper**

Common and widespread along coasts, particularly on reefs in Western Province, and along larger, rocky rivers (Appendix 1). Recorded in groups of one to six throughout our visit.

KOLOMBANGARA Maximum count of 13 along the coast near Iriri, 13/8.

Tringa (Heteroscelus) brevipes**Grey-tailed Tattler**

Widespread and common but only along the coasts (Appendix 1). The largest numbers occurred during late August.

KOLOMBANGARA 18 on reefs near Kena, 25/8 (the earliest sighting).

GHIZO Eleven on reefs between Gizo and New Maura, 27/8.

Tringa (Heteroscelus) incana**Wandering Tattler**

GHIZO One in full summer plumage on the reefs at New Maura, 27/8.

GUADALCANAL Two on reefs, Selwyn College, 26/7, were identified on call.

Arenaria interpres**Ruddy Turnstone**

Small numbers seen along coasts from 27/8 onwards (Appendix 1). Groups of up to five occurred in all coastal wader habitats.

Calidris ruficollis**Rufous-necked Stint**

GUADALCANAL One on Henderson Airport, 23/9.

MAKIRA One on the Ravo estuary, 14 to 15/9.

BELLONA One on the airstrip, 21/9.

Calidris subminuta/minutilla**Long-toed Stint/Least Sandpiper**

BELLONA One on the airstrip, 21/9. The yellow legs and general appearance identify it as one of these species but separating the two is very difficult. The fresh, rufous plumage indicated that it was a juvenile bird. The bird's resemblance to a small Sharp-tailed Sandpiper favours Long-toed Stint which, as a scarce visitor to Australia (Slater 1989), could be expected to occur. Least Sandpiper is a very unlikely visitor, it has not been observed on well-watched sites in Micronesia (Pyle and Engbring 1985) or Australia (Slater 1989). While the bird probably was a Long-toed Stint, it is best not regarded as definite as it would be the first record for the Solomons.

Calidris acuminata**Sharp-tailed Sandpiper**

GUADALCANAL Observed on short grassland at Henderson Airport from 2/9 onwards with a peak of 11 on 22/9. Two *Calidris* sandpipers flying past Honiara on 27/7 may have been this species.

GHIZO One on a beach, 26/8.

BELLONA One on the airstrip, 21/9.

Burhinus giganteus (Esacus magnirostris)**Beach Thick-knee**

KOLOMBANGARA One pair to the west of Kena, 9 to 13/8. They frequented open reef flats but retreated into mangroves when disturbed.

NEW GEORGIA One, Buru Harbour, 30/7 and 25/8. One on Banga Island, between Noro and Munda, 30/7.

THREE SISTERS At least 11 on Malaulalo on 3/9. These were flying around the island in a noisy flock at high tide. Coates (1985) states that this species does not form flocks. Earlier, three were feeding together on grassland under coconut palms.

Pluvialis fulva**Pacific Golden Plover**

A widespread and common migrant, preferring short grassland (Appendix 1). Few were recorded on coasts or in Western Province.

GUADALCANAL Present at Henderson Airport and the playing fields of King George VI school throughout our stay.

Numbers peaked in mid September with 134 on 22/9. One still had full summer plumage on 27/9 but was distinguished from the later-moulting American Golden Plover *P. dominica* on structural features.

RENELL Forty-five, including one juvenile, on Tinggoa airstrip, 21/9.

BELLONA Nineteen on the airstrip, 18/9.

Charadrius mongolus**Mongolian Plover (Lesser Sand Plover)**

THREE SISTERS One on Malaupaina, 3/9, feeding on a silty beach within the lagoon.

Sterna (Gelochelidon) nilotica**Gull-billed Tern**

RUSSELL ISLANDS Two single adults seen at sea to the north of the islands on 29/7 are the first to be recorded in the Solomon Islands. They are locally common in southern Papua New Guinea but scarce in the north and the Bismarck Archipelago. Lone immature Roseate Terns with incompletely developed bills, tails and wings were a source of confusion at sea where size was hard to judge and the distinctive wingtip patterns could not be seen. These two birds were the only ones positively identified. They were stocky with short, thick necks, bodies and bills. Their upperwings were wholly pale grey except for a diffuse black band across the tips of the primaries. Both had complete black caps indicating breeding plumage.

Sterna bergii**Great Crested Tern**

Common and widespread both on the coasts and at sea (Appendix 1). About half the birds were juveniles or immature birds. Some were still partially dependent in their parents (e.g. 3/9 to 5/9) but terns take several years to learn to fish efficiently (A. del Nevo verbally) so this need not mean that they had recently finished breeding. Most adults had worn and bleached plumage but five to ten seen on Ghizo had fresh plumage. These may have been Australian birds, soon to depart to breed. Usually seen in groups of up to six. Larger concentrations occurred at regular loafing sites on reefs at low tide, the maximum counts are listed below. The species seemed more common in Western Province than around the larger islands.

KOLOMBANGARA Fifty-five at Votuana, 13/8 and 45 on a fallen tree out in Ndulo Cove, 10/8.

GHIZO Up to 40 on the reefs at New Maura, 26/9 and 27/9.

Sterna dougallii**Roseate Tern**

GHIZO Between 30 and 50 adults in attendance at a colony on Sagharughombe Island at 1430 hours on 1/8. Eggs of two *Sterna* species were found, laid on the ground in scrapes in coral talus. Roseate Terns were circling the islet in an excited manner indicating that they were one of the species breeding. Four loafing on rocks near Gizo harbour on 27/8 were the only birds seen inshore.

NEW GEORGIA Concentrations observed at two potential breeding sites in the Blanche Channel. At least 130 around a sandy cay in a chain of islands to the south of Seghe at 1300 hours on 28/8. Twenty at the Munda Bar at 0800 hours on 28/8. None there at 1100 hours on 30/7 but two were seen at sea to the south.

GUADALCANAL Two at sea, just beyond the west end of the island, 29/8.

Sterna sumatrana

Black-naped Tern

GHIZO Up to 50 seen regularly around islands to the west of Gizo. Between 20 and 40 at the tern colony on Sagarughombe Island at 1430 hours on 1/8. Their behaviour indicated that they were the second species of tern breeding there and notes on the eggs seen tally with this species. There was also a juvenile bird in fresh plumage at the islet which suggests that they may have an extended breeding season. Six on offshore rocks near Gizo harbour were the only ones seen near the main island.

NEW GEORGIA Parties of up to 30, totalling 130, in the Blanche Channel on 30/7. Only two adults were seen in gatherings at two potential tern colonies.

RUSSELL ISLANDS Forty-nine around islands to the north of Mbanika and Pavuvu, 29/7.

GUADALCANAL Six at sea to the west of the island, 28/8.

THREE SISTERS Three by Malaupaina, 3/9.

RENNELL Four flew inland at Lavanggu at dusk on 20/9.

Sterna hirundo

Common Tern

KOLOMBANGARA Eight between Ringgi and Kena, along the coast, 13/8. They were predominantly one year old, non-breeding birds of the race *longipennis*.

NEW GEORGIA Sixty-eight in the Blanche Channel, in parties of up to 30 on 30/7.

RUSSELL ISLANDS One in a flock of noddies, at sea to the north of the islands, 29/7.

Sterna lunata

Grey-backed Tern

No definite records. One or two terns seen in the Blanche Channel, 28/9 may have been this species. It is evidently uncommon here at best. Blaber (1990) recorded just one here during three years.

Sterna anaethetus

Bridled Tern

Present in all offshore waters in groups of up to 20, but usually five or fewer, alone or with mixed species fishing flocks. Single independent juveniles were seen in a number of areas. The main concentrations of birds were as follows.

NEW GEORGIA Forty-eight in the Blanche Channel, 30/7. None were seen among terns gathering at potential nest sites.

RUSSELL ISLANDS Thirty-five at sea to the north of Mbanika and Pavuvu, 29/7.

Sterna fuscata

Sooty Tern

RUSSELL ISLANDS Eight, including one juvenile, seen at sea to the north of Pavuvu, 29/7.

GUADALCANAL Two seen offshore, 29/7.

Anous stolidus

Brown Noddy

More localised in distribution than Black Noddy in Western Province but common where it did occur. Mixed fishing flocks containing both noddy species were rarely encountered and the few we did see were predominantly of one or the other species. Noddies were the most numerous species in almost all the mixed species fishing flocks.

NEW GEORGIA About 600 loafing on a sandy cay in the chain of islands to the south of Seghe, at 1300 hours on 28/8. About 300 in the Blanche Channel, south of Munda, in flocks of up to 150.

RUSSELL ISLANDS One flock of 50 at sea, north of Pavuvu, 29/7. At least 22 between Guadalcanal and the Russell Islands on 29/7.

THREE SISTERS Twenty in a fishing flock of Black Noddies to the south of Malaupaina, 3/9.

RENNELL At least 230 in Kanggavu Bay, 19/9.

Differences in the plumage of the two noddy species were often hard to judge at sea. In mixed flocks the difference in size and colour was obvious but most flocks here contained just one noddy species. In this case we judged the size of the noddies with respect to accompanying terns. Black Noddies were small like Roseate and Black-naped Terns. Brown Noddies were slightly bigger than Bridled Terns. Numerous distant noddy flocks could not be identified to species and have been excluded from the totals.

Anous minutus

Black Noddy

More common and widespread than Brown Noddy in Western Province and more frequently observed inshore. Flocks of up to 200 were seen at sea. Dolphins and Black Noddies were occasionally seen following the same fish shoals.

KOLOMBANGARA Flocks of up to 100 seen regularly in the Blakett Strait.

GHIZO Numerous along the coast at all times. A maximum of 200 seen loafing on a sandy cay to the north of Nusatupe, 27/8.

NEW GEORGIA Concentrations of 500 at the Munda Bar and 500 more nearby in the Blanche Channel on 30/7. This could be a colony. Of 250 between Buru and Patutiva on 28/8, none was at the island chain to the south of Seghe, a potential tern colony.

THREE SISTERS A flock of 100 with Brown Noddies at sea to the south of Malaupaina, 3/9

RENNELL One with Brown Noddies in Kanggavu Bay, 19/9.

Aviceda subcristata

Pacific Baza

A lowland specialist, found in primary and secondary forest, frequently in clearings or open areas.

KOLOMBANGARA One pair seen regularly at Kena over garden edges, secondary forest and once at 380 m in a clearing. One pair nesting in Ringgi Cove village, 10 to 11/8. The nest was 12 m up a 15 m tall, isolated tree, on a branch amongst thick foliage. A change-over of adults was seen, the bird arriving was carrying a snake half-swallowed. Three more were seen over secondary forest nearby.

GHIZO A group of three over the swampy valley, west of Gizo, 31/7 and singles on other dates.

GUADALCANAL A pair at Selwyn College, 26/7. One over open plains near Henderson Airport, 22/9.

MAKIRA A pair at Manipareghe seen over gardens, primary and secondary forests, 13/9 to 14/9, displaying on 13/9. A displaying bird at Hunari, 5/9, may have been one of these birds. The spectacular aerial displays are variable (Schodde and Tidemann 1986). In the form seen here, the displaying bird gained height in a series of short vertical climbs, separated by shallow swoops. The legs were held thrust forwards during the climbs.

Pandion haliaetus

Osprey

Common on coasts and small islands in Western Province but scarce or absent on larger, more developed islands.

KOLOMBANGARA A pair at Kena (1.5 km inland) roosted regularly in a dead tree. They displayed on 8/8, performing the Sky Dance (Cramp and Simmons 1980) which is used to identify a breeding territory. Congregations, of adults, were seen on the coast near Kena with a maximum of five, 25/8.

GHIZO A peak of five around Gizo on 26/8, including a pair carrying nest material.

NEW GEORGIA A pair were seen at an active nest on Vonavona, 11/8. One near Bangga, 30/7.

RENDOVA Three along the north coast, 30/7.

RUSSELL ISLANDS Three around small islands north of Pavuvu.

THREE SISTERS One on Malaupaina, 3/9.

RENNELL Two single birds seen near Lavanggu.

Haliaeetus sanfordi

Sanford's Fish-eagle

Endemic to the Solomons; Buka and Bougainville to Makira.

Seen regularly at low densities in Western Province but at only one site on Makira and not at all on Guadalcanal. The birds ranged widely but made significant use of primary forests up to at least 1000 m altitude for hunting. Most sightings were on or near the coast but rarely away from tall trees (dead or alive) or old growth forests. These were favoured for loafing and roosting and were selected specifically amongst areas of coconut plantations and secondary growth. Transect counts indicate a slight preference for lowland forests (primary and secondary) with hill forests also used.

KOLOMBANGARA Two pairs at Kena in roughly 20 km², suggesting a minimum range of 10 km². These were seen in a boundary dispute on 8/8. Two were seen carrying prey from primary forest toward the coast, west of Kena, three times on 8 and 9/8. They may have been feeding young but a nest was not found. At Ringgi, single birds were seen in degraded forest, 11 and 12/8 and at 350 m, 8 km inland, at the lower edge of the primary forest. Four other sightings of single birds over primary forest between 700 and 1000 m, up to 9 km inland from Iri.

RENDOVA One on the north coast, 30/7.

NEW GEORGIA One on the coast near Noro, 30/7.

GHIZO One near Pailongge, 26/8, flying over the shoreline and also perching on reefs. A large nest found nearby may have been a fish-eagle nest. It was 1.2 m in diameter, in a huge dead tree in logged forest about 400 m inland.

MAKIRA One immature bird seen around Hauta, 8/9. Villagers stated that the species is hunted for meat in this area, despite tabu protection (Cain and Galbraith 1956).

The call, heard frequently, was a cackling series of yelps or shrieks, transcribed as "guaek, guaek,..." or "guak, guak,..." or "ya-ya-ya-...". A self-advertising display was noted several times including during a boundary dispute and when an eagle was attacked by Brahminy Kites. In this display, a high-flying bird, calling continuously, would rock from side to side with its fully outstretched wings held in a deep "V" and its legs dangling. This was visible over several kilometres and, by analogy with other large raptors, is probably part of maintaining a nesting territory. The species is easily identified by its distinctive strongly-tapered wingtips and short tail although in high winds these are less obvious. Immature birds appear to be separable from adults by their wholly pale upperparts and prominently streaked breast and also by the white bases to the underwing coverts and axillaries, as on immature White-tailed Eagle *H. albicilla*.

Haliastur indus

Brahminy Kite

Common on small islands, coasts and coastal plains. Also seen along large rivers. Transect counts show it is a lowland specialist using all habitats. Generally less abundant than on Manus. Least common on the developed north coasts of Guadalcanal and Makira where large nesting trees are scarce.

KOLOMBANGARA Regularly seen up to 5 km inland and up to 400 m altitude. A pair seen near Kena defending a forested ridge at 300 m against a Sanford's Fish-eagle were probably breeding (6/8). A juvenile was also seen in this area.

GHIZO Two adults and one juvenile regularly around the swampy valley west of Gizo. They were also seen scavenging fish in Gizo harbour. One carrying nest material, 31/7.

GUADALCANAL Up to three (one immature) at Henderson Airport regularly. One immature bird at Selwyn College, 27/7. More common on the weather coast at Avuavu and along the River Bolavu.

MAKIRA Singles on the north coast. One pair nesting by the River Ravo at Hunari, 5 km inland. The nest was near the end of a branch, 20 m up a 25 m tall tree. The tree was in a small group between the river and gardens, set in primary forest. One bird sitting on the nest, at 0630 on 5/9 was joined by its mate but no food was brought. Just two sightings of individuals over Hauta at 500 m.

Circus approximans

Swamp Harrier

GUADALCANAL One adult hunting on Henderson Airport on 28/7. This is a rare vagrant to the Solomon Islands with only two previous records (on Guadalcanal and the Three Sisters, J. Diamond *in litt* 1991). It was identified by its large size, bulky structure (resembling a Marsh Harrier *C. aeruginosus*), dark brown upperparts and large, contrasting, white rump patch.

Accipiter novachollandiae

Grey Goshawk

Uncommon but unobtrusive. It tends to hunt by flying low in open areas and within the forest like male European Sparrowhawk *A. nisus*, but possibly spends more time perched waiting for prey, as in Australia (Marchant and Higgins 1994). This form is sometimes recognised as a separate species, Variable Goshawk *A. hiogaster*.

KOLOMBANGARA Only recorded in secondary growth, where transect counts showed relatively high densities. One adult on the forest edge at Kena, 2/8. Single adults at Ringgi, hunting in gardens and open secondary growth, 10/8, and 5 km inland over cleared ground and plantations, 12/8. There is only one previous record on Kolombangara (J. Diamond *in litt* 1991).

GHIZO Single birds in a tall plantation and in secondary forest with scattered tall trees.

GUADALCANAL Single birds in the Botanic Gardens, Honiara on several dates including a juvenile on 26/9. A bird displaying high over Honiara on 27/7 was calling as it flew with accentuated, butterfly-like flapping. Elsewhere, one at Henderson Airport and one on Mount Austen.

The Kolombangara form has not been described. It had an orange-yellow cere, loreal skin, a dark eye and orange-yellow legs. The head and upperparts were a clean, mid blue-grey and the underparts were deep, dull chestnut, close in tone to the head. The tail was slightly paler, unmarked grey.

Accipiter fasciatus

Brown Goshawk

RENNELL Up to five seen between Lavanggu and Tinggoa. A nest at Lavanggu contained one or two small downy young on 19/9. The large nest of sticks was on a branch, 20 m up a 25 m tall emergent tree at the edge of a garden. They hunted nearby around Japan Mountain, attacking Pacific Imperial Pigeons and Silver-capped Fruit-doves emerging from the roost there. They displayed in the mornings (flying high with accentuated undulations or deep, slow wing beats or circling and chasing each other) and were observed attacking a passing Osprey.

BELLONA Two over the airstrip, 21/9, one chasing a Pacific Golden Plover.

Accipiter albogularis

Pied Goshawk

Endemic to the Solomons; Bougainville and Buka to Makira.

Apparently more common than Grey Goshawk though less secretive, often hunting above the forests. Recorded in all habitats but the highest transect densities were from hill forest and coconuts where the species may simply be easier to observe.

KOLOMBANGARA Six sightings of single birds over (or near) primary forest, from sea-level to 1100 m. Three sightings near Kena were of the pale form (see below).

GHIZO One bird (pale form) over swampy forest and secondary growth, Gizo, 31/7.

GUADALCANAL One adult hunting in the plains at Henderson Airport, 28/7. One adult displaying over primary forest by the River Lungga, 6/8. One juvenile in the Botanic Gardens, Honiara, 19/9.

MAKIRA Common over primary forest. Seen daily around Hauta, where at least six individuals were noted; including a nesting pair, a juvenile and a melanistic bird. Also common at sea level around secondary growth: single adults seen at Hunari, Maniparegho and Arohane and single juveniles at the latter two sites. One was seen chasing a Finsch's Pygmy-parrot.

The nest near Hauta was on a valley side in primary forest at about 600 m. It was at the end of a branch near the base of the crown of an emergent tree. The pair were sharing the incubation and feeding of small chicks on 10/9 and 11/9. A call, transcribed as "ki-ki-ki", was noted when the adults changed over at the nest (also given by perched birds). Displays included deeply undulating, high flights, flying with accentuated wing beats and the wings pressed forwards, steep vertical dives or series of steep dives followed by soaring up to repeat the sequence. None of these birds gave the wailing call, believed to be diagnostic of Imitator Sparrowhawk (Webb 1992).

Pied Goshawk has a longer tail than Grey Goshawk, although its tail is still relatively short for an *Accipiter* species. The wings are relatively long and broad. The species shows considerable variation, more than previously described (Ferguson-Lees *in prep*). Most birds were of a typical form, dark blue-grey above (often appearing black) and white on the underparts, including the throat and all but the tips of the primaries. Iris colour ranges from red to yellow, through orange. The cere is usually yellow. The bill is pale grey with a black tip and cutting edge. The legs are yellow. The pale form noted in Western Province is pale ash-grey above and a very pale grey below, with a plumage pattern similar to typical birds. The melanistic form is black with silvery bases to the undersides of the primaries, the bird we observed had an orange cere.

Three birds, all on Makira, showed features believed to be indicative of Imitator Sparrowhawk *Accipiter imitator* (Ferguson-Lees *in prep*). One bird, at Hunari, had white lores and the whole of the outer half of the undersides of the primaries

was black. This bird also had a contrasting dark cap, a bold white supercillium continuing across the nape, a red iris and a pale grey cere. It was a small adult male with a structure typical of Pied Goshawk. It was not noticeably short-legged or short-tailed so it was probably not an Imitator Sparrowhawk. A second bird, at Hauta, shared these features but lacked a white supercillium and had dark orange irides, black lores, orange-yellow legs and dusky black undersides to the secondaries (contrasting with the white underwing coverts). The third bird was noticeably smaller than female Pied Goshawk and appeared to have broader, rounder wings. -It had a black throat, which is only known from Imitator Sparrowhawk, and orange-yellow legs but was otherwise like a normal adult Pied Goshawk. Plumage variation is evidently poorly known for both this species and Imitator Sparrowhawk. Structural features may be the only visual clues for separating these species. Colour variation in the bare parts may prove to be age related (Marquiss 1980).

[*Accipiter imitator*

Imitator Sparrowhawk]

Endemic to the Solomon Islands; Bougainville to Santa Isabel.

MAKIRA Three accipiters seen in the Hauta/Hunari area showed features which suggest this species rather than Pied Goshawk (Ferguson-Lees *in prep*). The identification problems for this species pair have yet to be solved. Of the three, the one with a black throat is the strongest candidate for Imitator Sparrowhawk but none is entirely certain.

Accipiter meyerianus

Meyer's Goshawk

KOLOMBANGARA A single bird was seen at Kena early in the morning on 5/9 and the late afternoon of 8/9. It was in a coastal area including coconut plantations, littoral forest and secondary growth. On both occasions, it was mobbed by parrots around a roost. It closely resembled a Northern Goshawk *A. gentilis* in shape with a plumage pattern more like a Pied Goshawk. The large size of the bird suggests that it was a female. The flight was fast with continuous flapping and no gliding (probably an attack flight). There are few published records from the Solomons of this elusive species, the most recent being one on Nggatokae (Lees 1991).

Falco severus

Oriental Hobby

KOLOMBANGARA One over primary forest at about 350 m, 8 km inland from Ringgi on 12/8. It was soaring and sallying from a perch in a tall tree. This is the first record for Kolombangara (J. Diamond *in litt.* 1991). The bird was similar in structure to a European Hobby *F. subbuteo* but was largely rufous below.

Falco peregrinus

Peregrine Falcon

MAKIRA One bird over primary forest by the River Ravo, 5/9. Its structure was typical of Peregrine Falcons seen in Europe though it was small compared with British birds and had a dark breast and belly indicating the race *ernesti*. The throat was white, contrasting with the black cap, suggesting that it was an adult. This is the first record for Makira although it has been recorded on the Three Sisters (French 1957).

Phacton rubricauda

Red-tailed Tropicbird

RENNELL One adult seen from Lavanggu, in Kanggavu Bay at 1730 hours, 20/9. There are only four published records of this species in Melanesia (I. McAllan verbally) but it is regular in Micronesia (Pyle and Engbring 1985).

Phacton sp

unspecified tropicbird

AT SEA One juvenile in the Blanche Channel, New Georgia, 28/9.

Sula leucogaster

Brown Booby

AT SEA Most numerous in offshore waters or at roosts/colonies, few seen inshore. A peak of 55 between the Russell Islands and Savo, 29/7 and 29/8. At least 12 distantly to the south of Ghizo, 26/8, and up to five in the Blackett Straits to the north. One between the Three Sisters and Kirakira, 3/9.

NEW GEORGIA A roost (or colony) on the Munda Bar held at least 80 on 30/7 and 60 on 28/8.

Phalacrocorax melanoleucos

Little Pied Cormorant

GUADALCANAL Two individuals flew up the River Ravo past the airport in the morning of 22/9.

THREE SISTERS Five roosting in trees in a shallow, open swamp on Malaulalo, 3/9.

[*Phalacrocorax sulcirostris*

Little Black Cormorant]

GUADALCANAL A villager at Haimarao described a flock of about 100 cormorants which visited Lauvi Lagoon "after a recent cyclone". Compared with Little Pied Cormorant, with which he was familiar, the birds were the same size but black all over. He described the frenetic, gregarious hunting technique used to catch fish, as in Marchant and Higgins (1990). was not possible to judge whether this record was reliable so it should be treated as unconfirmed. If it was, it would represent the first record for the Solomon Islands. The species has occurred on Bougainville as a vagrant (Hadden 1981).

Egretta sacra

Pacific Reef Egret

Common on the coasts of all the islands visited (Appendix 1). Birds held feeding territories on reefs, the preferred habitat. They were also seen up to 5 km inland along all large, stony rivers

KOLOMBANGARA About 25 between Ringgi and Iriri (1.2 per km) with the dark phase predominating by about 4:1. An intermediate phase bird seen at Iriri was dark grey with a white alula.

MAKIRA All the birds seen were of the dark phase.

Butorides striatus

Striated Heron

Common along the coasts, on reefs and in mangroves, and rivers of most islands (Appendix 1).

KOLOMBANGARA At least 15 between Ringgi and Iriri (0.7 per km).

MAKIRA Common along the River Ravo to at least 10 km inland where a pair was seen with a juvenile on a dammed section, 12/9.

Nycticorax caledonicus

Rufous Night-heron

GUADALCANAL Three (one juvenile) on the River Lungga by Mount Austen, 1/9.

MAKIRA One adult on the River Ravo at Maniparegho, 12/9.

RENDOVA One on a north coast islet, 30/7.

Ixobrychus sp

unspecified bittern

RENNELL One was flushed from an overgrown, damp garden near Lavanggu, 19/9. In a brief flight view, the remiges were dark brown, contrasting with pale buff upperwing coverts. These features suggest either immature Yellow Bittern *I. sinensis* or female or immature Little Bittern *I. minutus*. Yellow Bittern breeds on Bougainville where it is scarce (Hadden 1981). Island populations in the Indian and Pacific Oceans indicate a propensity for long distance colonisation. Little Bittern has occurred as a vagrant (probably from Australia) to Lord Howe Island, New Zealand and Papua New Guinea (Marchant and Higgins 1990) so either species could potentially occur.

Threskiornis molucca

Australian Ibis

RENNELL Counts of 68 (18/9) and 156 (21/9) between Lavanggu and Tinggoa. Up to 25 at Lavanggu, including dependent juveniles, 19/9 to 21/9. About 100 seen from the air around Tinggoa.

BELLONA About 15 seen from the air around the airstrip, 18 and 21/9.

Pelecanus conspicillatus

Australian Pelican

KOLOMBANGARA At least four gliding west along the coast past Ringgi at dusk, 10/8. They were identified by structure and flight as pelicans by their large, broad wings, prominent bills, necks folded into the shoulders and no legs protruding beyond the tail eliminate all the possible herons, storks and cranes. The laboured, slow-flapping with heavy glides on flat wings was typical of pelicans.

Fregata minor

Great Frigatebird

AT SEA Two immature birds in the Blanche Channel, New Georgia, 30/7.

RENNELL Between 5 and 20 per day amongst the more numerous Lesser Frigatebirds over Lavanggu, 19 and 20/9. In contrast, this species was reported to be the most abundant frigatebird over Lake Te'Nggano (Lees 1991) possibly indicating that they were breeding there.

Fregata ariel

Lesser Frigatebird

Common at sea but scarcer just offshore except near roost sites or colonies.

NEW GEORGIA Large roost gatherings were noted at the Munda Bar (700 + in the morning of 28/8 but just 70, mid afternoon, 30/7) and around islands near Panjuku, Nggatokae (240 + at dusk, 28/8). Villagers reported breeding on an island off Vonavona. Up to 20 birds per day were seen in the Blakett Straits, most heading for Vonavona.

RUSSELL ISLANDS A dusk gathering of 120 + to the north of Pavuvu, 29/7.

RENNELL Up to 200 per day moving east over Lavanggu at dusk, 18 to 20/9, with smaller numbers during the day. Careful counts showed that adult females out-numbered adult males by 2:1 and that juveniles were scarce (3 out of 312 examined). In Western Province males seemed much scarcer but no significant counts were made.

Fregata andrewsi

Christmas Frigatebird

Five males (3 adult, 2 nearly adult) and one adult female represent the first records for the Solomons. An additional immature bird was either this species or Great Frigatebird but the field identification of immature plumages has yet to be conclusively described.

RENNELL Five males (and possibly one immature bird) were seen amongst Lesser Frigatebirds flying to roost over Lavanggu on 19 and 20/9.

AT SEA One adult female in the Blanche Channel, 29/7.

The white rear half of the underparts of the males extended back beyond the trailing edge of the wing. On immature Great Frigatebirds (juvenile stages 1 and 2, Harrison 1985) it did not. The immature males were like the adults except for a brown sullied head on one and traces of white axillary spurs on the other. The adult female was a black-headed (black throat), white-bellied individual. White axillary spurs were noted but black breast spurs were not. The white patch on female Lesser Frigatebirds is smaller and restricted to the breast, rather than extending to the belly as on this bird. The black head/white belly

pattern is distinctive. Differences in structure between Christmas and Great Frigatebirds proved difficult to assess as birds in flocks at different heights appeared to be different sizes. There is increasing evidence that the species wanders widely (e.g. the South China Sea) but there are no records for the tropical Pacific Ocean. Identification problems probably obscure the full range of the species; recent extralimital sightings have all involved distinctive adult males (Marchant and Higgins 1990).

Puffinus pacificus

Wedge-tailed Shearwater

AT SEA Three between the Russell Islands and Guadalcanal, 29/8. Six between the Three Sisters and Kirakira, 3/9.

Puffinus heinrothi

Heinroth's Shearwater

KOLOMBANGARA A total of five were observed in the Blakett Straits during canoe journeys between Kolombangara and Ghizo. On 1/7 at 1515 hours, two were seen with a flock of 100 Black Noddies, feeding on a shoal of fish 3 km west of Hunda. At least one shearwater was feeding by plunging to the water surface amongst diving noddies. On 3/7 at 1730 hours, three were flying west, a few hundred metres offshore from Hunda. Morning canoe trips to Gizo (3/7) and along the south-west coast of Kolombangara (10 and 13/7) produced no sightings. On other trips the seas were too rough to spot shearwaters. These few records suggest that Heinroth's Shearwaters congregate along the coast of Kolombangara late in the day. This pattern was subsequently noted by David Gibbs (*in litt.*). This behaviour is consistent with that of a pelagic seabird nesting on an island. Shearwaters do not breed in their first year so these may be non-breeding immature birds. Forested and grassy slopes suitable for nesting are present on the Kolombangara crater rim. Breeding records from Bougainville (Hadden 1981) were in August.

In near calm conditions the birds flapped one to four times before gliding low over the water on down-curved wings. The flaps were shallow and fairly sluggish with a slight flexing of the wing at the wrist. The flight action was quicker and lighter than Wedge-tailed Shearwater. Their size was judged to be just bigger than the accompanying Black Noddies. The wing-tip was broad and rounded and the tail was broad and short. The most similar species, Sooty Shearwater *P. griseus* is larger and has longer, thinner wings. The bill was long, slim and all dark. While perched on the water the neck seemed relatively long and thin for a shearwater. The plumage was a dark brown, a little paler than Wedge-tailed Shearwater. A diffuse greyish white panel on the underwing included the greater, median and greater primary underwing coverts. The lesser underwing coverts were brown. No pale marks were noted on the belly or the chin but these would have been hard to observe in these sightings.

No definite Heinroth's Shearwaters were identified during two voyages between Ghizo and Guadalcanal on the MV Iuminao.

Puffinus sp

unspecified shearwater

AT SEA At least eight were seen between the Russell Islands and Savo on 29/8. All were dark, a little bigger than Manx Shearwater *P. puffinus* and with rounded wing-tips. All flew low over the water but were too distant to assign to a species. Two species may have been involved.

Oceanites oceanicus

Wilson's Storm-petrel

AT SEA Between 12 and 18 were seen between Savo and the Russell Islands on 29/7. The majority were out in the open sea. Two were seen within 1 km of the west end of Guadalcanal, 29/8.

Pitta anerythra

Black-faced Pitta

Endemic to the Solomons; Bougainville, Choiseul and Santa Isabel.

KOLOMBANGARA One was seen at about midday on 23/8 after a call resembling Superb Pitta *P. superba* was investigated. The bird flew across a hanging valley on the side of a steep valley at about 850 m. The hanging valley contained tall primary forest with an open ground layer and sparse leaf litter. The bird, seen in flight from above, was almost wholly green. The only areas of iridescent blue were along the leading edge of the base of the wings (the 'arm'). Hooded Pitta *P. sordida* and Noisy Pitta *P. versicolor* are the only green-backed pittas which could be expected to occur as vagrants, both show prominent areas of white and iridescent blue in flight, particularly on the primary bases and rump. These areas of bright colour would have been seen easily and were definitely not present, eliminating these species. There was some doubt as to whether the calls heard were made by the pitta as a variant song of the Crested Cuckoo-dove, heard at the same site, was structurally similar. The pitta calls were transcribed as "kook-kweeoo". The first note was as loud as the second and the pause following it was very short. The first part of the call sounded hollow, the second part was a shrill whistle. The second part of the call was similar to the call of Superb Pitta. In comparison, the Crested Cuckoo-dove song had a very faint first note followed by a longer pause. This is the first reported sighting of the species since 1937 and the first record for Kolombangara.

Myzomela cardinalis

Cardinal Myzomela

MAKIRA Restricted to the coast where it is common. Up to 30 seen per day between Kirakira and Arohane. Mainly seen in coconuts but also in secondary growth and degraded forest. None seen 2 km inland at Maniparegho. Dominant over Sooty Myzomela at food.

THREE SISTERS Abundant in the absence of other *Myzomela* species. Particularly common on Malaulalo where at least 50 seen on 3/9.

RENNELL Common in primary and secondary forest and coconuts, possibly preferring primary forest. This is in contrast to Makira and perhaps due to the absence of competing congeners. Many in mixed species feeding flocks, unlike on other islands. Up to 40 seen per day near Lavanggu.

Small numbers of young, but independent juveniles, were seen on all three islands between 2 and 19/9. Young birds at various stages of the post-juvenile moult were more numerous than these. This indicates an extended breeding season. Calls include a variety of short sharp monosyllables, given singly or as groups of up to five, e.g. a rich "chrrr" and "cheet", both rising in pitch or short, dry "tk" or "tch" calls. One juvenile on Makira gave a wheezy "cheeeu", falling in pitch. Rich, disyllabic whistles and short melodious songs were frequent on Rennell, but not on Makira, perhaps indicating breeding behaviour.

Myzomela cichorni

Yellow-vented Myzomela

Endemic to the Solomon Islands; New Georgia group.

KOLOMBANGARA Common in all habitats with trees or bushes at all altitudes. Most common at higher altitudes. Particularly abundant in the moss forest where numbers were only exceeded by the Hermit White-eye. Around Kena, most frequently seen in coastal coconut groves, then secondary growth, then primary forest. Up to 24 per day in moss forest and 13 per day around Kena. Up to three per flock in mixed species feeding flocks. They mainly foraged for nectar and at high altitudes ant-plants were visited regularly. Up to five together in flowering trees in Ringgi Cove. One juvenile was seen on 22/8.

GHIZO Up to eight seen in the swampy valley west of Gizo. This included a family party with two juveniles on 26/8. A count of 18 was made from the roads between Gizo and Sagheraghi. Also seen on adjacent small islands; four on Mbambanga and one on J. F. Kennedy Island.

Loud, sharp, high-pitched "tzeep", "bzeet" or "tit-it-tit" calls were given frequently.

Myzomela melanocephala

Black-headed Myzomela

Endemic to the Solomon Islands; Guadalcanal, Savo and Nggela.

GUADALCANAL Relatively uncommon, preferring disturbed habitats so potentially more common on the mountain tops, like Yellow-vented Myzomela. Up to five seen regularly in the Botanic Gardens, Honiara and up to six on Mount Austen. Two at Hailali in gardens at 900 m and one in primary forest lower down. The calls of this species seemed to be softer than similar notes given by Yellow-vented Myzomela.

Myzomela tristrami

Sooty Myzomela

Endemic to the Solomon Islands; Makira and Santa Anna.

MAKIRA Very abundant on the coast, more so than Cardinal Myzomela. At least 60 per day between Kirakira and Arohane. Moderately common inland in primary forest where the highest densities were in hill forest. Daily maxima of 38 between 400 and 700 m at Hauta and 13 in the foothills at Maniparegho. Seen up to 900 m but less common there. Occasionally joins mixed species feeding flocks. Up to three per flock, but up to ten gathering at flowering trees.

Immature birds were numerous (15% on 2/9) but no young or dependent juveniles were seen. Juveniles are duller than adults with pale grey smudging on the underparts, black-ended orange-yellow bills and pale legs. Adults have a faint violet-blue sheen (they are not "sooty") with duller, browner wings (particularly in flight) and dull grey underwings. One of two birds chasing through the understorey of primary forest at about 260 m flew up to enter a nest on 5/9. The nest was like a sunbird nest but was proportionally broader and shorter. It was suspended from an understorey branch, 10 m above the ground. Frequently gives sharp contact calls, similar, but possibly harsher than Cardinal Myzomela. Song was only heard twice as it was given at dawn. It was a short nasal whistle followed by a fast twitter then a slow twitter, "oowae-oo, chit-it-it, ..chit..chit..chit".

Melidectes sclateri

San Cristobal Melidectes

Endemic to Makira (San Cristobal).

MAKIRA Abundant in hill forest. Lower densities in montane forest. Even fewer in lowland primary forest although common there. Maximum daily counts of 37 between 450 and 900 m around Hauta and six (all in mixed species feeding flocks) between 50 and 450 m at Maniparegho. Uncommon on the coastal lowlands except near rivers; 12 in 6 km of the River Ravo and five along a stream at Kirakira. Up to two occasionally joined mixed species feeding flocks. One bird seen feeding another on 4/9 was either courtship feeding or feeding a juvenile.

[Manorina melanocephala

Noisy Miner]

THREE SISTERS Not found on Malaulalo or Malaupaina on 3/9. Not recorded since its introduction the 1950s (French 1957). The species is easily located (*pers. obs.* Australia) so it can be presumed to have died out.

Gerygone flavolateralis

Fan-tailed Gerygone

RENNELL Abundant in secondary growth along the road near Lavanggu and in open scrub. Not quite so numerous in primary forest away from the road. Up to 37 seen per day including singing birds, birds in mixed species feeding flocks and a young fledgling (on 19/9). An adult at Tinggoa on 18/8 was seen chasing a Shining Bronze-cuckoo for which it is probably a host species.

Petroica multicolor**Scarlet Robin**

KOLOMBANGARA High densities above 1100 m in moss forest and stunted montane forest. Lower densities but still common down to 1000 m in hill forest. Up to seven found per day including a dependent juvenile on 16/8 and two singing males. Birds appeared to follow mixed species feeding flocks as they crossed their territories.

MAKIRA Common in hill and montane forests. Seen from 680 m upwards, in primary and stunted montane forests. Apparently patchily distributed, most birds were in a small area of primary forest at 700 m where there was a nest. The nest was 8 m above the ground in the fork of a tree. The female was feeding and incubating small chicks between 9 and 11/9. The female also added extra material to the nest. The male gave food to the female on 10/9.

GUADALCANAL Not encountered around Hailali, even at 1000 m.

Pachycephala pectoralis**Golden Whistler**

Common to abundant in the understorey and lower canopy of primary forest. The highest densities, mainly singing birds, were found in hill and montane forests. In favoured areas, males were often singing within 50 m of each other. Frequently associates with mixed species feeding flocks with up to five in a flock. Females and immature birds appear to follow flocks more readily and for longer than males which join them just as they pass through their territories. Kleptoparasitism was seen once in a flock: a male stole a froghopper nymph *Aphrophoridae* from a White-capped Monarch on Kolombangara. Males sing strongly shortly after dawn, this biases daily counts as the majority of the birds are recorded at this time.

KOLOMBANGARA Abundant above 300 m, especially near the mountain top. Peak counts along paths were 22 singing males between 600 to 940 m and 35 from 940 to 1300 m. Also occurred in moss forest but at lower densities (although we never reached this habitat while most of the males were singing.) Five singing above 1300 m. Less common in the lowlands. Locally abundant on a broad ridge at 350 m, 8 km inland from Ringgi where there were eight singing males. No young birds were seen in full juvenile plumage during August. Songs recorded here were typical of Solomon Island races but were much richer in tone, more complex and more variable than those of Golden Whistlers near Sydney, Australia (*contra* Cain and Galbraith, 1956).

GUADALCANAL Common on the weather coast; 21 including 16 singing around Hailali with most at 900 m near the village (at dawn). Three singing in denser areas of degraded forest on Mount Austen, above about 200 m. A juvenile was seen on 25/9.

MAKIRA Common in primary forest from 50 to at least 900 m. Up to 27 per day around Hauta, from 500 to 900 m, including 20 singing males. The overall density seemed lower than on Kolombangara but the forests around Hauta are more disturbed. Up to 20 per day around Maniparegho, from 50 to 450 m, including nine singing. Juveniles were seen on 10/9 and 13/9, the former begging (silently) at a female.

RENNELL Uncommon or perhaps unusually unobtrusive. Up to four per day in primary forest around Lavanggu. Single juveniles were seen on 19 and 20/9.

Corvus meeki**White-billed Crow**

Endemic to the Solomon Islands; Choiseul to Guadalcanal.

GUADALCANAL Seen in (or near) primary forest from sea level up to at least 1000 m on the weather coast. Ten between Hailali and the River Bolavu. At least one seen over the River Lungga below Mount Austen. Calls included a rolling "karr-r-r", falling in pitch. This was given in groups of three or four, apparently as an alarm call, with each note, higher in pitch than the preceding one. A quiet, soft "rauk" or "rowk" was heard in flight. Most birds were shy. Several were seen around open areas, where they appeared to be frequenting tree canopies at the forest edge.

Coracina caledonica**Melanesian Cuckooshrike**

Moderately common on the coast in degraded littoral forest and mangroves. Observed in primary forest up to 1100 m but not in mist forest. Previously, the species has been described as rare, possibly confined to mist forest and absent from Makira (Cain and Galbraith 1956, Coates 1990). Possible interpretations for this striking change of status are an expanding population, seasonal altitudinal migration or irruptive displacement from montane habitats following cyclone damage. The limited evidence available is consistent with altitudinal migration; non-breeding birds frequenting the lowlands and returning to higher altitudes to breed.

KOLOMBANGARA Groups of up to three seen regularly on the coastal plain around Kena and Ringgi. One frequented a Kapok tree *Ceiba pentandra* in the middle of Iri village. Inland a pair was seen carrying nest material in primary forest at 490 m. They were carrying beakfuls of an epiphyte on 15/8 but the nest was not found. One or two birds were occasionally seen in larger mixed species feeding flocks at 600 and 940 m.

GUADALCANAL Five in degraded forest 300 m on Mount Austen, 1/9. This is only the second record for Guadalcanal, previously it has only been seen above 1300 m (Cain and Galbraith 1957).

MAKIRA One in degraded littoral forest near Kirakira on 15/9. This is the first record for Makira and fills a surprising gap in the middle of its described distribution (Coates 1990). It was identified by its wholly dark grey plumage, large size and long tail, eliminating migrant Black-faced Cuckooshrike *C. novaehollandiae*. Diamond (*in litt.* 1994) finds it remarkable that the species has been overlooked here, given the number of ornithologists that have visited the island. Such comments are applicable to all the islands on which we encountered the species.

Four calls were heard. Two were probably those described by Finch (in Coates 1990) and Cain and Galbraith (1956). The others were harsh "chak" notes and a series of shrill "chi" notes.

Coracina lineata**Yellow-eyed Cuckooshrike**

Moderately common, mainly in primary forest but also in disturbed areas where tall trees are retained, including garden edges. Unobtrusive so possibly overlooked.

KOLOMBANGARA Observed in groups of up to three, often in mixed species feeding flocks, up to about 600 m. One seen at the camp at 940 m in a mixed species feeding flock. The highest transect densities were in lowland primary and secondary forests.

GHIZO Up to five in degraded forest west of Gizo. Only one seen from the roads between Gizo and Sagheraghi.

GUADALCANAL Up to five on Mount Austen. One to three occasionally in the Botanic Gardens, Honiara. One at 900 m near Hailali on the weather coast.

MAKIRA Maximum of eight per day, usually singly or in pairs, between 500 and 700 m at Hauta. Higher transect densities were found in hill forest than lowland primary forest. Only one was found in disturbed coastal habitats.

RENNELL Up to five per day in forest near Lavanggu.

Coracina papuensis**White-bellied Cuckooshrike**

Common in towns, villages, gardens, coconut plantations, cleared areas and degraded forest. Lower densities were found in primary and closed secondary forest. Largely confined to the lowlands, coasts and along large rivers.

KOLOMBANGARA Up to five per day around Kena and Ringgi. Two dependent juveniles were seen at Iri on 13/8; one in the village and one in coastal coconut plantation. Three sightings of single birds in primary forest; two below 350 m near Kena and one at 350 m, 8 km inland from Ringgi.

GHIZO More abundant than on Kolombangara. Five in the swampy valley west of Gizo. Sixteen seen from the roads between Gizo and Sagheraghi. One on J. F. Kennedy Island.

GUADALCANAL Up to ten seen per day in Honiara and around the Botanic Gardens. About 15 at Selwyn College. Up to ten seen on Mount Austen up to 400 m. On the weather coast, confined to the coastal strip and along the River Bolavu.

Exaggerated wing-flicking displays between two birds, thought to be related to courtship (Coates 1990), were seen in August at Ringgi, Kena and on Ghizo. Occasionally, individuals fed on the ground and in undergrowth, unusual behaviour for the species and for Cuckooshrikes in general (Coates 1990, Schodde and Tidemann 1986).

Coracina tenuirostris**Slender-billed Cicadabird**

Unobtrusive but probably more common than Yellow-eyed Cuckooshrike. Occurs from sea level up to at least 1100 m in primary forest. Birds were seen occasionally in secondary growth or degraded forest. Commonly seen in mixed species feeding flocks, maximum five per flock. A sub-group of cicadabirds and cuckooshrikes often moved quickly ahead of noisy feeding flocks, usually above them in the canopy. They were possibly taking advantage of the approaching disturbance rather than leading the flocks. This behaviour indicates a diet comprised mainly of invertebrates. Prey items identified included mantids *Mantodea* up to 5 cm long. Singing was more frequent in September than in August. The song was softer and less like a cicada than the Australian race *tenuirostris* around Sydney.

KOLOMBANGARA Five singing in forests around Kena where up to six were seen per day. Two singing birds near Ringgi, one in mangroves and one in degraded forest. More common in primary forest inland from Ringgi; at least seven found at 350 m including four singing. Two singing on the mountain above Iri, between 1000 and 1100 m. The highest transect densities occurred in lowland forest.

GHIZO Only one heard between Gizo and Sagheraghi.

GUADALCANAL Most common in weather coast primary forest; five singing below Hailali between 50 and 900 m. Occasional single female birds were seen in the Botanic Gardens, Honiara and two were at Selwyn College. Up to three per visit on Mount Austen including one singing.

MAKIRA Occurs at lower densities than on Kolombangara, with a preference for hill, rather than lowland forest. Up to eight recorded per day between 500 and 900 m around Hauta. Fewer in the foothills; up to three per day around Maniparegho. Only one on the coast, at Arohane.

Cicadabirds on Makira are relatively distinct from other Solomon Islands races and may deserve specific status. They were seen in mixed species feeding flocks less frequently than on other islands. Birds seen in flocks were sallying to take small berries. Cain and Galbraith (1956) noted the more frugivorous diet of this race. Lees *et al* found it to be uncommon during their visit (no date given) possibly due to breeding behaviour (Lees 1991). One bird ate a whole nursery web of a spider containing baby spiders. Wing-flicking seemed more frequent but this could be a seasonal feature. Loud, staccato, disyllabic calls, e.g. "chi-beet" or "pity-you", were given frequently here, but not elsewhere in the Solomons.

Coracina sp**unspecified Cicadabird**

KOLOMBANGARA Three small cuckooshrikes were seen on 15/8 and 23/8, between 490 and 600 m, in primary forest inland from Iri. The birds were slightly larger than Golden Whistler, but were closer to this species than to Slender-billed Cicadabird or Solomon Islands Cuckooshrike. They were relatively long-tailed and short-winged with small, dumpy bodies. The head was slim for a Cuckooshrike, more like a triller *Lalage*. The bill was of medium length, finer and more tapering than Yellow-eyed Cuckooshrike. The plumage was uniformly pale grey. The precise shade was difficult to judge in the field and was noted as similar to White-bellied Cuckooshrike but one bird was as dark as a Yellow-eyed Cuckooshrike. In close views, the paler bird had very thin pale fringes to all the body and head feathers. The lores were black, possibly continuing as a slight

eyestripe behind the eye on one bird, though this may have been a shadow. The chin was no darker than the body. The wing was the same shade as the upperparts or slightly darker. Only the primaries were noticeably darker, the inner webs of the tertials were not contrastingly darker as on Yellow-eyed Cuckooshrike. The pattern on the underside of the tail was like a Slender-billed Cicadabird. The outermost rectrices had long white tips, about half one feather-width in length. The tips were very pointed and fell short of the tail tip by about one fifth of its length. The next two pairs in may have had pale tips but these were much thinner. The upperside of the tail was darker than the body. The eye was dark, possibly with a dull red tint. The bill and legs were dark grey. The birds were all seen in large mixed species feeding flocks. They behaved like typical Cuckooshrikes, hopping along branches, making short fluttering flights to the next branch and perching with the tail drooping.

The most likely sources of confusion were eliminated as follows. The Kolombangara race of Slender-billed Cicadabird *C. t. saturatus* is dark on the chin and throat. Female Solomon Islands Cuckooshrike is darker with much less white under the tail tip. Immature male Yellow-eyed Cuckooshrike has no white on the undersides of the tail tips and a larger bill. It is possible that they were non-breeding migrants from outside the Solomon Islands. Possibilities include Black-shouldered Cuckooshrike *C. morio* from Papua New Guinea or an undescribed race of Slender-billed Cicadabird.

Coracina holopolia

Solomon Islands Cuckooshrike

Endemic to the Solomons; Buka to Guadalcanal and Malaita.

Similar transect densities to Yellow-eyed Cuckooshrike but in a slightly higher altitude range. Often in mixed species feeding flocks with up to three together.

KOLOMBANGARA Maximum of seven per day from 500 to 940 m. Common in hill forest and low-lying moss forest on a ridge at 490 m.

GUADALCANAL Occurs down to sea level; one or two regularly in the Botanic Gardens, Honiara. Up to three on Mount Austen at about 300 m and one at Selwyn College in secondary growth. Two below Hailali in primary forest on the weather coast.

The two races gave different sets of calls. Both sexes of the Kolombangara race *pygmaeum* gave a nasal, cat-like contact note, "kiaow" or "kiauw", occasionally "kwau". A aimless, warbling song, lacking the richness of Golden Whistler was also heard. Whistling calls given by males were the only ones similar to *holopolium* calls. These were noted as "pee yew" and "ko pee-o-whit".

Rattling, scratchy notes were heard twice from individuals of the Guadalcanal race *holopolium*. These resembled the call of a distant Black-billed Magpie *Pica pica*. One was transcribed "katta atta ratch". The other was given by a male in flight, "ratatatach". Upon landing it gave a clear whistled call, falling in pitch and then rising. A softly rippling "chirrooe" was also heard.

The species is considered to catch more food on the wing than other cuckooshrikes (Hadden 1981). Systematic counts showed the opposite with this species proving to be a specialised gleaner.

Lalage leucopyga

Long-tailed Triller

MAKIRA Moderately common in conspicuous flocks of up to nine birds. Occurred from sea level on the coast to 600 m. Up to 14 seen per day around Hauta, usually in the tops of large trees by gardens and villages and in the canopy of primary forest. Birds occasionally fed on the ground in gardens. Curiously, none was found in lowland primary forest. Vocal while in flocks. The most common calls were rich, fluid whistles, "tyoor-r-ri" or "br-r-reet". A rich, staccato whistle, "choot-weet", rising in pitch was probably the call described by Cain and Galbraith (1956).

Rhipidura leucophrys

Willie Wagtail

Common in all open habitats including beaches, reef flats, larger stony rivers and inhabited areas.

KOLOMBANGARA Relatively uncommon. Ones and twos at Kena and on nearby beaches. Up to three around Ringgi Wharf and two on the airstrip.

GHIZO Small numbers on the coast and to the west of Gizo in cleared areas and at the town tip. Thirty-two counted from the roads between Gizo and Sagheraghi included one nesting pair, 26/8. Higher densities occur here than on the other islands visited.

GUADALCANAL Common in the suburbs of Honiara, about 20 seen per day. Up to four seen at Henderson Airport. Up to nine on Mount Austen. Favours the larger, rocky rivers; five in 0.5 km of the Lungga and six in 2 km of the Bolavu.

MAKIRA Common, 12 birds and a nest in 6 km of the River Ravo and 11 between Kirakira and Arohane in villages and grasslands.

THREE SISTERS About 20 on Malaulalo and four on Malaupaina, mainly in cattle grazed coconut plantations.

The nest on Ghizo was in an exposed fork of a dead branch, overhanging a reef, an adult was incubating on 26/8. The Makira nest contained two small chicks on 12/9, it was near the end of an overhanging branch, 5 m above the River Ravo. This was at 100 m about 10 km inland. An adult bird was seen scolding people near a nest 10 m up a *Casuarina* in the Botanic Gardens, Honiara on 18/9.

Rhipidura cockerelli

White-winged Fantail (Cockerell's Fantail)

Endemic to the Solomons; Buka to Guadalcanal and Malaita.

Moderately common, preferring primary forest but occurring in tall secondary growth and forest edge. Uncommon in disturbed habitats, unlike on New Georgia (Blaber 1990).

KOLOMBANGARA Common with similar densities in all primary forests below 1000 m and in some older secondary forests. Up to six per day around Kena. Two singing in dry, closed secondary forest and one in trees among coconut palms were the only ones away from primary forest or forest edge. None were seen around Ringgi in the logged areas. Observed up to 100 m with regular sightings of up to four around the camp at 940 m. A territorial pair attacking a Buff-headed Coucal in primary forest at 850 m was considered to have an active nest nearby on 24/8.

GHIZO Not seen on this island.

GUADALCANAL Two on Mount Austen in a mixed species feeding flock on 1/9. Three at 900 m in primary forest on the weather coast.

Up to three seen in mixed species feeding flocks. Feeds by sallying from branches in the lower canopy, sitting still for some time between prey items. Occasionally aggressive to other species in the flocks, including White-capped Monarchs. The tail is often waved, but is only fanned infrequently compared to other fantails.

Rhipidura fuliginosa

Grey Fantail

MAKIRA Moderately common around Hauta from 500 to 900 m. Perhaps most common on ridge tops. Transect densities are highest in hill and, especially, montane forests. Scarce in lowland primary forest and not in disturbed coastal habitats. Frequents paths and clearings in primary forest and gardens edges where it can fly from perches to catch food. Relatively infrequent in mixed species feeding flocks, perhaps due to its feeding preference and to breeding activity. Up to four seen in a flock. Maximum of 12 found per day.

Nest building was observed on 8/9 in stunted ridgetop forest at 900 m (the nest was not found). A dependent juvenile was seen in a garden edge at 600 m on 7 and 10/9 and a fledgling, with down still showing, was near Hauta on 8/9.

Rhipidura tenebrosa

Dusky Fantail

Endemic to Makira (San Cristobal).

MAKIRA Uncommon and virtually restricted to the undergrowth of primary forest, preferring hill forest. It occurs at relatively low densities but does have a wide altitudinal range, at least 50 to 700 m. No more than two seen together. Some joined mixed species feeding flocks. Maxima of six per day around Hauta and in the foothills near Maniparegho. Extensive logging could become a threat to this species given its low population density.

Several calls were heard, all were quiet and typical of fantails. The pitch of most notes was inflected upwards. Such calls included single "cheet" or "chit" notes and sequences like "chleet, chleet-it". Other calls included a clear, resonant "teenk", a quiet "chitoo weet" falling in pitch and a nasal "tchiky".

Rhipidura rennelliana

Rennell Fantail

Endemic to Rennell.

RENNELL Common along the road and in primary forest. Up to 20 found per day near Lavanggu. Not seen in secondary scrub. A dependent juvenile was seen on 19/9. The species frequently joins mixed species feeding flocks, feeding in the undergrowth or understorey and occasionally on the ground. The tail is wagged but is not fanned frequently.

Rhipidura rufifrons

Rufous Fantail

Common in primary and old growth forest and in some, but not all, secondary and degraded forests. Transects show a marked preference for hill forest, with most of the remainder in lowland primary forest. Uncommon in moss forest. Often in mixed species feeding flocks where it occasionally follows other birds. No birds of the migratory Australian race *rufifrons* were identified.

KOLOMBANGARA At least ten singing in primary and secondary forests around Kena, with up to eight recorded per day. Only one found near Ringgi but five at 350 m, 8 km inland. Numerous in primary forest up to 1100 m; up to seven per day around the camp from 940 to 1100 m. Only one was seen in moss forest, in a mixed species feeding flock at 1440 m. Kolombangara birds were more shy than Makira ones and had a preference for the canopy.

GHIZO Two in a mixed species feeding flock between Gizo and Sagheraghi were the only ones encountered.

GUADALCANAL Four singing on Mount Austen and in the adjacent Lungga Valley on 1/9 only. Two in primary forest below Hailali.

MAKIRA Common in primary forest, degraded forest and coastal secondary growth. Found up to 900 m but less common above 800 m. Dependent juveniles were seen on the coast on 2/9 and 15/9. Peak daily counts were 18 on the coast, 21 in foothill forests at Maniparegho (including 18 singing) and 28 around Hauta. Individuals in Baroghane (at 500 m) and Hauta fed around leaf huts, hopping on the ground (like *R. semirubra* of Tong Island, Manus).

Dicrurus bracteatus

Spangled Drongo

MAKIRA Uncommon and remarkably quiet compared to other drongos including Spangled Drongos seen in New Guinea. Seen in primary forest between 500 and 700 m around Hauta, with a daily maximum of seven birds. Occasionally seen in secondary growth and gardens at Hauta. Lower densities below 100 m, in flood-damaged secondary forest by the River Ravo and in the foothill forests. Often in mixed feeding flocks where they call constantly but quietly. One was seen eating a cicada.

Clytorhynchus hamlini**Rennell Shrikebill**

Endemic to Rennell.

RENNELL Uncommon. Peak daily counts of seven in primary forest near Lavanggu. Mainly seen in the forest interior, occasionally in the canopy. Although none was seen outside closed forest, Lees (1991) reported that the species may use secondary growth. Bounds up and down creepers like a White-capped Monarch but often sits motionless for long periods. Seen singly or in pairs, mainly in mixed species feeding flocks. Gives varied, rich, fluty whistled songs and calls with notes often repeated three times. Contact notes included a thin "*seek-ik*" and a raspy "*etch etch etch etch*".

Monarcha castaneiventris**Chestnut-bellied Monarch**

Endemic to the Solomon Islands; Choiseul to Makira and surrounding islands.

Common in primary forest, degraded forest and secondary growth including sparse scrub under coconut palms. One of the most numerous and noisy species in mixed species feeding flocks, often forming the nucleus of the flock. Up to five seen in each flock.

GUADALCANAL Recorded up to 900 m on the weather coast; 11 between Hailali and the River Bolavu. Up to seven on Mount Austen. Just one record of a single bird in the Botanic Gardens, Honiara.

MAKIRA High densities in all habitats except montane forest. Daily maxima of 14 on the coast between Kirakira and Arohane, 28 in the foothills near Maniparegho and 14 around Hauta, between 500 and 700 m. One seen carrying a caterpillar on 13/9 at Maniparegho may have been breeding (but note the protracted period of post fledging dependence in rainforest flycatchers).

THREE SISTERS Seven on Malaulalo and five on Malaupaina. These were in littoral forest and secondary scrub. Groups of up to five included some immature birds but these were not very young. The birds were all of the wholly-black race *ugiensis*.

All three races gave similar loud, rich whistles falling in pitch. These calls only waver slightly in pitch, usually only at the end of the note, and were quite distinct from the weaker, quavering notes of White-capped Monarchs (*contra* Cain and Galbraith 1956). The typical contact notes were harsher, starting more abruptly than White-capped Monarchs calls. The two calls were transcribed "*chach*" and "*zzajk*" respectively. These were the most typical calls but the species is very vocal and a range of less common and "one-off" calls were heard. This species forages mainly in the foliage of trees and bushes (cf. White-capped Monarch). Chestnut-bellied Monarchs appeared to flick their wings and tail more frequently than White-capped Monarchs.

Monarcha richardsii**White-capped Monarch**

Endemic to the Solomon Islands; New Georgia archipelago.

This species was previously treated as race of Chestnut-bellied Monarch *M. castaneiventris*. Abundant in primary forest and common in secondary growth. Observed up to 1100 m. One of the commonest species in mixed species feeding flocks, often leading the flock.

KOLOMBANGARA The peak daily count of 35 in primary forest near Kena included the largest flock recorded. The flock, containing 20 White-capped Monarchs, was moving through primary forest on Hipera Mountain, near Kena at 380 m. High densities found in lowland and hill primary forest. Common in older, closed secondary growth but not in scrub, amongst coconuts or near the coast. Scarce around Ringgi, where just four seen in secondary forest. Up to 12 per day between 1000 and 1100 m, inland from Irii.

GHIZO Up to six in the degraded swampy valley to the west of Gizo and 22 seen from the roads between Gizo and Sagheraghi.

The two most typical calls sound distinct from the equivalent calls of Chestnut-bellied Monarch. The whistled, soft "*thyouyouyouyou*" call wavers distinctly in volume, remaining at the same pitch throughout. The contact note is quite slurred and is sometimes given in groups of three. A distinct harsh, nasal "*xiao-wit!*" call was given while in flocks, but not by Chestnut-bellied Monarch. Overall this species seemed less vocal than Chestnut-bellied Monarch, even in mixed species feeding flocks. They make much use of creepers to feed close to the trunks of tall forest trees (about one third of their food being obtained in this way). This seems to be a specialisation of the species. Immature birds were common throughout August and displayed a wide range of head patterns. The full juvenile plumage resembles an adult Island Monarch *M. cinerascens* but it is duller and browner with a dark bill. The adult head pattern also varies, mainly in the extent of black backwards onto the crown.

Monarcha barbatus**Black-and-White Monarch (Solomon Pied Monarch)**

Endemic to the Solomons; Buka to Guadalcanal.

GUADALCANAL Common on the weather coast with six around Hailali up to 1000 m. Most were in primary forest. Two near Hailali in scrub in an abandoned garden near 1000 m included one carrying nest material. Uncommon in disturbed habitats near the north coast. One on Mount Austen and one near Selwyn College.

Only one call was heard, a series of harsh "*rach*" notes, given while chasing a Variable Goshawk. Up to two seen together in mixed species feeding flocks.

Monarcha browni**Kolombangara Monarch**

Endemic to the Solomon Islands; New Georgia archipelago.

This species was previously treated as race of Solomon Pied Monarch *M. barbatus*.

KOLOMBANGARA Relatively uncommon with a patchy distribution in primary forest only. Most occurred below 600 m with the highest densities occurring above about 300 m. Not seen daily, five individuals found near Kena and seven at 350 m, 8 km inland from Ringgi. Five inland from Iri, between 400 and 600 m. These included a juvenile, well into its post-juvenile moult, on 15/8. Several adults were finishing their tail moult during August, with the one or two outer pairs of rectrices missing or partly grown. This species usually fed in the understorey and some birds followed mixed species feeding flocks. Fluttering in foliage to disturb prey was seen but not frequently (cf. Schodde 1977). Generally not very vocal. Harsh, scratchy notes with an upward inflection in pitch were the most common. The song was a series of six shrill, staccato "chee" notes or a "prerere" sounding like a distant pea-whistle. A quiet, hollow "chook chook" was heard once from a bird in flight. Insufficient calls were recorded to examine differences within the pied monarch complex in the Solomons. However, the song may be distinct from the other forms. On New Georgia the species is common, even in secondary growth (Blaber 1990). Blaber (*in litt* 1991) suggests that the species could have been overlooked due to a seasonal reduction in calling.

Monarcha viduus

White-collared Monarch

Endemic to Makira (San Cristobal) and adjacent islands.

This species was previously treated as race of Solomon Pied Monarch *M. barbatus*.

MAKIRA Common in lowland and hill primary forest; up to 14 seen per day around Maniparegho, between 50 and 450 m. Exceptionally, up to 30 per day around Hauta, but usually two to eight between 500 and 800 m. Less common in montane forest and disturbed coastal habitats, with just four seen between Kirakira and Arohane. Most were seen in mixed species feeding flocks, maximum three per flock. The species tended to feed mostly in the understorey and shrub layer. Tail moult was seen three times between 5 and 9/9. The harsh, scratchy call notes were slower and more drawn-out than those of other pied monarchs but were at least as grating. A rough hiss was given after one call, "gratatgrat shhirrow". Lees (1991) reported this species to be uncommon; this may be due to seasonal behaviour as in the Kolombangara Monarch. The visit made by Lees *et al* may have coincided with breeding but no date was given.

Myiagra ferrocyanea

Steel-blue Flycatcher (Solomon Broadbill / Satin Flycatcher)

Endemic to the Solomons; Buka to Guadalcanal.

Prefers primary forests but also common in degraded and taller secondary forests. Often in mixed species feeding flocks, maximum four per flock.

KOLOMBANGARA Most abundant below 1000 m, preferring hill and lowland primary forests. Up to 13 per day around Kena but none at all at Ringgi. Not seen in moss forest. Up to four per day between 1000 and 1100 m. The highest record was at 1200 m. Some birds were holding territory in August while others were still following flocks. Ten singing males were found around Kena and territorial disputes were seen.

GHIZO Up to four in the swampy valley west of Gizo and five seen from the roads between Gizo and Sagheraghi.

GUADALCANAL Two pairs in the Botanic Gardens, Honiara. Up to 19 per visit (typically rather fewer) on Mount Austen. Appeared to be more common in weather coast primary forest; 11 between 100 and 900 m below Hailali.

Two displays were seen on Kolombangara. The song flight is like a Blue Tit *Parus caeruleus*; the tail and wings were fully fanned and the bird either glided or flapped slowly like a butterfly in a horizontal flight. Another singing male pursued its mate continuously in a horizontal circle around a tree, 8 m above the ground. The song is variable, two main forms were noted. The song is a trill of fast, rattling notes. The repeated note is either drawn out with the pitch rising or is more abrupt with a slight fall in pitch. The latter form was preceded by a quiet warbling subsong once, the full song being very like a Lesser Whitethroat *Sylvia curruca*.

Myiagra cervinicauda

Ochre-headed Flycatcher

Endemic to Makira (San Cristobal) and adjacent islands.

MAKIRA Moderately common but unobtrusive as it is relatively quiet and prefers the canopy of primary forest. The highest densities were in hill forest. Up to six recorded per day around Hauta, from 400 to 700 m, with eight singing birds found. Only two were seen in the foothills at Maniparegho and none on the coast.

This form is treated by different authors as a subspecies of *M. ferrocyanea* (Cain and Galbraith 1956) or as a member of the *Myiagra* superspecies including *rubecula*, *ferrocyanea*, *cervinicauda*, *caledonica* and *vanikorensis* (Coates 1990). The calls and songs of these five forms were heard and all are basically the same. The strong preference for the forest canopy (Cain and Galbraith 1956, Lees 1991) is different from the other forms which have more catholic habits.

Myiagra caledonica

Melanesian Flycatcher

RENNELL Three males, one singing, in open and closed scrub at Tinggoa airstrip. Not seen in primary forest at Lavanggu despite prolonged searches. The species appears to be less common than Rennell Shrikebill. Other observers have commented upon the difficulty of finding it here although it is common on Vanuatu (Bregulla 1992).

Zoothera margarethae**San Cristobal Thrush**

Endemic to the Solomon Islands; Makira (San Cristobal) and Guadalcanal. The two island subspecies are sometimes considered to be separate species (Gibbs *in litt.* 1994).

MAKIRA Single birds were flushed from paths, hence the local name *manu babainitara*, "the bird that lives by the road". Shy and hard to observe but probably uncommon. Apparently less common than Olive-tailed Thrush *Z. lunulata* in New South Wales and found at considerably lower densities than Island Thrush. They were mainly found on the floor of primary forest between 400 and 700 m with occasional birds in overgrown gardens or secondary growth. When flushed they flew off strongly with audibly whirring wings. Few unidentified ground birds with whirring wings were encountered, perhaps confirming the scarcity of the species. Two calls were heard in the vicinity of San Cristobal Thrushes but were not confirmed to be from this species. These were a soft "chook" like a typical thrush *Turdus* and a thin "tseep".

Turdus poliocephalus**Island Thrush**

KOLOMBANGARA Single birds heard or seen from 1100 m upwards. Most were in the moss forest or just below it. The lowest was in tall primary forest at the top of a broad ridge. Transect counts show it to be quite common in moss and montane forests.

RENNELL Frequently seen but unobtrusive. Up to six recorded per day along the road near Lavanggu. Mainly in primary forest but also in secondary growth next to gardens and the village. An agitated pair seen on 19/9 were feeding young concealed in coral talus on the forest floor.

Aplonis cantoroides**Singing Starling**

Mainly a coastal species using disturbed habitats, only rarely found in primary forest.

KOLOMBANGARA Common around Ringgi; up to 30 per day in areas of degraded and secondary forest and in the village. Uncommon in coconut plantations and gardens near Kena and Iriri, where up to five were seen per day though not regularly. Two in primary forest above Kena were not far from gardens.

GHIZO Common in Gizo town where it breeds and in the swampy valley to the west where up to 20 seen per day including two juveniles on 3/8. A total of 34 seen from the roads between Gizo and Sagheraghi. One entering a hollow branch stump, 7 m up a wharf side tree and a pair carrying food to a similar site nearby, 27/8.

GUADALCANAL Common in and around Honiara with a maximum of 300 on 27/7 including a roost of 200 in the centre of town. Fifteen in the experimental plantation on Mount Austen at flowering trees but only two in degraded forest. Fewer at Henderson Airport; a maximum of four per visit including one carrying nest material on 28/8.

THREE SISTERS Common; 60 on Malaulalo and 30 on Malaupaina, 3/9.

MAKIRA Small numbers breeding at Kirakira. Previously only a vagrant to the island (Coates 1991). Up to three seen per day including an adult feeding two dependent juveniles on 4/8.

Aplonis insularis**Rennell Starling**

Endemic to Rennell.

RENNELL Uncommon but using secondary growth, gardens and villages for feeding. Up to five seen per day at Lavanggu. Quiet and fairly unobtrusive. Some were flushed from the ground amongst dense ferns and secondary growth. A preference for secondary habitats has been noted previously (Lees 1991). The commonest call was a shrill, high-pitched "ksik" also noted as a metallic "tzeep" like a Dipper *Cinclus cinclus*. The song was a short series of thin squeaks recalling a Singing Parrot. Iris colour varies from red (one individual) to dull yellow and orange-yellow.

Aplonis grandis**Brown-winged Starling**

Endemic to the Solomons; Buka to Guadalcanal.

Moderately common in all habitats with tall trees. Frequently observed in pairs but up to three together. Generally seen high up in the tallest trees. Occasionally feeds on the ground; seen taking land-snails from the road on Mount Austen and in adjacent secondary growth.

KOLOMBANGARA Relatively uncommon in the lowlands in tall secondary growth and primary forest below 400 m.. Up to seven seen per day here. Occasionally associated with parties of Yellow-faced Mynahs but not seen in mixed species feeding flocks.

GHIZO Four in the swampy valley west of Gizo but none seen from the roads between Gizo and Sagheraghi.

GUADALCANAL Two pairs regularly in the Botanic Gardens, Honiara. One active nest in the Gardens and another nearby, 28/7 to 28/9. About five at Selwyn College in coconuts and forest edge. Common in degraded forest on Mount Austen, up to 32 seen per day and one active nest found. Moderately common in weather coast primary forest up to at least 1000 m with a maximum of 12 seen per day. One nest in a tall tree in gardens at 900 m, near Hailali.

Nest building in the tops of tall trees was noted on 28/7 and 30/7 on Guadalcanal. The display noted by Cain and Galbraith (1956) was observed on 13/8 on Kolombangara. It resembles the display of European Starling *Sturnus vulgaris* except that no song is audible (cf. Hadden 1981). A common call consisted of a click and a pop; "erik-pop".

Aplonis dichroa**San Cristobal Starling**

Endemic to Makira (San Cristobal).

MAKIRA Common in all habitats with a strong preference for hill forest. Up to 21 per day between 400 and 800 m at Hauta. Frequently seen in mixed species feeding flocks where it is vocal, in contrast to Brown-winged Starling. Usually up to seven in a flock but exceptionally 25 together late in the day. A family party was seen on 7/9. Most were seen in the canopy. Uncommon on the coast; up to three between Kirakira and Arohane. Relatively uncommon in lowland forest. Just four above Maniparegho and ten near Hunari by the River Ravo. Two were seen buffeting a White-headed Fruit-dove near Hauta.

Aplonis metallica**Metallic Starling**

KOLOMBANGARA Common up to 350 m in primary and secondary forest, coconut plantations and gardens. Foraging parties of up to 80 (at least three-quarters of this flock were juveniles) were seen in lowland primary forest where densities were highest. Groups of up to 20 were noted at flowering and fruiting trees in primary forest and partially cleared areas. Small groups were seen hawking flying insects from isolated tall trees like European Starling. Occasionally seen in mixed species feeding flocks. Immature birds were seen on 30/7, 6/8 and 12/8 but no colonies were located.

GHIZO Up to 80 seen in the swampy valley west of Gizo, feeding in flowering trees and moving off north-west to a communal roost. Immature birds were noted on 31/7 and 25/8. A count of 48 was made from the roads between Gizo and Sagheraghi.

NEW GEORGIA Eleven seen from the MV Iuminao in tall mangrove forest at the west end of the archipelago, 30/7.

GUADALCANAL Apparently uncommon. Only seen on the weather coast; four on the coastal strip and one by the River Bolavu.

MAKIRA Abundant on the coastal plain and inland to Maniparegho but not in the foothills. A colony was found in a tall tree amongst gardens between Kirakira and Arohane. At least 150 birds were in attendance on 2/9. Nest building material was being carried but numerous immature birds were still tolerated at the tree, suggesting that breeding had yet to commence (Coates 1991).

Aplonis brunneicapilla**White-eyed Starling**

Endemic to the Solomons; Bougainville to Guadalcanal.

GUADALCANAL Three to five birds were seen on 1/9 and 27/9 in a small area within degraded forest on Mount Austen. This area, at about 300 m, consisted of an open stand of tall trees amongst dense, low secondary growth. The starlings remained in the taller treetops. No display was noted although some chasing around in the treetops was seen on the latter date. Both observations were made in the late afternoon, the birds being absent during the mornings. No Metallic Starlings were seen at this site.

The species is evidently scarce and localised and may be nomadic as well. There is an encouraging series of recent records from Rendova (Blaber 1990), Bougainville (Kaestner 1987) and Guadalcanal (Finch and McKean 1987). These records indicate that the species can tolerate partial clearance of forests. Colonies are known to have been destroyed for food (Cain and Galbraith 1956). Habitat loss to customary agriculture may not be a problem but clear felling and, probably, selective logging may destroy feeding and nesting sites. Seen well, this species is easily identified by the white irides. The elongated central tail-feathers were often missing. Compared to the similar Metallic Starling, White-eyed Starlings were relatively thick-necked with short, broad-based bills and short legs. The plumage was smoother without obvious hackles and had a deep bottle-green sheen.

Acridotheres tristis**Common Myna**

GUADALCANAL Common in Honiara and on the surrounding coastal plain. Up to 40 seen at Henderson Airport. A fledgling was seen in Honiara on 26/9. Not seen frequently in the Botanic Gardens, preferring more open habitats. One was seen on the weather coast near Avuavu, 25/9.

THREE SISTERS About 20 on Malaupaina, 3/9, on grasslands among coconut plantations.

Mino dumontii**Yellow-faced Myna**

Common in all areas with tall trees including degraded and secondary forest. Seen in parties of up to six and in association with Brown-winged Starlings and mixed species feeding flocks.

KOLOMBANGARA Commonest in the lowlands below 400 m but noted up to about 600 m. Up to 28 seen per day around Kena and 25 inland from Ringgi, in primary forest at 350 m. One partial albino with white on the shoulders and the breast near Kena, 8/8.

GHIZO Up to seven in the swampy valley west of Gizo and 18 seen from the roads between Gizo and Sagheraghi.

GUADALCANAL Up to four occasionally in the Botanic Gardens, Honiara and three at Selwyn College. Up to 14 on Mount Austen in degraded forest.

Hirundo tahitica**Pacific Swallow**

Widely distributed on the coasts and the larger rivers but not common. Probably limited by the lack of nest sites. More abundant at settlements with buildings suitable for nesting.

KOLOMBANGARA Two between Kena and Ringgi, 10/8.

GHIZO Up to 14 around Gizo and the swampy valley to the west of town.

NEW GEORGIA Three near Noro and seven at Buru Harbour.

GUADALCANAL Common in Honiara and at Selwyn College.

MAKIRA A small colony was found in Kirakira where the species was common. The colony was under the roof of a vehicle shelter. Twelve birds had at least seven nests on 4/9 when at least five were still being built. The nests were on girders below a tin roof. A group of birds on the beach near Arohane were at a natural nest site on 14/9. This nest was in a hollow branch of a fallen dead tree on the beach. Up to five seen along the River Ravo near Maniparegho. One seen inland at Hauta.

THREE SISTERS Two on Malaulalo and two on Malaupaina.

Zosterops luteirostris

Splendid (Ghizo) White-eye

Endemic to Ghizo.

GHIZO Transect densities were well below densities of other *Zosterops* white-eyes within their preferred habitats. A maximum of 14 seen per day in the swampy valley west of Gizo, mainly in taller secondary growth along the roadside. Twenty seen from the roads between Gizo and Sagheraghi, most foraging in treetops but also in low herbs at the roadsides. Not seen in Gizo town. Up to ten together in mixed species feeding flocks. The contact call was noted as softer than that of Solomon White-eye, "pee-u" rather than "chee-u". Singing birds were encountered within feeding flocks. Only one singing bird was on territory, this was in a stand of 15 old trees. They did not respond to a recording of Solomon White-eye song from Kolombangara. At least two were seen taking nectar from a flowering Malay apple tree *Eugenia malaccensis* on 31/7. The relatively long bill seemed to be suited to this habit. Insects were also taken at flowers.

The species seemed to be dependent upon older secondary growth. Younger secondary growth was used but much less despite the greater area available. This habitat is restricted to strips along the roads and between adjacent plots of land. It is very limited in extent and probably vulnerable to further demands for gardens and for firewood. In view of the low abundance for a *Zosterops* White-eye, this habitat may be sub optimal. We predict that the original habitat may have been primary or old growth forest. There is some debate about the taxonomy of Solomon Islands *Zosterops* species. We follow Sibley and Monroe (1990) recognising *luteirostris* as full species.

Zosterops rennellianus

Rennell White-eye

Endemic to Rennell.

RENNELL Uncommon; especially compared to other white-eyes, *Zosterops* and *Woodfordia*. Not much more abundant than Rennell Shrikebill. It is reported to be more common on the western half of the island (Lees 1991). Up to nine seen per day in primary forest around Lavanggu (few seen in secondary growth). Usually seen in mixed species feeding flocks, maximum three per flock. Typically found in undergrowth or the shrub layer.

A variety of fluid rattling calls was heard, including "chwit" and "chwit-wit-it-it". The song was a sequence of repeated notes, "chwit-chwit-chwit, kril-kril-kril, chrrr-chrrr-chrrr".

Zosterops kulambangrae

Solomon White-eye

Endemic to Kolombangara, Rendova and New Georgia.

KOLOMBANGARA Common at all altitudes, with the highest densities in lowland primary forest below 400 m. Most frequently encountered in mixed species feeding flocks in primary forest. Usually up to ten per flock (but a maximum of 30) and often forming a distinct, well-co-ordinated, noisy sub-group within the flock. Seventeen singing birds defending territories around Kena. These preferred secondary to primary forest, in contrast to those in feeding flocks. A singing bird responded strongly to a recording of its song on 8/8. Occasionally fed in *Molinia* plantations at Ringgi. Maximum daily counts of 25 around Kena, 30 inland from Ringgi at 350 m, five at around 1000 m and nine in the moss forest. Some birds were probably overlooked amongst large flocks of Hermit White-eyes above 500 m. Food items observed included caterpillars, insects and small fruits. Feeds in the canopy in the lowlands but tends to prefer lower levels of the forest where Hermit White-eye is present. The song is a loud, melodious warble. The contact call resembles the cheep of a young domestic chick.

Zosterops murphyi

Hermit White-eye (Kolombangara Mountain White-eye)

Endemic to Kolombangara.

KOLOMBANGARA The most abundant passerine in the moss forest, where densities were extremely high, and in primary forest above 400 m. Between 100 to 200 seen on most days on the mountain top. Occurred down to 350 m. Seen in large, fast-moving, noisy flocks which sounded like *Aplonis* starling colonies. Flocks containing at least 100 birds were seen at 450 m and in the moss forest. Flocks often moved downhill from the moss forest while foraging, returning to the moss forest late in the day, like Meek's Lorikeets. A high localised concentration of feeding birds was found in primary forest at 450 m, 8 km inland from Ringgi. The white-eye flock was usually a distinct unit within mixed species feeding flocks, often leading the flock but sometimes moving so fast that the rest of the flock was left behind. Begging birds were seen in flocks during August. Some were evidently courting adults but juveniles were seen on 23/8. Song was heard once only, on 23/8. It was noted as a subdued, thrush-like whistling. Food items recorded were small fruits or berries. Calls included an explosive, pinging "pyoo!" and a more shrill, nasal "byeet".

Zosterops rendovae**Grey-throated White-eye**

GUADALCANAL Common in weather coast primary forest around Hailali, between 800 and 1000 m. Up to 13 seen per day in groups of up to five, some were in mixed species feeding flocks. Pairs seen at 300 m on Mount Austen on 1 and 27/8 are the lowest recorded on Guadalcanal. Previously known only from the mist forest above 1300 m (Cain and Galbraith, 1956).

MAKIRA Common in primary forest, garden edges and secondary growth around Hauta, above about 400 m. Up to 60 seen per day in groups of up to 26. Occurred as low as 80 m by the River Ravo but uncommon in the foothills below 400 m. Regularly in mixed species feeding flocks with up to 14 seen in a flock. One juvenile was seen being fed near Hauta on 8/9.

Our records indicate either that it undertakes altitudinal migrations (c.f. Melanesian Cuckooshrike) or a change of status has occurred, perhaps the species is expanding its range or has been displaced from the mist forest by cyclone damage. No evidence of breeding was obtained.

Woodfordia superciliosa**Bare-eyed White-eye (Woodford's White-eye)**

RENNELL Common. Up to 49 seen per day around Lavanggu in both primary forest and secondary growth around the villages of Lavanggu and Tinggoa and along the road. Frequently up to five in mixed species feeding flocks, probably leading the flock in a number of cases. Seen to take small fruits. Bathing in foliage occurred after rain, an adaptation to the lack of standing water on the island. A family party was seen on 20/8. One begging bird, believed to be a juvenile had a paler bill than the adult, especially the culmen. The wide range of contact calls includes soft whistled "tyoo" and "chuchee" notes, a similar, rolling "drick" recalling Bee-eater *Merops apiaster*, a twittering trill, a rough chatter "tch-tch-tch..." and a series of rich "chay" notes, possibly a song.

Cettia (Vitia) parens**Shade Warbler**

MAKIRA Common in primary forest above 600 m, occurring sparingly down to 500 m. Occupies the undergrowth and shrub layer at lower altitudes and appears to avoid secondary growth. Forages frequently on vertical stems, including mossy tree trunks. Also uses the canopy in stunted montane forests where the highest densities were recorded. Up to 12 recorded per day, mainly singing males but also families and young juveniles on 7 and 8/9. At least 13 singing near Hauta, with up to 3 pairs in 80 m along a ridgetop path in stunted forest at 900 m. There is extensive suitable habitat, under no threat at present, to the south of Hauta so the species appears to be at little risk.

The song was recorded and playback elicits a strong aggressive response. It is a loud, pure whistled phrase consisting of a long note, slowly increasing (occasionally falling) in pitch, followed by a variable sequence of three notes; e.g. "oooOOO, ee-u-ee". The song is very similar to that of Fiji Warbler *Cettia (Vitia) ruficapilla*. The songs of both are very different to the harsh, guttural chattering of Cetti's Warbler *Cettia cetti*. The genus *Vitia* has recently been included in *Cettia*. A harsh churring call was often heard.

Acrocephalus stentoreus**Clamorous Reed Warbler**

GUADALCANAL Two, including one singing male, near Henderson Airport, 22/9. They were in a small patch of reedswamp by a small oxbow pool on the Lungga floodplain.

Phylloscopus poliocephalus**Island Leaf-warbler**

KOLOMBANGARA Moderately common above about 1000 m in tall primary forest and moss forest. Occasional birds seen down to 940 m. Transect data show moss forest is preferred to montane forest, although they are common in both types. Up to four together and a maximum of eight per day. Most mixed species feeding flocks contained a few Island Leaf-warblers which often sang while foraging. They foraged in the foliage of primary and stunted montane forests. The underparts colour varies; some birds were dull olive-green while most were the typical pale greyish white with pale grey-brown or olive wash on the flanks.

Phylloscopus makirensis**San Cristobal Leaf-warbler**

Sibley and Monroe (1990) treat this form as a full species, not a subspecies of Island Leaf-warbler.

MAKIRA Found at similar densities to Island Leaf-warbler on Kolombangara. A maximum of five recorded per day. Occurs from 600 to 900 m around Hauta with higher densities in montane forest. Forages almost exclusively in the canopy of tall forest, including tall trees next to gardens. Also follows mixed species feeding flocks. This form closely resembles Island Leaf-warbler on Kolombangara but in the field it appears to be more yellow below.

Phylloscopus amoenus**Sombre Leaf-warbler****(Kolombangara Warbler)**

KOLOMBANGARA Uncommon, occupying a very restricted habitat. The species was unobtrusive and occurred at very low densities. Not seen below 1390 m which suggests that there may be no more than 8 km² of suitable habitat (this will be a maximum figure). A. Greensmith (*in litt* 1991) saw birds in January, 1975 from 1200 m upwards, this extends the range to a maximum of 21 km². Only four sightings were made in five visits to the summit, 16/8 to 23/8. At most two birds were seen together; these were in a mixed species feeding flock with Island Leaf-warblers, Golden Whistlers and a Rufous Fantail. Transect counts give a density of 44 birds per km² and a population of about 900 individuals. Using the highest density from an individual transect a population of 2100 was calculated. As the birds are elusive this is likely to be an under-estimate. Island Leaf-warblers are significantly more abundant but the two species occupy different niches. Sombre Leaf-warblers forage on the numerous, mossy stems of stunted trees and shrubs while Island Leaf-warblers feed in the foliage. This may limit the Sombre

Leaf-warbler to habitats with a high density of tree stems. Such habitats were not encountered at lower altitudes. Montane forest is prone to destruction by landslides so its availability will be erratic, dependent on earthquakes and cyclones. There are no indications of how quickly the montane forests recover after landslides but we consider that full recovery of moss forest is likely to be slow. Our observations cannot assess seasonal changes in behaviour so altitudinal migration cannot be ruled out. Moss forest is under little threat from exploitation but lower altitude forests are and if altitudinal migration does occur, then habitat loss in the lowlands could be very damaging to such a tiny overall population. A separate paper (*in prep*) provides further details of field observations.

Dicaeum aeneum

Midget Flowerpecker

GUADALCANAL Common in primary, secondary and degraded forests. Up to 26 seen on Mount Austen and 28 seen in weather coast primary forest between 50 and 900 m. Less common near the north coast in more open habitats. Up to four seen regularly in the Botanic Gardens, Honiara.

Dicaeum tristrami

Mottled Flowerpecker

MAKIRA Very abundant at all altitudes with bushes or trees including coconut plantations. Montane and hill forests held the greatest densities. Up to 11 per day on the coast between Kirakira and Arohane, eight per day in the foothills and 43 per day around Hauta, between 450 and 900 m. Occasionally one or two in a mixed species feeding flock. In addition to the calls described by Cain and Galbraith (1956), a musical "tsu" note was also heard.

Nectarinia jugularis

Olive backed Sunbird

(Yellow-bellied Sunbird)

Common in villages, coconut plantations and secondary growth in the lowlands. Only rarely in primary forest.

KOLOMBANGARA Abundant around Ringgi, a maximum of 50 per day in secondary growth and young plantations and up to ten together in a flowering Papuan apple tree *Eugenia malaccensis* in the village. Up to 11 per day around Kena. A male was seen nearby at 250 m in primary forest on 4/8. Nest building was seen in a scrubby coconut plantation near Hunda harbour on 2/8.

GHIZO Maximum of seven per day in Gizo and the swampy valley to the west of the town and 78 seen from the roads between Gizo and Sagheraghi. One on J. F. Kennedy Island.

GUADALCANAL Common only along the coast. Regularly up to four in the Botanic Gardens, Honiara and up to five on Mount Austen. Single birds at Henderson Airport and up to five in the Honiara suburbs where it is relatively uncommon compared to Ringgi, Kolombangara. Up to six per day seen around Avuavu and Haimarao on the weather coast.

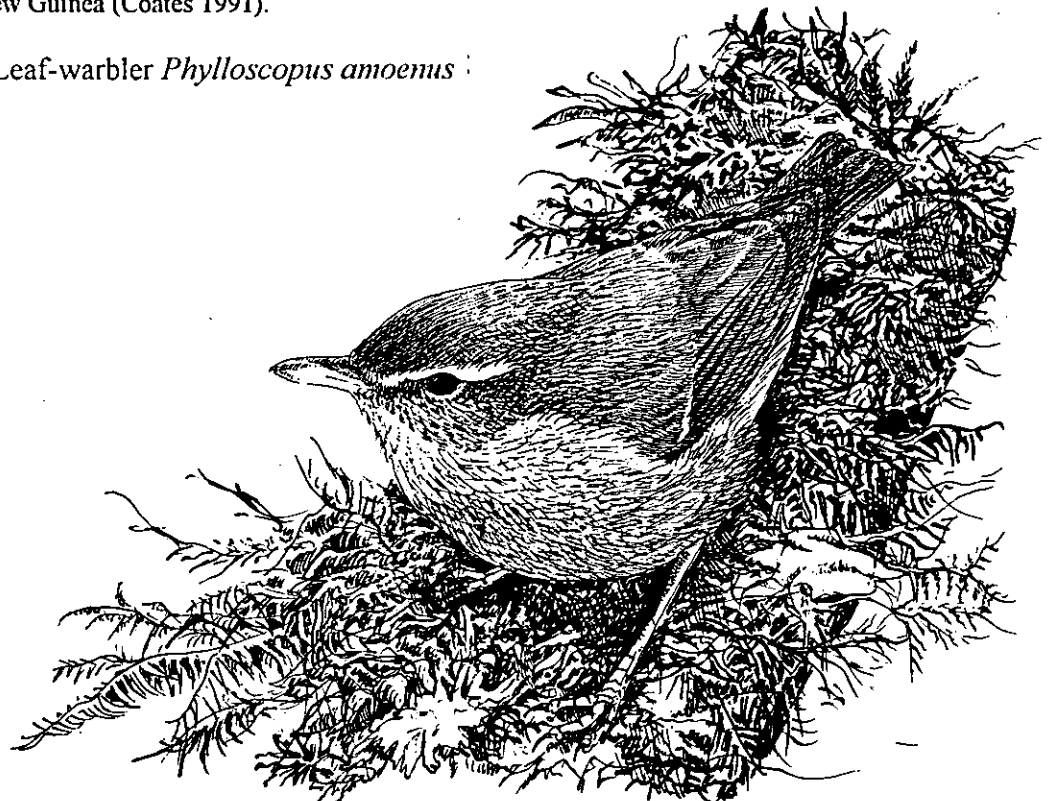
THREE SISTERS Uncommon. Four on Malaulalo where it is greatly outnumbered by Cardinal Myzomela.

Erythrura trichroa

Blue-faced Parrot-finch

KOLOMBANGARA Scarce and elusive. Just three sightings of single birds and none heard despite being generally vocal in New Guinea (pers. obs.). These were at 750 m and 900 m in hill forest and at 1550 m in moss forest. All three were seen in the understorey between 2 and 6 m above the ground. The bird in moss forest was singing on 23/8 and was the only one seen near bamboo, a preference noted in New Guinea (Coates 1991).

Sombre (Kolombangara) Leaf-warbler *Phylloscopus amoemus*



SYSTEMATIC LIST MANUS

Megapodius cremita

Dusky Scrub Fowl

Uncommon compared to the Solomon Islands. A single bird was flushed and two were heard calling in primary forest and rubber plantation. Local people occasionally hunted this species but knew of no nesting grounds.

Anas superciliosa

Pacific Black Duck

A flock of five on an ox-bow of the Lauis River. Villagers occasionally hunted this species.

Eurystomus orientalis

Dollarbird

About six individuals, including two immatures, recorded regularly. They used similar perches to Moustached Treeswift. These are the first records for Manus.

Alcedo atthis

Common Kingfisher

Two singles and a group of three seen on larger rivers.

Ceyx lepidus

Variable Kingfisher

Two were seen and five heard along one small stream in dense primary forest. No other streams of a similar size and nature (0.5-2 m wide and fast-flowing) were followed, but the species was far less common than in the Solomon Islands. Compared to *collectoris* on Kolombangara, the Manus subspecies *dispar* had a slightly paler bill, blue rather than purplish upperparts and a louder, shriller call.

Todirhamphus chloris

Collared Kingfisher

One in a Kapok tree at Rossun, 2 km inland, on 7/7. The separation of this species from Sacred Kingfisher is not easy, but with much subsequent experience on the Solomon Islands, we are confident of our identification. This bird had a gleaming white collar and loreal spot, a uniform buff wash on the lower breast and belly and a stout bill. It was larger with a longer, heavier bill than Sacred Kingfisher. It was smaller than Beach Kingfisher and had the characteristic collar and head pattern of Collared Kingfisher. This is the first record for Manus. The bird did not call. The nearest previous records are from the West Papuan islands and Solomon Islands. Although its distribution appears to be allopatric with Beach Kingfisher in the New Guinea region, both species occur together on many of the Solomon Islands, occupying different habitats.

Todirhamphus saurophaga

Beach Kingfisher

Three birds were seen on Patamu Island. No other rocky shores, other than disturbed habitat around Lorengau town, were visited. Although individuals of the Admiralty Islands race *admiralitatis* vary greatly in crown colour, many showing green crowns, these three had entirely white heads.

Todirhamphus sancta

Sacred Kingfisher

Six birds were seen, mostly in towns and gardens, but also in mangrove.

Merops ornatus

Rainbow Bee-eater

Nineteen flocks of up to five adult birds were seen over gardens and secondary forest.

Cacomantis variolosus

Brush Cuckoo

One or two were heard most days in primary forest and emergent trees in secondary forest and gardens. A trisyllabic call was heard commonly (call 1 in Beehler *et al.* 1986). A purring trill reminiscent of Turtle Dove *Streptopelia turtur* was heard once; this is likely to be the referee type whistle of Coates (1985). The plumage was markedly different to Beehler *et al.* (1986) and Solomon Island birds, with slate-grey underparts uniform with the upperparts, a buff underwing bar and dull orange eyering. Heavily barred immatures, judged to be independent as they were silent and had no attendant host, were seen on 29/6 and 3/7.

[Cacomantis castaneiventris

Chestnut-breasted Cuckoo]

Cuckoos resembling this species were seen or heard calling on average once daily; no silent birds were seen. Most were recorded in forest edge along roads, especially in farmbrush emergent trees, possibly replacing Brush Cuckoo in secondary forest. In New Guinea, Brush Cuckoo occurs in forest gardens and clearings, whilst Chestnut-breasted Cuckoo occurs in hill forest. The plumage fitted descriptions of Chestnut-breasted Cuckoo in Beehler *et al.* (1986): slaty-grey upperparts including the face and chin, uniform dull orange underparts and white tips to the rectrices. They appeared to have slightly shorter tails than Brush Cuckoo. On one bird the dark upperparts extended down to the upper breast. The only call heard from this form was a descending series of whistles "pe-u, pe-u, pee-uu, ...". This song was distinct from the songs given by Brush Cuckoos. Chestnut-breasted Cuckoo has not been recorded off the New Guinea continental shelf and would seem unlikely to occur on Manus. It is

possible that the form described here is a colour morph of Brush Cuckoo but the lack of a precedent for dimorphism in this genus, the different calls observed, habitat difference and tail length appear to rule this out.

Chrysococcyx lucidus

Shining Bronze-cuckoo

One adult seen in forest edge on 3/7.

Trichoglossus haematodus

Rainbow Lorikeet

An average of 10 birds seen daily, mostly in secondary forest and gardens. Most common on small islands: 50 on Patamu island, feeding on coconut flowers, and several flocks seen flying between Manus and Baluan. Reported to nest in the ground on coralline islets off Lou Island (K. Kisokau verbally). On average, birds were more yellow on the upperparts than Port Moresby birds and a few had bright golden-yellow upperparts. This colour phase is unique to the Admiralty Island subspecies *flavicans* (Coates 1985).

Micropsitta meeki

Meek's Pygmy-parrot

Endemic to Admiralty and St. Matthias Islands.

Locally common in forest edge, especially along the main road where there was an apparent preference for isolated trees. Calling birds were heard about 10 times more frequently in degraded habitats than in closed forest. On average, one or two birds were recorded every hour in forest. The species was gregarious, usually seen in pairs, but with up to seven together. They foraged on trunks and branches as small as 3 cm diameter, nibbling at surface, but were not seen to take insects. Most were seen in tree tops but some descended to 5 m in trees and 1.5 m in thickets, climbing downwards more often than upwards. Locals reported that the species preferred *kiwla* trees. The call was similar to that of Blue-crowned Hanging-parrot *Loriculus galgularus*, though given more frequently and with more double notes in flight. The brown or mustard-coloured head patch was variable in size and brightness, with a broad yellow collar present on some individuals.

Eclectus roratus

Eclectus Parrot

A total of 47 males and seven females was seen, with another ten birds heard only. This species was conspicuous in flight, with only one seen perched. This was a female which gave a bell-like 'keleng' call while hanging upside-down next to a tree cavity.

Collocalia esculenta

Glossy Swiftlet

Local and uncommon in small groups of up to five birds. This species flies lower to the ground and closer to observers than the other two swiftlets on Manus, often following a regular beat. The Admiralties subspecies *stresemanni* encountered here has a white rump with a variable amount of black extending up the middle, visible only at close range. Glossy Swiftlets were distinguished from other swiftlets by their glossiness, smaller size, jizz (especially wing-shape) and the clear demarcation between the black throat and white belly.

Collocalia spodopygius

White-rumped Swiftlet

The commonest swiftlet with many flocks of about 50 birds. The overall ratio of swiftlet abundance was about 100 *spodopygius* : 55 *vanikorensis* : 7 *esculenta*.

Collocalia vanikorensis

Uniform Swiftlet

Common, especially over secondary forest, with a maximum of 50 along 3 km of road. They usually fed higher in the sky than other swiftlets, unless it was raining. About 50 were seen over a potential breeding site at Polomou Quarry. The endemic Manus race *coultasi* had paler rumps, slightly different flight (gliding more on level wings) and, overall, appeared more like *Apus* swifts than Solomon Islands birds.

Hemiprocne mystacea

Moustached Tree-swift

About five pairs were recorded. Most were perched in favoured Kapok trees or large dead trees along roadsides or in villages. A pair was seen copulating on a perch on 20/7. Two immature birds were seen on 13/7.

Ninox meeki

Manus Hawk-owl

Endemic to Manus.

Two individuals were seen during the day. One was low down in a bamboo thicket in a sago plantation, the other high in the edge of a coconut plantation. Both birds were alert and active although they were being pursued by monarchs and fantails. Birds were heard each night with a maximum of 3 within 1.5 km of roadside secondary forest. They were also heard in primary forest and village trees (especially breadfruit trees). Calls were heard from 17:00 local time, peaking at 17:45-18:15 (dusk) and occasionally through the middle of the night and during the day in light rain. The call was a series of four to eight booming notes, reminiscent of the wing-beats of a large hornbill, and often with the first three or four notes much quieter. One bird was catapulted by villagers; its biometrics were weight 280 g, right wing (maximum chord) 245 mm, left wing 242 mm, tail 123 mm, bill to cere 18 mm, bill to skull 28 mm, tarsus 44 mm and total length about 320 mm.

Macropygia amboinensis**Slender-billed Cuckoo-dove**

Only four birds were seen, but one or two were heard daily. Usually recorded in forest edge, often calling from favoured emergent trees.

Macropygia mackinlayi**Mackinlay's Cuckoo-dove**

Three singles and two pairs were seen and calls were heard on average every other day. Recorded in primary forest, degraded forest and mangrove. This is a 'supertramp' species, usually found on small islands. These are the first records for the Manus mainland.

Reinwardtoena browni**Pied Cuckoo-Dove**

Endemic to the Bismarck Archipelago.

Two birds were seen: one flying into forest near Polomou mine and one flying high over the River Lauis with deep, slow wingbeats. The plumage of the latter bird was uniform suggesting that it was immature. The immature plumage of Pied Cuckoo-Dove is not known but is presumed to be uniform like immature Great Cuckoo-dove *R. reinwardtii* (Coates 1985).

Chalcophaps stephani**Stephan's Dove**

Up to four seen most days, but the call was not recognised so others may have been overlooked. Most birds were seen in secondary forest and gardens, like the related Emerald Dove *C. indica* (pers. obs.). Three or four birds were flushed from under a Metallic Starling colony each time the area was visited. They were presumed to be feeding on seeds dropped or voided by the starlings.

Caloenas nicobarica**Nicobar Pigeon**

Two dark-tailed juveniles were seen flying over mangroves near Lomuchei Inlet, on the evening of 1/7 and one early in the morning of 2/7. Villagers reported that this species bred in large numbers on a few offshore islets.

Gallicolumba beccarii**Bronze Ground-dove**

Two individuals were seen in flight in or close to primary forest.

Ptilinopus superbus**Superb Fruit-dove**

Of a total of 30 seen only three were females. Most were in secondary forest. An average of six unidentified fruit dove calls, possibly this species, were heard daily. A male was seen at a nest containing a downy chick, in a rubber plantation on 11/7. Another nest containing a single egg was found on 13/7. A male was observed building a nest on 9/7. One pair was seen displaying on a branch on 20/7; the male fanning his tail and waddling from side to side next to the female. A typical pigeon display flight was seen on 3/7. The male flew steeply upwards before gliding with wings and tail spread to a new perch.

Ptilinopus solomonensis**Yellow-bibbed Fruit-dove**

A single male was seen flying across a road in degraded forest.

Ptilinopus viridis**Claret-breasted Fruit-dove**

A total of 15 birds were seen. Most were in fruiting trees or calling from isolated large trees in secondary forest. The Manus form resembled the Solomon Islands race *lewisi*. The bill was entirely yellow and grey extended down the nape, in contrast to the western subspecies *salvadorii* as illustrated in Beehler *et al.* (1986). No 'female plumaged' birds were seen, unlike *salvadorii* which shows marked sexual dimorphism. This species has only recently colonised Manus (Hicks and Hicks in prep.). The species probably spread through the Bismarck Archipelago from the North Solomons where the nearest populations of *lewisi* occur.

Ducula pistrinaria**Island Imperial Pigeon**

Locally common, including a flock of 30. Most records were from forest edge but it was also seen in mangroves. This species was completely absent around a number of villages where it was hunted.

Porphyrio porphyrio**Purple Swamphen**

One was seen along an inland stream and 11 along the lower 4 km of the Lauis River. This species was hunted extensively by local people, both for its meat and to prevent damage to crops.

Numenius phaeopus**Whimbrel**

One on 30/6 and 11 on 1/7 were seen along riverside and coastal mangroves.

Tringa (Actitis) hypoleucos**Common Sandpiper**

Two birds seen on the coast 18/7 and one at Momote Airfield on 21/7.

- Pluvialis dominica** Pacific Golden Plover
Sixteen were seen at Momote Airport on 21/7.
- Sterna bengalensis** Lesser Crested Tern
One adult seen off Lorengau on 13/7. Seen at close range, the orange bill and small size were distinctive. This is the first record for Manus.
- Sterna bergii** Crested Tern
Up to four seen offshore on three dates, including several sightings of immature birds.
- Sterna sumatrana** Black-naped Tern
Up to seven seen offshore frequently. A pair were seen giving a head-shaking greeting display, similar to that of Sandwich Tern *S. sandwichensis*, on 8/7.
- Sterna hirundo** Common Tern
Up to ten were seen on three dates, usually close inshore.
- Sterna anaethetus** Bridled Tern
About 10 seen off Baluan Island.
- Anous stolidus** Brown Noddy
Unidentified noddies were always present far offshore, with a daily maximum of 300 identified as this species.
- Anous minutus** Black Noddy
One bird off Lorengau was seen well enough to be confident of its identification, but this species was probably overlooked (see previous species).
- Aviceda subcristata** Pacific Baza
One or two in degraded roadside forest on five dates. Copulation was observed on 10/7.
- Pandion haliaetus** Osprey
One over a lagoon next to Momote Airport on 28/6.
- Haliaeetus leucogaster** White-bellied Fish-eagle
One pair and two single adults seen, up to 9 km inland.
- Haliastur indus** Brahminy Kite
Up to four were seen daily over all types of forest, showing no preference for coastal areas. Birds were seen carrying nest material to two nests. An active pair was perhaps incubating at a third nest and one disused was nest seen. All four nests were at the base of large branches in single, isolated trees. Two of the active nests were in trees housing large Metallic Starling colonies. The adult kites caused alarm among the starlings and were said by villagers to prey on them.
- Accipiter novaehollandiae** Grey Goshawk
Up to five birds were seen on most days. It was common in secondary forest, coastal coconuts and small islets but rarely recorded in primary forest. Most birds were seen below the canopy, either in flight or perched, where they frequently called. Brief periods of soaring were observed twice. One pair was incubating at a nest in the fork of a tall riverside tree in upper mangrove forest. Another pair frequently visited a nest in the outer branches of an isolated tree in secondary growth. Two immatures were seen. All adults were of the typical colour phase, but with brighter orange eyerings and ceres and slightly paler underparts than shown in Beehler *et al.* (1986). This contrasts with Coates (1985) who states that the endemic Manus race *manusi* is more richly coloured.
- Accipiter meyerianus** Meyer's Goshawk
A large pied accipiter seen on 12/7 was presumed to be this species. The bird was seen perched and flying over secondary growth and gardens during light rain. It was larger than a Pacific Baza, thickset, but without the bulging breast of Northern Goshawk *A. gentilis*. The underparts were off-white with a suggestion of fine streaking and the upperparts were uniformly black. The iris was yellow-orange and cere was pale yellow. This matches the descriptions in Beehler *et al.* (1986) and Coates (1985). Meyer's Goshawk occurs on a number of small islands, the nearest being New Britain, but it is generally rare (Beehler *et al.* 1986, White and Bruce 1986). This is the first record for Manus.

Falco peregrinus**Peregrine Falcon**

One immature seen chasing a Striated Heron between Patamu Island and Manus. A second bird was seen flying over a village 1 km inland. Identification was based on structure. These are the first records from Manus of this widespread species.

Sula leucogaster**Brown Booby**

One seen between Lou and Baluan Islands, south of Manus.

Phalacrocorax sulcirostris**Little Black Cormorant**

One seen flying low over the estuary and mangroves of Lomuchei Inlet on 30/6. There are no other small all-black cormorants known from the Papuasian region. This is the first record for the Admiralties or Bismarcks. There are scattered records from Melanesian islands including Bougainville.

Egretta sacra**Pacific Reef Egret**

This species was widespread on rocky coasts and sheltered beaches. Three were seen up to 4 km inland along the Luis River. Ten were perched in coconuts on Patamu Island but there was no evidence of breeding. About 85% were dark phase birds; no intermediates were seen.

Casmerodius albus**Great Egret**

One in non-breeding plumage was seen at close range on a freshwater marsh near Momote Airport on 21/7. This is the first record for Manus although it is locally numerous in New Britain.

Butorides striatus**Striated Heron**

Three were seen in mangroves at Lomuchei Inlet on 30/6 and one on 1/7. This is the first record for Manus, but it is widely distributed in the south-west Pacific.

Nycticorax caledonicus**Rufous Night Heron**

One or two birds were seen frequently along the larger rivers. On Patamu Island on 30/6, there were at least 20 adults, some carrying nest material, with one immature and a brood of downy young in a coconut palm.

Fregata ariel**Lesser Frigatebird**

One seen off Lou Island.

Pitta superba**Superb Pitta**

Endemic to Manus.

A small population of Superb Pittas was found 2 km north of Rossun. Our observations, including a sonogram of the call and the results of questioning villagers on the status of this species are reported in more detail separately (Dutson and Newman 1991). At least three individuals were calling in a patch of disturbed forest close to a settlement. Two of these responded strongly to imitations of their calls, suggesting they were holding territory. Superb Pitta, known as 'kuku', proved to be well known to villagers (at least in folklore) but rare. Interviewing villagers produced only two other reliable records, one during the 1940's and one recent record, about 2 km from our sightings. A standard description of its nesting habits, namely that they build their nests with the entrance facing away from the wind, was reported throughout the area we visited. The species was said to prefer hilltop forest by two independent informants. One of these added that the forest should preferably be near a river. The occurrence of hill forest and watercourses together is unlikely to be frequent on such a small island. We suggest that this combination provides ideal conditions for landsnails and perhaps stone anvils are more easily found on the steeper slopes. Villagers reported that the Superb Pitta eats snails, smashing them open on anvils; such behaviour is widely reported amongst the pittas (Bruce 1985). The pittas occupied an area of 3.5 km² of which about 80% was primary forest. Assuming all primary forest is suitable an overall population of about 1100 to 1600 calling birds was estimated from forest cover data (Kula *et al.* undated). This is an upper figure as there appear to be additional requirements, reducing the amount of potential habitat. It is not known how to convert numbers of calling birds to actual population numbers. Habitat loss and fragmentation were judged not to be a major threat at present, given the small scale of such activities on Manus. Local informants indicate that snakes are a major nest predator, citing this as a major factor in the rarity of Superb Pitta. There is no evidence that this is unnatural or a threat to the species. Two species of snake, a ground boa *Candoia aspera* and Brown Tree Snake *Boiga irregularis* are commonly recorded on Manus (Kisokau 1980). Brown Tree Snake is a known egg predator (McCoy 1980) and introduced populations have driven birds to extinction (Savidge 1987). The Brown Tree Snake is, however, likely to be native to Manus in which case, the Superb Pitta may have evolved to withstand its depredations. Habitat deterioration, reducing breeding success or survival, can make populations more vulnerable to predators. The forest at the pitta site was disturbed by the collection of forest products and felling of trees by hunters, searching for sleeping Spotted Cuscus *Phalanger maculata*.

Myzomela pammelaena**Bismarck Black Myzomela**

Endemic to smaller islands in the Bismarck Archipelago.

Three flocks of three to five birds were seen on two dates in one small area of isolated tall trees 3 km inland. The species was reported by local people to be found uncommonly elsewhere on Manus. The flocks were compact and cohesive. They fed actively on the leafless branches of a flowering tree, frequently hovering, fluttering vertically downwards and chasing one another. The plumage was uniform matt black except for dull grey underwing coverts. These birds were silent unlike the very vocal mainland Papuan Black Myzomela *M. nigrata* (Beehler *et al.* 1986). In a review of *pammelaena*, Diamond (1976) claimed that it occurred on Manus only as a vagrant, not breeding on any island larger than Long, near Manus (357 km²). Another of Diamond's 'supertramp' species, Mackinlay's Cuckoo-dove, was recorded for the first time in 1990: it is possible that the increased area of degraded vegetation presently on Manus has allowed these generalist species to develop breeding populations since the time of the original island collections. Diamond describes *pammelaena* as glossy black with dark axillaries and underwing-coverts and *tristrami* from Makira as matt with dark underwing-coverts. Beehler *et al.* (1986) describe *nigrata* as lacquer-black with white underwing-coverts. However, we recorded both *pammelaena* and *tristrami* with pale (though not silvery or white) underwings and considered the latter species to be more glossy. Discrepancies between these descriptions may be due to feather wear.

Philemon albitorques**White-naped Friarbird**

Endemic to Manus.

This species was similar to the widespread Helmeted Friarbird *P. buceroides* both in its abundance in all disturbed habitats and its noisy, pugnacious habits. It was common in forest edge, including villages and the outskirts of Lorengau town; less common in secondary forest and mangrove and uncommon in other closed forests. Birds were also seen on Patamu Island, a small coconut islet about 500 m offshore. Most records were of single birds or pairs, but about four times as many were heard as seen. The species was highly aggressive in its defence of flowering trees. On average six birds were recorded hourly in a mixture of forest, gardens and secondary growth. The onomatopoeic local name 'chauka' is given to the radio station Radio Chauka in recognition of the birds' garrulous nature and endemism. The most common call was a very loud "chauka" from single birds or "chaukapowe" from birds apparently in disputes over territory. One bird was seen mobbing a Brahminy Kite. A disused, 30x40 cm, flask-shaped nest was seen suspended from a branch overhanging a river, very close to an active Grey Goshawk nest.

Pachycephala pectoralis**Golden Whistler**

An unobtrusive canopy species which was probably greatly overlooked. A total of 14 were recorded, all in primary forest and usually in mixed species flocks. An infrequently heard "churr" was distinctive, but the loud melodious song was heard just once.

Coracina papuensis**White-bellied Cuckooshrike**

Pairs were seen on most days in disturbed habitats, especially villages. The Manus race *ingens* appeared to be much whiter below and larger than Solomon Island birds, being similar to White-naped Friarbird in size.

Coracina tenuirostris**Slender-billed Cicadabird**

Up to three birds seen per day, in all habitats but, exceptionally, 15, including groups of four birds, recorded in three hours. This species was least frequent in primary forest, but could have been overlooked in the canopy. The normal female plumage of the Manus race *admiralitatensis* was warmer and more barred than illustrations in Beehler *et al.* (1986). At least one bird with female plumage had a blue-grey crown. Both calls heard from males were unlike those described in Beehler *et al.* (1986): a chirp reminiscent of Common Starling *Sturnus vulgaris* and a series of "pee-pee..." notes of constant pace and pitch.

Rhipidura rufiventris**Northern Fantail**

A total of 52 birds was seen but the species was quiet and unobtrusive and hence probably overlooked. Most were in primary forest, it was much less frequent in secondary forest, roadsides and gardens. A pair were feeding a fledgling on 15-16/7.

Monarcha infelix**Manus Pied Monarch**

Endemic to Manus.

A conspicuous species, frequently calling. A total of 57 birds were seen and another 80 were heard. The black markings between the throat-patch and the sides of the neck varied from a solid collar to a single black spot. No immature birds were identified. Most of the pied *Monarcha* forms from Wallacea to the Solomon Islands have a distinct juvenile plumage, but a few such as White-collared Monarch *M. viduus* lack this plumage. Virtually all records were from primary forest where it was patchily distributed. A handful were seen in secondary forest along roadsides and old gardens, always close to primary forest. The species foraged by gleaning in the lower canopy, usually between 6 and 20 m, often perching in open centres of trees. About 90% of mixed flocks included this species, but this only accounted for about 30% of sightings. Birds were much quieter and less obtrusive when in mixed flocks. The most frequent call, possibly a territorial song, was a fast accelerating series of five or six notes followed by two loud, fluid notes "123456-twit-twit". Occasionally, only the last 2 notes were uttered. These calls

were heard from solitary, stationary birds in otherwise deserted forest. Another distinctive call was a monotone whistle like a long, drawn-out first note of the song. A wide repertoire of harsh and melodious notes were also heard, usually from birds scolding the observer or conspecifics. Few of these calls were obviously different from those of Shining Flycatcher.

Myiagra alecto

Shining Flycatcher

A noisy and conspicuous species. A total of 70 birds seen, of which only 12 were female. Most were solitary, with a trio, a pair and two females seen on one occasion each. The species was most common in primary forest but was also seen in a range of secondary habitats, especially in thick undergrowth including bamboo thickets and riverside tangles. This species tended to forage lower than Manus Pied Monarch, usually within 6 m of the ground. A distinctive scolding "schrr-schrr" was often heard. Other calls were less distinctive. A male was seen repeatedly carrying nesting material on 15/7. Males displayed as described in Beehler *et al.* (1986).

Aplonis cantoroides

Singing Starling

Only seen in Lorengau where about 30 birds were presumed to be nesting in holes in wooden posts, just offshore and foraging in adjacent parts of the town.

Aplonis metallica

Metallic Starling

The commonest bird recorded, with 100 seen on many dates. Most birds were in degraded forest, not penetrating far into primary forest. Adults appeared about 2 cm shorter-tailed than birds on the Solomon Islands. Five active colonies were found, four in isolated emergent trees in secondary growth and one on a tiny riverine islet, with about 30, 100, 150, 250 and 280 nests, respectively. Two of the nest-trees also held nesting Brahminy Kites.

Hirundo tahitica

Pacific Swallow

About 15 at Momote Airfield on 28/6 and two at Rossun on 7/7. It is possible that these were non-breeding birds, or that breeding occurs elsewhere on Manus, probably around coastal habitations as preferred by this species (pers. obs).

Zosterops hypoxantha

Black-headed White-eye

Endemic to the Bismarck Archipelago.

A common canopy species, especially in secondary forest, but also villages and primary forest, with 10-20 seen most days. Usually seen in single species flocks but also in mixed species flocks where it was often the nuclear species. The frequent contact call resembles a muffled version of Olive-backed Sunbird. The song was heard twice from the same tree-top; it was a descending series of thin, high-pitched notes similar to the song of Willow Warbler *Phylloscopus trochilus*. All birds had black on the lores and around the eye, fading to dark brown before a sharp cut-off onto yellow body plumage. The dark head patch included the nape and throat in extreme cases, but only extended a little beyond the lores, forehead and ear-coverts in others. A pair were carrying nesting material on 13/7.

Nectarinia jugularis

Olive-backed Sunbird

Common in all disturbed habitats, particularly coconuts, usually singly or in pairs. Unrecorded in all but the smallest patches of primary forest. Two young fledglings were seen on 10/7.

OTHER GROUPS

Mammals

Cetaceans were observed at sea from the MV Iuminao and from wooden canoes. They were identified from field notes following Evans (1987). The larger bats *Megachiroptera* are tentatively identified from field notes on size, colour and range following Phillips (1968). Revisions following ongoing work by the Australian Museum (including descriptions of new species) have not been referred to. No attempt was made to identify *Microchiroptera*. Records from Manus are included with those from the Solomon Islands.

Delphinus delphis

Common Dolphin

The commonest species. At least 30 between New Georgia and Rendova including a group of 20 on 30/7. Twelve north of the Russell Islands on 29/7. Fewer in the Blakett Straits; a daily maximum of two. One seen following a sailfish *Istiophorus platypterus* just offshore, between Ringgi and Kena (Kolombangara), 13/8.

Stenella longirostris

Long-snouted Spinner-dolphin

At least one, possibly up to ten, to the north of the Russell Islands, 29/7. Identified by the long snout and characteristic jumps with longitudinal spinning (Watson 1981).

Tursiops truncatus

Bottle-nosed Dolphin

Up to four seen between New Georgia and Rendova, usually with pilot whales.

Grampus griseus

Risso's Dolphin

At least one with pilot whales off Rendova on 30/7.

Globiocephala macrorhynchus

Short-finned Pilot Whale

Common in groups of up to 15, often with other dolphins or sailfish. Maximum counts of 15 north-west of Guadalcanal, ten (with about ten sailfish) south of New Georgia and six in the Blackett Strait, Kolombangara.

Peponocephala electra

Melon-headed Whale

KOLOMBANGARA One group of ten offshore between Iri and Kena, 13/8.

Phalanger orientalis

Grey Cuscus

Not observed in the field. A newly captured female with a half-grown, back young was seen in Hauta village, Makira, 9/9. One captive in Ringgi village, Kolombangara, 11/8.

Phalanger maculata

Spotted Cuscus

MANUS Uncommon in primary forest, forest edge. Hunted and sold for meat but also kept in villages as a pet.

Rattus norvegicus

Brown Rat

GUADALCANAL One rat, probably this species, seen on the litter strewn, rocky foreshore by Honiara market. Identified by the large size and the long, thick, fleshy tail.

Rattus exulans

Pacific Rat

GHIZO Three in the bar of the Gizo Hotel, 25/8. Identified from field notes (T. Flannery *verbally*).

Rattus sp

Unspecified rat

KOLOMBANGARA Up to five seen raiding the camp at 940m, 22/8 and 23/8. They came after dark to steal food and to nibble equipment with increasing boldness. Compared to *R. exulans* on Ghizo, they were smaller with a proportionately smaller head, stockier body, smaller ears and shorter tails. The eye was dark and the feet pink. The coat was pale fawn-brown in torch light with contrasting white underparts. The blunt tail was pink, covered in short white fur and was approximately 2/3 to 3/4 the length of the head and body.

Pteropus rayneri

Endemic to the Solomons, Bougainville to Makira and Rennell.

KOLOMBANGARA (subspecies *rubianus*) Fifty in degraded and secondary forest and timber plantations around Ringgi airstrip, 11/8. Up to 15 per evening over Kena village. One found roosting 20 m above the ground in a strangler fig, in ridgetop primary forest at about 200 m, near Kena. Not seen further inland.

MAKIRA (subspecies *cognatus*) Possibly less common. Singles on the coast over Kirakira and inland, over Hauta, at 500m. Two at Maniparegho over gardens and secondary growth.

Pteropus tonganus

RENNELL Abundant and active all day. Up to 18 seen per day near Lavanggu, flying over primary forest and feeding in flowering trees. Up to 39 seen from the road between Lavanggu and Tinggoa.

Pteropus admiralitatum

KOLOMBANGARA Uncommon compared to *P. rayneri*; five amongst 50 *rayneri*, near Ringgi airstrip, in degraded and secondary forest, 11/8.

GHIZO One roosting in a *Casuarina* by Gizo market.

Macroglossus lagochilus

Northern Blossom-bat

MAKIRA (subspecies *microtus*) One feeding at banana blossoms in a garden at Hunari, set in primary forest by the River Ravo at 40 m. One feeding in secondary forest by the Ravo at Maniparegho.

Sus scrofa

Feral Pig

KOLOMBANGARA One caught by dogs inland at 700 m. Spoor were found at 1100 m but were not common.

MAKIRA Relatively common. Spoor seen at several locations in primary forest from 200 m upwards. Semi-domesticated animals roam freely near the villages as well.

MANUS Uncommon.

Canis familiaris

Feral Dog

KOLOMBANGARA Village dogs accompanied us up to the camp at 940 m. They went off alone and killed a pig. No sign of truly wild dogs were observed here or on other islands.

Dugong dugong

Dugong

MANUS Villagers reported that small numbers survived around the island.

Reptiles

The more distinctive species were identified in the field or from photographs using McCoy (1980). Critical species were identified in the hand when they could be caught and were all released. Blue-tailed skinks *Emoia caeruleocauda/cyanogaster* were often abundant but could not be distinguished reliably.

Crocodylus porosus

MAKIRA One seen in a small sago swamp at the mouth of the River Ravo. Verbal reports of one or two surviving here.

THREE SISTERS A freshly captured individual was seen. It had been caught in a small sedge dominated swamp behind the beach on the north-west side of Malaupaina. Fresh crocodile tracks were seen on the beach by a larger sedge swamp at the north end of the island.

KOLOMBANGARA Verbal reports from a small, forested lagoon on the coast to the east of Hunda, "a few years ago."

MANUS Villagers reported one or two to survive on the River Lauis.

Gekko vitatus

RENNELL One caught in a hut at Lavanggu.

Hemidactylus frenatus

GHIZO Common in the Gizo Hotel, with at least six seen.

GUADALCANAL Common in houses; with at least ten around houses in Bishopsdale.

Emoia atrocostata

GUADALCANAL At least four on the rocky foreshore by Honiara Market.

Emoia cyanogaster

KOLOMBANGARA Abundant in secondary growth and forest edge at Kena.

MAKIRA Small numbers seen in gardens around Hauta, 500 to 600 m, and in primary forest and overgrown gardens at Maniparegho below 100 m. On the coast, one between Kirakira and Arohane.

Emoia cyanura

RENNELL The only reptile seen commonly around Lavanggu and by the road.

Emoia nigra

KOLOMBANGARA Moderately common in secondary growth around Kena.

GUADALCANAL Common in secondary growth on the north coast, including Mount Austen, the River Lungga and the Botanic Gardens, Honiara. Common around buildings at Henderson Airport.

RENNELL One seen near Lavanggu in gardens with coconuts.

Eugongylus albobasculatus

KOLOMBANGARA One caught in a muddy creek through a coastal coconut plantation at Pine. Upon release it hid down a coconut crab burrow. This is the first record for Kolombangara (McCoy 1980). It was identified from a photograph by Alan Greer at the Australian Museum.

Prasinohaema virens

GUADALCANAL One in the Botanical Gardens, Honiara, caught a large spider in the canopy of a tall tree.

MAKIRA Single lizards were seen in gardens above Hauta at 600 m on six dates.

Sphenomorphus sp

KOLOMBANGARA One at Kena schoolhouse.

Varanus indicus

KOLOMBANGARA One at the edge of the lagoon at Iri in a coconut plantation.

GHIZO Two individuals seen, including one on the rubbish tip at Gizo.

MANUS One by the River Lauis and one in forest canopy near Rossun.

Candoia carinata

MAKIRA One hunting frogs among boulders in a small stream after dark, near Hauta at about 500 m.

Candoia aspera

MANUS Relatively common; at least seven seen.

Boiga irregularis

KOLOMBANGARA Two were killed by villagers in a sago leaf hut near Hunda. They were aggressive, striking repeatedly in their defence. Their lengths were 1.7 and 1.6 m.

Dendrelaphis calligaster

KOLOMBANGARA One on a ridgetop in primary forest at 250 m, above Kena and one in old secondary forest.

GUADALCANAL Single snakes in the Botanic Gardens, Honiara, on Mount Austen and by the River Bolavu on the weather coast. The latter two were in open secondary growth.

MAKIRA One in a garden edge at 700 m.

Salmonclaps par

KOLOMBANGARA Four records near Kena. One in dry, fern-rich secondary growth at 50 m, one in damp, tall, secondary forest at 100 m and two in primary forest between 100 and 300 m.

Unspecified seasnake

KOLOMBANGARA One seen from the MV Iuminao while moored at night off Ringgi Wharf.

MANUS One seen off Baluan.

Amphibians

Bufo marinus

Cane Toad

KOLOMBANGARA Common at Kena, in the village and next to the coconut plantations.

GUADALCANAL At least three on a shingle bed in the River Lungga by Mount Austen. Uncommon compared to Kolombangara and Fiji.

MAKIRA Abundant by the River Ravo at dusk and common along paths at all altitudes.

MANUS Common in deforested areas.

Ceratobatrachus guenthere

Horned Toad

KOLOMBANGARA One found hidden in leaf litter in primary forest near Kena at about 100 m. Much undergrowth had been cleared from this site.

Butterflies

Identifications were based on field notes and photographs. Only distinctive species could be identified. The most comprehensive work available (d'Abrera 1971) does not include some of the forms observed, including some photographed. The taxonomy of several genera seem in need of review (*Cyrestis*, *Cupha*, *Hypolimnas* and *Doleschallia*). Nomenclature follows d'Abrera (1971) with subsequent amendments (Common and Waterhouse 1972, 1981 revision).

Ornithopterus priamus urvillianus

D'Urville's Birdwing

KOLOMBANGARA Moderately common around Kena at flowering *Hibiscus* bushes in the village and in secondary growth. Children often captured individuals, releasing them with lengths of grass or polythene attached.

Papilio ulysses georgias

Ulysses Butterfly

KOLOMBANGARA Uncommon. Two individuals seen high in the canopy of primary forest below 100 m in the Ndugghore Valley.

Graphium sarpedon isander

Blue Triangle

GUADALCANAL One in secondary scrub on Mount Austen.

MAKIRA One on the coast in Arohane village.

Graphium sp

MAKIRA One in the village at Hauta. Like *G. sarpedon* but the pale green band was boldly broken up by transverse bands.

Eurema hecabe nivaria **Common Grass Yellow**

KOLOMBANGARA Common along roads and tracks through secondary growth.
GUADALCANAL Common in open grasslands.

Argyronympha rubianensis

KOLOMBANGARA (subspecies *rubianensis*) Common along forest paths in primary and secondary forest up to at least 400 m.

Mycalesis sp **Bushbrowns**

GUADALCANAL Moderately common in the Botanic Gardens, Honiara.
MAKIRA Small numbers in gardens at Hauta, between 500 and 600 m.

Danaus plexippus **Wanderer**

RENELL Up to three seen in Lavanggu village.

Danaus juvena sobrinoides **a tiger**

GUADALCANAL Common in open secondary growth on Mount Austen.

Euploea nechos **a crow**

KOLOMBANGARA (subspecies *nechos*) Common near the coast. Individuals were frequently seen crossing the sea throughout Western Province.

GUADALCANAL (subspecies *nechos*) Abundant around Honiara. At least 30 congregated on sap oozing from a tree trunk at Bishopsdale, 31/8.

MAKIRA (subspecies *prusias*) Common on the coast and inland at Hauta up to at least 600 m but only in open areas such as gardens and villages.

Hypolimnas alimena **Blue-banded Eggfly**

RENELL (subspecies *libateia*) Moderately common in gardens and by the road at Lavanggu.

Hypolimnas bolina **Common Eggfly**

GHIZO At least three in low, damp, secondary scrub at Gizo.

Hypolimnas sp **unspecified eggfly**

MAKIRA A female photographed at Hauta does not appear to be a known form. The most similar form is *H. octocula* from Vanuatu and New Caledonia. It was on a steep, flowery grass slope by Hauta village at 500 m on 11/9.

Phalanta alcippe **Small Leopard**

RENELL (subspecies *rennellensis*) One photographed in the village at Lavanggu. Common and Waterhouse (1981) question d'Abrera's treatment of the genus (d'Abrera 1971). The identity of this specimen was confirmed by Lekagul *et al* (1977).

Vindula sapor

KOLOMBANGARA Uncommon, seen in primary forest and older, closed secondary forest up to about 600 m.

MAKIRA Uncommon. Seen in primary forest around Hauta, between 500 and 600 m. These records apparently constitute the first records for these islands (d'Abrera 1971).

Cupha melichrysas **a rustic**

MAKIRA Common in secondary growth along open paths and garden edge around Hauta (range identification, d'Abrera 1971).

Cupha sp **a rustic**

GUADALCANAL One photographed in the weather coast primary forest at about 400 m most closely resembles *C. prosope* but on range is more likely to be *C. melichrysas* (d'Abrera 1971).

(Doleschallia bisaltide **Australian Leafwing)**

GUADALCANAL Uncommon. One photographed by the River Lungga by Mount Austen, next to primary forest. Identified on range (d'Abrera 1971) but as the genus reaches its maximum diversity in New Guinea (Common and Waterhouse 1981) the occurrence of other *Doleschallia* species cannot be ruled out.

Cyrestis acilia nitida **a map butterfly**

KOLOMBANGARA Moderately common but shy. Seen along paths through primary and secondary forest up to at least 200 m.

Cyrestis achates

a map butterfly

GUADALCANAL One photographed in a garden by the River Bolavu on the weather coast. Identified on range as *C. achates* but more closely resembling *C. adaemon* (d'Abrera 1971).

Parthenos sylvia ugiensis

Clipper

MAKIRA Moderately common in open secondary growth, along paths and garden edges around Hauta at 500 to 600 m. Individuals often defended territories in sheltered sunny locations.

Junonia (Precis) hedonia

Brown Soldier

MAKIRA (subspecies *zelima*) Common along paths through secondary growth and in the village at Hauta, 500 to 600 m.

unspecified *Lycaenid*

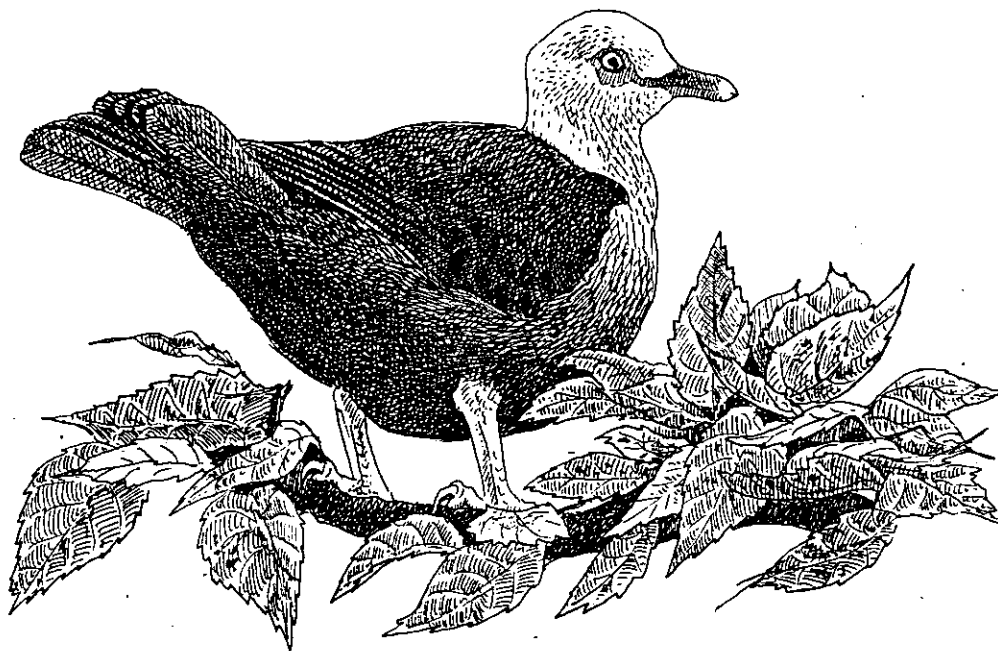
KOLOMBANGARA Moderately common by forest paths in primary and older secondary forest up to 600 m. Like *Curetis* on the upperwing, but with a strongly marked underwing; chestnut on the distal half, yellow on the basal half. Prominent tufts of scent hairs could be extruded from the end of the abdomen.

Luthrodes cleotas

RENNELL Two females seen and photographed in grassland in Lavanggu village. No Rennell subspecies is described (d'Abrera 1971) but the black spotting on the underwing was noticeably heavier than on the nominate form.

Other insects

The moth *Diaphania indica* was photographed in Hauta, Makira; it is a pest on melons (Common 1990). Day flying moths of the family Aganidae were abundant in secondary forest on Kolombangara. The noctuid moth *Calogramma picta* was common in Kirakira, Makira during September. The beetle *Xylotrupes gideon* was seen once at Kena, Kolombangara; it is a pest on coconuts (Endrodi 1985). The longhorn beetle *Shingnotus mirabilis* was seen and photographed twice in gardens at Hauta, Makira. Nearby, a jewel beetle *Paracupta* was seen in a garden at 700 m (*P. helopoides* has been collected from the Roviana Lagoon).



Yellow-legged Pigeon *Columba pallidiceps*

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Appendix 1

Species recorded by the expedition on and around each island group

Key

Occurrence codes (Pyle and Engbring 1985). New records for the Solomon Islands and Manus are shown in bold lettering.

- R Resident breeding or presumed breeding species
- M Passage migrant or wintering species
- S Seabird attracted to or near islands for feeding, roosting or breeding
- V Vagrant, occurring accidentally outside its normal migratory range
- (R) Status uncertain or unconfirmed (refer to systematic list)
- I Introduced species

Island codes

KOL	Kolombangara	RUS	Russell Islands	REN	Rennell
GEO	New Georgia	GUA	Guadalcanal	BEL	Bellona
GIZ	Ghizo	MAK	Makira	MAN	Manus
RED	Rendova	SIS	Three Sisters (Olu Malau)		

Table 4 Species recorded on or around each island group.

Species	KOL	GEO	GIZ	RED	RUS	GUA	MAK	SIS	REN	BEL	MAN
Melanesian Scrubfowl	R		R				R				R
Plumed Whistling Duck							V				
Pacific Black Duck	R	R	R			R	R	R			R
Blyth's Hornbill	R	R		R	R	R					
Dollarbird	R		R			R	R				R
Common Kingfisher	R		R			R	R				R
Little Kingfisher	R		R								
Variable Kingfisher	R						R				R
Forest Kingfisher	V/M										
Ultramarine Kingfisher						R					
Collared Kingfisher	R		R		R	R	R	R	R		R/V
Beach Kingfisher	R	R	R		R	R	R	R			R
Sacred Kingfisher	M		M			M	M	M			M
Rainbow Bee-eater											M
Brush Cuckoo	R					R	R				R
Chestnut-breasted Cuckoo											(R)
Shining Bronze-cuckoo	M					M	M		R		M
Australian Koel						R	R	R			
Buff-headed Coucal	R		R			R					
Cardinal Lory	R	R	R	R	R	R	R	R			
Rainbow Lorikeet	R		R	R	R	R	R				R
Yellow-bibbed Lory						R	R		R		
Meek's Lorikeet	R					R					
Duchess Lorikeet	R						R				
Ducorp's Cockatoo	R	R	R	R		R					
Finsch's Pygmy-parrot	R					R	R		R		
Red-breasted pygmy-parrot	R										
Meek's Pygmy-parrot											R
Singing Parrot	R		R			R	R		R		
Eclectus Parrot	R		R		R	R	R				R
Glossy Swiftlet	R					R	R		R		R
White-rumped Swiftlet	R					R					R
Uniform Swiftlet	R	R	R		R	R	R	R	R		R
Moustached Treeswift	R		R			R	R	R	R		R
Solomon Islands Hawk-owl	(R)					R	R				
Manus Hawk-owl											R
Metallic Pigeon	R						R				

Species	KOL	GEO	GIZ	RED	RUS	GUA	MAK	SIS	REN	BEL	MAN
Yellow-legged Pigeon							R				
Mackinlay's Cuckoo-dove	R		R			R	R		R		R
Brown Cuckoo-dove											R
Crested Cuckoo-dove	R					R	R				
Pied Cuckoo-dove											R
Stephan's Ground-dove	R		R			R	R	R			R
Nicobar Pigeon	R										R
Bronze Ground-dove							R		R		R
Superb Fruit-dove	R					R					R
Silver-capped Fruit-dove								R	R		
Yellow-bibbed Fruit-dove	R						R				R
Claret-breasted Fruit-dove	R		R			R					R
White-headed Fruit-dove							R				
Pacific Imperial Pigeon									R		
Red-knobbed Imperial Pigeon	R	R	R			R	R				
Island Imperial Pigeon	R	R	R	R	R		R				R
Chestnut-bellied Imperial Pigeon							R				
Pale Mountain Pigeon	R					R					
Buff-banded Rail	(R)					R	R	R			
Bush-hen							R				
Spotless Crake							R				
White-browed Crake							R				
Purple Swamphen	R		R			R	R				R
Swinhoe's Snipe						M					
Bar-tailed Godwit							M	M			
Whimbrel	M	M	M			M		M	M	M	M
Common Sandpiper	M	M	M			M	M				M
Grey-tailed Tattler	M		M			M	M	M			
Wandering Tattler			M			M					
Ruddy Turnstone			M			M	M	M			
Rufous-necked Stint						M	M			M	
Long-toed Stint										(V)	
Sharp-tailed Sandpiper			M			M				M	
Beach Thick-knee	R	R						R			
Pacific Golden Plover			M			M	M	M	M	M	M
Mongolian Plover								M			
Gull-billed Tern					S						
Lesser Crested Tern											S/M
Crested Tern	S	S	S	S	S	S	S	S			S
Roseate Tern		S	R			S					
Black-naped Tern		S	R		S	S		S	S		S
Common Tern	S	S			S						S
Bridled Tern	S	S			S	S		S			S
Sooty Tern					S	S					
Brown Noddy		S	S		S	S		S	S		S
Black Noddy	S	S	S		S			S	S		S
Pacific Baza	R		R			R	R				R
Osprey	R	R	R	R	R			R	R		R
White-bellied Fish-eagle											R
Sanford's Fish-eagle	R	R	R	R			R				
Brahminy Kite	R	R	R	R	R	R	R	R			R
Swamp Harrier						V					
Grey Goshawk	R		R			R					R
Brown Goshawk									R	R	
Pied Goshawk	R		R			R	R				
Meyer's Goshawk	R										R

Species	KOL	GEO	GIZ	RED	RUS	GUA	MAK	SIS	REN	BEL	MAN
Oriental Hobby	V/M										
Peregrine Falcon							R				R/M
Red-tailed Tropicbird									S		
Brown Booby		S	S			S		S			S
Little Pied Cormorant						S		S			
Little Black Cormorant						(V)					V
Pacific Reef Egret	R	R	R		R	R	R	R	R		R
Great Egret											M/V
Striated Heron	R	R	R			R	R				R
Rufous Night Heron				R		R	R				R
Ixobrychus sp									?		
Australian Ibis									R	R	
Australian Pelican	V										
Great Frigatebird		S							S	S	
Lesser Frigatebird	S	S	S	S	S	S	S		S		S
Christmas Frigatebird									S		
Wedge-tailed Shearwater						(S)		S			
Heinroth's Shearwater	S										
Wilson's Storm Petrel					S	S					
Superb Pitta											R
Black-faced Pitta	R										
Cardinal Myzomela							R	R	R		
Yellow-vented Myzomela	R		R								
Black-headed Myzomela						R					
Bismarck Black Myzomela											R
Sooty Myzomela							R				
San Cristobal Melidectes							R				
White-necked Friarbird											R
Fan-tailed Gerygone									R		
Scarlet Robin	R						R				
Golden Whistler	R					R	R		R		R
White-billed Crow						R					
Melanesian Cuckooshrike	R					R	R				
Yellow-eyed Cuckooshrike	R		R			R	R		R		
White-bellied Cuckooshrike	R		R			R					R
Slender-billed Cicadabird	R		R			R	R				R
Solomon Islands Cuckooshrike	R					R					
Long-tailed Triller							R				
Willie Wagtail	R		R	R		R	R	R			
White-winged Fantail	R					R					
Grey Fantail							R				
Northern Fantail											R
Dusky Fantail							R				
Rennell Fantail									R		
Rufous Fantail	R		R			R	R				
Spangled Drongo							R				
Rennell Shrikebill									R		
Chestnut-bellied Monarch						R	R	R			
White-capped Monarch	R		R								
Manus Pied Monarch											R
Black-and-white Monarch						R					
Kolombangara Monarch	R										
White-collared Monarch							R				
Shining Flycatcher											R
Steel-blue Flycatcher	R		R			R					
Ochre-headed Flycatcher							R				

Species	KOL	GEO	GIZ	RED	RUS	GUA	MAK	SIS	REN	BEL	MAN
Melanesian Flycatcher									R		
San Cristobal Thrush							R				
Island Thrush	R								R		
Singing Starling	R		R	R	R	R	R	R			R
Rennell Starling									R		
Brown-winged Starling	R		R			R					
San Cristobal Starling							R				
Metallic Starling	R	R	R			R	R				R
White-eyed Starling						R					
Indian Myna						I		I			
Yellow-faced Myna	R		R			R					
Pacific Swallow	R	R	R			R	R	R			R
Black-headed White-eye											R
Splendid White-eye			R								
Rennell White-eye									R		
Solomon White-eye	R										
Hermit White-eye	R										
Grey-throated White-eye						R	R				
Bare-eyed White-eye									R		
Shade Warbler							R				
Clamorous Reed Warbler						R					
Island Leaf-warbler	R										
San Cristobal Leaf-warbler							R				
Sombre Leaf-warbler	R										
Midget Flowerpecker						R					
Mottled Flowerpecker							R				
Olive-backed Sunbird	R		R			R		R			R
Blue-faced Parrot-finch	R										

Appendix 2

Landbird species previously recorded on the islands visited but not observed during the expedition

Each species we missed is classed as follows. (Migrant and vagrant species are excluded).

- 1) no longer occurring on the island or a rare and possibly vulnerable population;
- 2) probably present but overlooked due to cryptic behaviour;
- 3) correct habitat not visited (e.g. Lake Te Nggano not visited on Rennell).

Kolombangara

Australian Koel	2
White-eared Nightjar	2
Bronze Ground-dove	1/2
Woodford's Rail	1
Roviana Rail	1/2
Rufous Night Heron	2
Black Bittern	2
Glossy Ibis	2

Ghizo

Australian Koel	2
Duchess Lorikeet	1
Finsch's Pygmy-parrot	1
White-eared Nightjar	2
Nicobar Pigeon	1
Grey Goshawk	1
Rufous Night Heron	2
Black Bittern	2
Island Monarch	3

Guadalcanal

Melanesian Scrubfowl	2
Red-backed Button-quail	2/3
Little Kingfisher	3
Variable Kingfisher	2
Moustached Kingfisher	3
Duchess Lorikeet	2
Red-breasted Pygmy-parrot	3
Mayr's Swiftlet	3
Barn Owl	2
Metallic Pigeon	2
Yellow-legged Pigeon	1/2
Nicobar Pigeon	1
White-bibbed Ground-dove	3
Bronze Ground-dove	2
Yellow-bibbed Fruit-dove	3
Island Imperial Pigeon	1/2
Chestnut-bellied Imperial Pigeon	1/2
Woodford's Rail	1
Spotless Crake	3
White-browed Crake	3
Osprey	1
Sanford's Fish-eagle	1
Meyer's Goshawk	2
Black Bittern	2
Guadalcanal Honeyeater	3
Scarlet Robin	3
Hooded Whistler	3
Australian Magpie	1
Brown Fantail	3
Spangled Drongo	2
San Cristobal Thrush	3
Island Thrush	3
Island Leaf Warbler	3

Guadalcanal (continued)

Guadalcanal Thicketbird	3
Blue-faced Parrot-finch	3

Makira

Nicobar Pigeon	1
Thick-billed Ground-dove	1
Makira Moorhen	1
Osprey	1
Black Bittern	2
White-rumped Swiftlet	2

Three Sisters (Olu Malau)

Melanesian Scrubfowl	1
Barn Owl	1/2
Mackinlay's Cuckoo-dove	2
Crested Cuckoo-dove	2
Nicobar Pigeon	1
Bronze Ground-dove	1/2
Yellow-bibbed Fruit-dove	1
White-headed Fruit-dove	1
Pacific Imperial Pigeon	2
Red-knobbed Imperial Pigeon	2
Island Imperial Pigeon	2
Chestnut-bellied Imperial Pigeon	1/2
White-browed Crake	2
Sanford's Fish-eagle	1
Peregrine Falcon	1
Striated Heron	2
Rufous Night Heron	2
Noisy Miner	1

Rennell

Grey Teal	3
Pacific Black Duck	3
White-rumped Swiftlet	2
Barn Owl	1/2
Nicobar Pigeon	1
Spotless Crake	2
Purple Swamphen	2
Black Bittern	2
Royal Spoonbill	3

Manus

Manus Masked Owl	1
Yellow-tinted Imperial Pigeon	1
Buff-banded Rail	2
Beach Thick-knee	2
Australasian Grebe	3
Black Bittern	2
Manus Rufous Fantail	1

Appendix 3

Breeding records

Dates are given for nest building, incubation, feeding of nestlings and young birds recently out of the nest. The latter includes fledglings (not fully grown) and dependent young birds. In tropical forests, the period of dependence may be unusually long so this may not be a good indicator of recent nesting. It was often not possible to tell if adults were sitting on eggs or small chicks, particularly in nests in holes or high in trees. Circumstantial records are placed in brackets. Records for the same nest are linked by dots.

Table 5 Breeding records in the Solomon Islands.

	Nest building	Incubating	Nestlings	Fledgling
Variable Kingfisher			18/8...	...23/8
Cardinal Lory		17...18/8		
Rainbow Lorikeet	16/8	27/8	8/8	
Meek's Lorikeet			23/8	
Ducorp's Cockatoo				25/9
Singing Parrot				25/8
Superb Fruit-dove		16...22/9		
Silver-capped Fruit-dove				19/9
Red-knobbed Imperial Pigeon		(22/8?)		
Buff-banded Rail				14 to 16/9
Purple Swamphen				10 to 11/8
Roseate Tern		1/8 (eggs)		
Black-naped Tern		1/8 (eggs)		
Crested Tern				5/8, 3/9
Pacific Baza		10...11/8		
Osprey	26/8	11/8		
Sanford's Fish-eagle			(8...9/8?)	
Brahminy Kite	31/7	6/8, 5/9		
Brown Goshawk			19/9	
Pied Goshawk			10...11/9	
Australian Ibis				
Sooty Myzomela		5/9		
Fan-tailed Gerygone	(21/9?)			19/9
Scarlet Robin			9...11/9	
Golden Whistler				10/9
Melanesian Cuckooshrike	15/8			
White-bellied Cuckooshrike				13/8
Willie Wagtail		26/8 & 18/9	12/9	
White-winged Fantail		(24/8?)		
Grey Fantail	8/9			7 to 10/9
Rennell Fantail				19/9
Rufous Fantail		(9/9?)		2 & 15/9
Chestnut-bellied Monarch			13/9	
Island Thrush			19/9	
Singing Starling	28/9		27/9	4/9
Brown-winged Starling	28/7 & 30/8			
Metallic Starling	2/9			
Indian Myna				26/9
Pacific Swallow	4 & 14/9			
Hermit White-eye				23/8
Shade Warbler				7 to 9/9
Olive-backed Sunbird	1/8			

Table 6 Breeding records on Manus.

	Nest building	Incubating	Nestlings	Fledgling
Moustached Treeswift	20/7 (laying)			13/7
Superb Fruit-dove	9/7	11/7. 13/7 (egg)		
Pacific Baza	10/7 (laying)			
Brahminy Kite	2/7			
Grey Goshawk		30/6 to 13/7		
Rufous Night Heron			30/6	
White-naped Friarbird	11/7			
Northern Fantail				15/7
Shining Monarch	15/7			
Olive backed Sunbird				10/7

Appendix 4

Bird densities in forest habitats

Counts of birds were made along known lengths of forest track. In practice, the limited numbers of tracks dictated that transect lengths were not constant and were shorter than ideal (mostly under 1 km). Also, the speed at which transects were walked was not strictly controlled, to enable unfamiliar birds to be studied. Only birds using the forest were counted; birds flying over were excluded. We considered that we were detecting birds within about ten metres of the paths except for a selection of vocal species, often singing birds, which were audible at up to 50 m. Thus, population densities were calculated for each species within the area defined by the transect width (20 or 100 m) times the transect length. Transect data from each habitat were pooled to produce a mean density for each habitat and the standard deviation was estimated. The standard deviation of the mean density was greater than the estimate in most cases. Consequently, the densities must be treated as first estimates. The most accurate estimates (standard deviation less than mean) are highlighted with bold text in the tables. In our judgement, the forests could be divided into lowland and upland forests at around 500 m altitude, this division is used for the density data.

Table 7 Bird densities on Kolombangara (contacts per km²).

habitat	1" lowland	low montane	1" hill	1" montane	moss	2" lowland	coconut and 2"	mangrove
Melanesian Scrubfowl	2.3	0	0	0	0	11	9.1	300
Blyth's Hornbill	23	0	8.3	0	0	6.1	0	0
Dollarbird	0	0	0	0	0	9.1	32	0
Little Kingfisher	0	0	0	0	0	0	0	50
Variable Kingfisher	23	0	42	63	0	24	0	0
Collared Kingfisher	3.0	0	1.7	30	0	8.5	1.8	0
Sacred Kingfisher	0	0	0	0	0	21	46	100
Brush Cuckoo	2.3	0	8.3	35	0	4.8	0	0
Shining Bronze-cuckoo	0	0	0	0	0	3.0	4.5	0
Cardinal Lory	32	0	15	45	0	51	67	0
Rainbow Lorikeet	17	0	57	110	0	40	40	0
Meek's Lorikeet	0	0	17	220	640	0	0	0
Duchess Lorikeet	0.8	0	0	10	0	0	0	0
Ducorp's Cockatoo	15	0	8.3	0	0	24	4.5	0
Finsch's Pygmy-parrot	30	0	0	0	0	12	0	0
Red-breasted Pygmy-parrot	0	0	33	140	0	0	0	0
Buff-headed Coucal	18	0	12	10	0	27	9.1	0
Singing Parrot	3.0	50	4.2	0	0	3.0	18	0
Eclactus Parrot	5.4	20	1.7	0	0	13	9.1	0
Glossy Swiftlet	0	0	50	0	11	0	0	0
Moustached Treeswift	0	25	0	0	0	0	46	0

Table 7 (continued) Bird densities on Kolombangara (contacts per km²).

habitat	1" lowland	low montane	1" hill	1" montane	moss	2" lowland	coconut and 2"	mangrove
Metallic Pigeon	0	0	8.3	0	0	0	0	0
Mackinlay's Cuckoo-dove	3.8	0	0	0	0	6.1	0	50
Crested Cuckoo-dove	3.6	0	18	10	0	0	0	0
Stephan's Dove	1.9	0	0	0	0	3.0	9.1	0
Superb Fruit-dove	0.8	0	1.7	0	0	0	0	0
Yellow-bibbed Fruit-dove	0.6	0	50	80	4.4	1.2	0	0
Claret-breasted Fruit-dove	11	0	0	0	0	11	0	0
Red-knobbed Imperial Pigeon	41	0	13	5.0	0	42	38	0
Island Imperial Pigeon	4.5	0	0	0	0	6.1	0	0
Pale Mountain Pigeon	21	0	0	0	11	0	0	0
Purple Swamphen	3.8	0	0	0	0	24	36	0
Pacific Baza	0.8	0	0	0	0	2.4	0	0
Osprey	0	0	0	0	0	0	0	20
Sanford's Fish-eagle	3.1	0	1.7	0	0	3.6	1.8	0
Brahminy Kite	3.1	0	0	0	0	4.8	3.6	0
Grey Goshawk	0	0	0	0	0	6.1	0	0
Pied Goshawk	1.9	0	4.2	0	0	3.0	4.5	0
Yellow-vented Myzomela	61	150	100	480	780	97	64	0
Scarlet Robin	0	0	17	140	160	0	0	0
Golden Whistler	15	40	200	220	76	0	0	0
Melanesian Cuckooshrike	3.8	0	0	0	0	0	4.5	50
Yellow-eyed Cuckooshrike	29	25	4.2	0	0	21	4.5	0
White-bellied Cuckooshrike	5.8	0	0	0	0	61	18	0
Slender-billed Cicadabird	44	50	25	0	0	18	23	100
Coracina sp	0	0	4.2	0	0	0	0	0
Solomon Islands Cuckooshrike	0	25	29	0	0	0	0	0
Willie Wagtail	0	0	0	0	0	0	5.5	0
White-winged Fantail	50	50	42	0	0	30	4.5	0
Rufous Fantail	44	0	130	13	11	24	0	0
White-capped Monarch	190	350	160	0	0	52	14	0
Kolombangara Monarch	39	75	58	0	0	0	0	0
Steel-blue Flycatcher	73	180	67	13	0	36	46	0
Island Thrush	0	0	4.2	25	33	0	0	0
Singing Starling	3.8	0	0	0	0	36	4.5	0
Brown-winged Starling	23	0	8.3	0	0	27	0	0
Metallic Starling	340	0	0	0	0	170	260	750
Yellow-faced Mynah	160	75	8.3	0	0	180	50	0
Solomon White-eye	220	250	230	13	120	91	0	0
Hermit White-eye	680	50	710	450	4200	0	0	0
Island Leaf-warbler	0	0	17	130	260	0	0	0
Sombre Leaf-warbler	0	0	0	0	44	0	0	0
Olive-backed Sunbird	5.8	0	0	0	0	82	140	200
Blue-faced Parrotfinch	0	0	4.2	0	11	0	0	0

Table 8 Bird densities on Makira (contacts per km²).

habitat	1" lowland	1" hill	1" montane	coconut and 2"
Melanesian Scrubfowl	17	0	0	15
Dollarbird	11	9.2	0	15
Common Kingfisher	2.2	0	0	0
Variable Kingfisher	33	90	0	70
Collared Kingfisher	0	4.2	0	50
Beach Kingfisher	0	0	0	15
Sacred Kingfisher	0	0	0	0
Brush Cuckoo	3.5	37	10	0
Australian Koel	8.7	0	0	45
Cardinal Lory	0	0	0	6.0
Rainbow Lorikeet	0	0	0	90
Yellow-bibbed Lory	24	110	15	0
Duchess Lorikeet	8.7	65	55	16
Finsch's Pygmy-parrot	28	32	50	25
Singing Parrot	48	66	38	15
Eclectus Parrot	10	5.8	0	12
Glossy Swiftlet	0	28	0	40
Moustached Treeswift	2.2	17	0	5.0
Solomon Islands Hawk-owl	2.2	1.3	0	0
Metallic Pigeon	4.3	12	0	0
Yellow-legged Pigeon	0	3.9	0	0
Mackinlay's Cuckoo-dove	0	2.6	0	0
Crested Cuckoo-dove	1.7	6.8	10	0
Stephan's Dove	11	0	0	10
Bronze Ground-dove	8.7	6.6	0	0
Yellow-bibbed Fruit-dove	51	110	60	18
Claret-breasted Fruit-dove	15	7.9	0	4.0
Red-knobbed Imperial Pigeon	90	78	10	0
Chestnut-bellied Imperial Pigeon	11	22	0	10
Buff-banded Rail	0	1.3	0	75
Bush-hen	0	1.3	0	0
Spotless Crake	0	0	0	5.0
Purple Swamphen	2.2	0	0	15
Pacific Baza	2.6	0	0	0
Sanford's Fish-eagle	0	1.6	0	0
Pied Goshawk	2.2	5.3	5.0	5.0
Cardinal Myzomela	0	0	0	140
Sooty Myzomela	65	200	38	360
San Cristobal Melidectes	24	220	110	5.0
Scarlet Robin	0	21	38	0
Golden Whistler	70	130	110	0
Yellow-eyed Cuckooshrike	2.2	25	0	0
Slender-billed Cicadabird	15	32	25	0
Long-tailed Triller	0.9	26	0	38

Table 8 (continued) Bird densities on Makira (contacts per km²).

habitat	1" lowland	1" hill	1" montane	coconut and 2"
Willie Wagtail	0	0	0	80
Grey Fantail	2.2	71	150	0
Dusky Fantail	11	17	0	0
Rufous Fantail	72	130	25	170
Spangled Drongo	13	25	0	0
Chestnut-bellied Monarch	67	68	0	65
White-collared Monarch	78	75	38	15
Ochre-headed Flycatcher	6.5	46	13	10
San Cristobal Thrush	0	3.9	0	0
Singing Starling	0	0	0	0
San Cristobal Starling	13	140	25	20
Metallic Starling	0	0	0	210
Grey-throated White-eye	30	290	380	0
Shade Warbler	0	49	230	0
San Cristobal Leaf-warbler	0	17	88	0
Mottled Flowerpecker	41	280	330	100

Table 9 Bird densities on Ghizo (contacts per km²) in mixed secondary growth and coconuts.

Melanesian Scrubfowl	7.3	Pacific Baza	0.9
Dollarbird	4.5	Osprey	5.5
Little Kingfisher	2.3	Sanford's Fish-eagle	0.9
Collared Kingfisher	22	Brahminy Kite	4.5
Beach Kingfisher	5.5	Pied Goshawk	0.9
Sacred Kingfisher	6.4	Yellow-vented Myzomela	41
Buff-headed Coucal	2.7	Yellow-eyed Cuckooshrike	2.3
Cardinal Lory	37	White-bellied Cuckooshrike	32
Rainbow Lorikeet	77	Slender-billed Cicadabird	2.3
Ducorp's Cockatoo	30	Willie Wagtail	29
Singing Parrot	2.3	Rufous Fantail	4.5
Eeclactus Parrot	29	White-capped Monarch	48
Moustached Treeswift	11	Steel-blue Flycatcher	11
Mackinlay's Cuckoo-dove	2.3	Singing Starling	24
Stephan's Dove	2.3	Metallic Starling	110
Claret-breasted Fruit-dove	13	Yellow-faced Mynah	41
Red-knobbed Imperial Pigeon	8.2	Pacific Swallow	11
Island Imperial Pigeon	14	Splendid White-eye	46
Purple Swamphen	11	Olive-backed Sunbird	160