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Bird Conservation Priorities and a Draft Avifauna Conservation Strategy for the Pacific Islands Region

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Cover: Kakerori *Pomarea dimidiata* about one year old, Takitumu Conservation Area, Rarotonga
Photo by Greg Sherley

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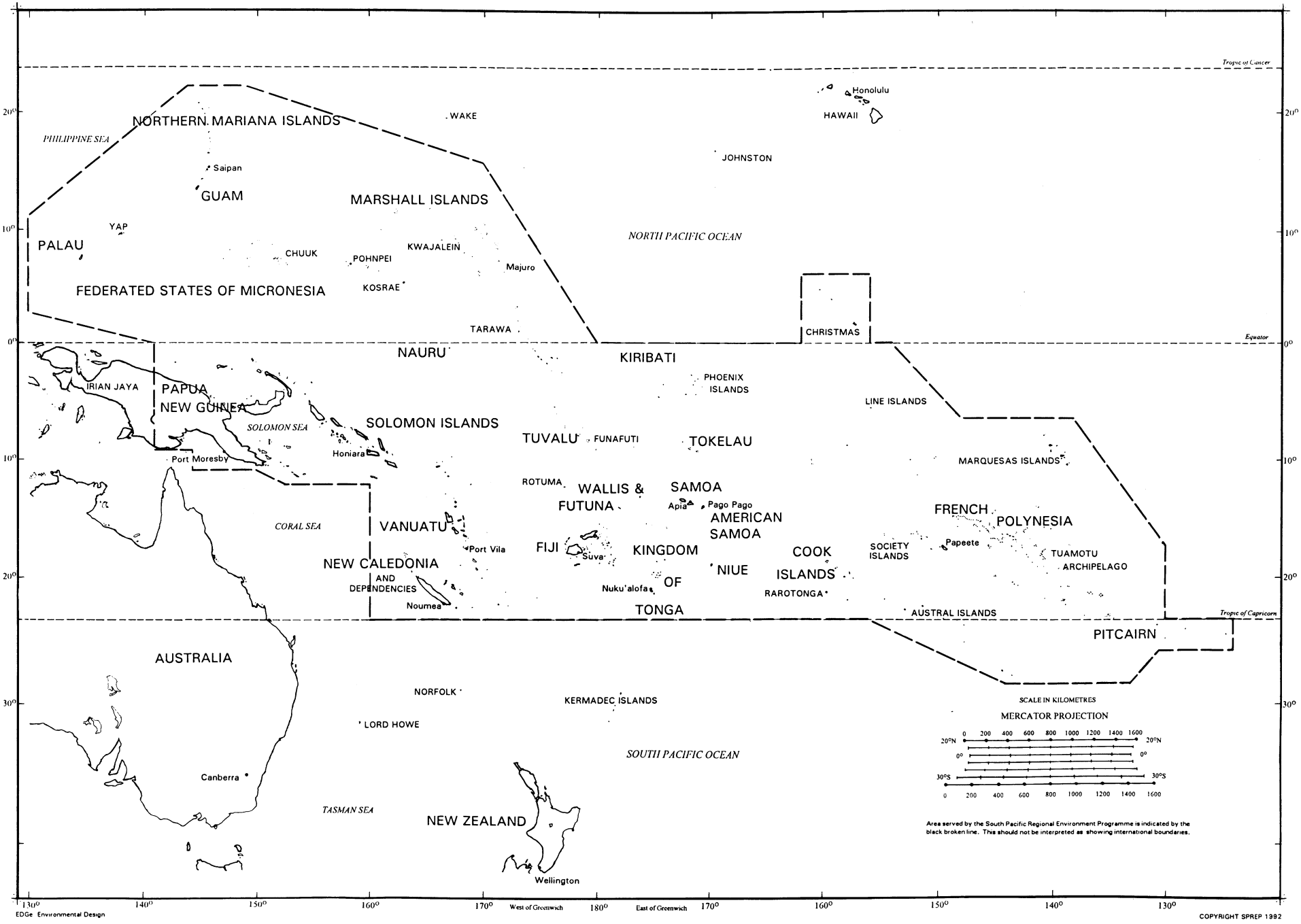
Contents

AREA SERVED BY THE SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME



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Foreword

The South Pacific Regional Avifauna Conservation Programme is funded by the New Zealand Government as part of its Overseas Development Assistance. The concept for the programme was developed by the Avifauna Working Group at the Third South Pacific Conference on Nature Conservation and Protected Areas, Port Vila, 24–28 October 1991. Thereafter, individuals from the New Zealand Government and SPREP acted as advocates for the programme and it finally received funding in 1998. In September 1998 a Programme Officer was appointed to manage the project. The project's *modus operandi* has been to conduct a technical review of the conservation status of birds in Polynesia, Melanesia and Micronesia and issues facing birds in the region overall, organise and fund workshops to decide on urgent conservation project briefs, and implement as many of these as funds allowed.

The objectives of the workshops were to:

1. Review the Draft Pacific Islands Region Avifauna Conservation Strategy which originated from the Port Vila meeting.
2. Agree on priority avifauna conservation projects for each country and for species whose survival is being threatened. This may include identifying areas which are important for bird conservation and which need protection and/or management action.
3. Provide participants with an up-to-date technical overview of the status of bird species in the Pacific islands region and the threats to their conservation.
4. Provide technical guidance on the latest advancements related to avifauna conservation and control or eradication of invasive species which might threaten bird species.
5. Provide a forum for representatives of appropriate organisations in Pacific island countries, including non-government organisations (NGOs), to share experiences and information on avifauna conservation, to create networks for future collaborative work, and to explore what opportunities exist for collaboration between SPREP, in-country conservation officers, NGOs, and regional and international organisations.

There were three main tasks which the workshop participants completed: (1) reviewing the Draft Pacific Islands Region Avifauna Conservation Strategy; (2) writing agreed project briefs for the important bird conservation projects in their country; and (3) agreeing on generic recommendations for the conservation of avifauna in the Pacific. The project briefs and recommendations were drawn from information from BirdLife International's *Threatened Birds of the World* and country reports supplied by Pacific country and NGO participants.

Projects for individual countries were ranked subjectively to identify those projects which should be implemented immediately. Readers should consult BirdLife International to confirm the conservation status of individual species because new information may have arisen which changes the status of some species. Each workshop tabled generic recommendations which they wished to see presented to a SPREP Meeting for endorsement. Similarly, the groups reviewed the Draft Pacific Islands Region Avifauna Conservation Strategy. The final agreed Draft Strategy will be tabled to a SPREP Meeting for endorsement.

Talks were delivered on the following: conservation status of birds in the sub-regions, and issues facing bird conservation; BirdLife International's structure and operation; Birds Australia; and various other topics. One-day field trips were made to the Takitumu Conservation Area (Rarotonga), Koroyanitu National Heritage Park Conservation Area (near Nadi, Fiji), and Guam wildlife projects.

French translations of the projects for New Caledonia and the workshop recommendations for the Melanesia workshop are included in these proceedings. The issues and options papers used to brief workshop participants are included after project briefings for each workshop.

Annexes to this document describe a preferred method for applying for assistance from the Regional Avifauna Conservation Programme for in-country bird conservation projects, and the lists of participants at each workshop are included.

Tamari'i Tutangata
Director

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Thanks are due to all workshop participants for their excellent contributions to the strategy review and project briefs. Special thanks are due to the NGOs that contributed by sending delegates and, in particular, BirdLife International for assisting in funding the workshops and providing much of the technical information used. This was facilitated by Gary Allport, while Alison Stattersfield and Guy Dutson provided the technical information. The following people volunteered their time *gratis* because of their commitment to bird conservation: Gaye Harford (of Xpand Management Ltd, New Zealand, who facilitated the Melanesia and Micronesia workshops), Eric Dorfman (Birds Australia), Guy Dutson (BirdLife International), Dick Watling (representing the Fiji Islands and Polynesia), Hugh Robertson and Rod Hay (Science & Research Unit, Department of Conservation, New Zealand) and Graham Wragg (providing technical information on the Pitcairn Islands). Eric Dorfman and Graham Wragg also paid some or all of their own expenses, and this generosity is gratefully acknowledged by SPREP. Anna Tiraa acted as a consultant assisting in the organisation of the Polynesia workshop in Rarotonga. Thanks to Nicolas Barré for the French translations of the New Caledonian project briefs and Melanesia workshop recommendations.

The administrative organisation of the workshops was ably handled by Helen Ng Lam (Melanesia and Micronesia workshops) and Ruta Couper (Polynesia), both of SPREP. Participants were grateful to those who organised the field trips: Ian Kareka, Anna Tiraa and Ed Saul (Takitumu Conservation Area, Cook Islands), Unaisi Tawake (Conservation Area Support Officer, Koroyanitu, Fiji), and the Koroyanitu National Heritage Park staff and Abaca Village, and Bob Beck, Tino Aguon, Blaine Dicke and Suzanne Medina for a very successful field day in Guam. The Regional Avifauna Conservation Programme (RACP) co-sponsored this workshop with BirdLife International, and the RACP is funded by the New Zealand Government's Official Development Assistance (NZODA) programme.

Finally, thanks to Geoff Gregory of Word Therapy (New Zealand) for the excellent job editing, and to Guy Dutson and Alison Stattersfield (BirdLife International) for peer review of the text.

Executive Summary

Three workshops were held over two years for the three sub-regions in the Pacific: Polynesia, Melanesia and Micronesia. Each workshop considered a summary of threatened species in their sub-region and generic problems, and then decided on a priority list of project briefs for bird conservation projects. The workshops also revised the draft regional strategy.

The summary of threatened species will change with time. Most of the change will be for the worse, because the conservation status of threatened species for which there is accurate information is declining, and species with inaccurate information at the time of assessment usually subsequently turn out to be more threatened than was originally thought. The conservation assessments have relied heavily on BirdLife International's publication, *Threatened Birds of the World*.

For SPREP's Pacific island countries and territories membership, the totals for the BirdLife (hence IUCN) conservation categories are: 1 Extinct in the Wild; 18 Critically Endangered; 32 Endangered; 111 Vulnerable; 0 Conservation Dependent; 84 Near Threatened; 23 Data Dependent. These data may theoretically score species twice or more if they occur in more than one country. However, only one category is significantly affected: if bristle-thighed curlew *Numenius tahitiensis* is counted once, the number of Vulnerable species is 101.

Recurring generic bird conservation issues identified by the workshops included (not ranked): invasive species threatening birds directly from predation and habitat modification; unsustainable hunting of particular species for food; habitat destruction and modification for agriculture, timber extraction, and infrastructural developments; the need for much higher levels of public awareness and education; the need for regulations and laws which are enforced to protect birds and their habitats; the need to protect and restore whole island communities represented by Important and Endemic Bird Areas (as defined by BirdLife International); clarification of the taxonomic and conservation status of many birds; a shortage of experts trained in standard methodologies who are permanent residents in the Pacific.

Finally, all workshops ended on an optimistic note. There was a genuine concern for birds and their habitat and willingness to share skills and knowledge—something which stems from birds being part of the spiritual and traditional culture of the Pacific.

Polynesia workshop, Rarotonga, 26-30 April 1999

1. Priority avifauna conservation projects

American Samoa

Single-species projects

Shy ground-dove (*Gallicolumba stairii*)
Problem: Not enough data information; loss of habitat; predation; vulnerable to natural disasters.

Justification: IUCN Near Threatened* species; lack of scientific data.

Actions: Need more surveys on Manu'a Islands; habitat protection; predator control; survey and monitoring; legislation; education programme; community involvement.

Priority: High.

Important bird locality projects

Tutuila, Manu'a
Problem: Lack of scientific data; predators; loss of habitat.

Justification: American Samoa National Park. Limited funding (for trip to Manu'a Islands).

Action: Surveying and monitoring frequently; predator control; community involvement and support; education programme; Government and community support.

Priority: Tutuila – Medium, Manu'a – High.

Cook Islands

Single-species projects

Kakerori, Rarotonga flycatcher (*Pomarea dimidiata*)
Problem: Was Critically Endangered because of predation, and declining. The solution was to control rats, the success of which was measured by monitoring nesting success and population numbers.

Justification: These actions were justified by results – rat control has increased kakerori numbers.

Action: Continued rat control and feasibility study including winning community support for possible subsequent translocation.

Priority: High.

Kopeka, Atiu swiftlet (*Collocalia sawtelli*)
Problem: Population is Vulnerable because of small numbers of nests, only two breeding sites, and species confined to one island; nestlings preyed upon by crabs; also fledging period prolonged, perhaps because of lack of food.

Justification: Single-island endemic species which appears to be under stress and research is needed to find out how to help them (or not).

Actions: (1) Detailed study of breeding biology over a full season so that further actions can be identified/justified. (2) Crab exclusion and perhaps translocate bird to another suitable island.

Priority: High.

I'oi, Rarotonga starling (*Aplonis cinerascens*)
Problem: Insufficient data on numbers and distribution.

Justification: Single-island endemic species about which little is known, and which could decline undetected, unless baseline data are gathered.

Action: Survey.

Priority: Medium.

Tanga'eo, Mangaia kingfisher (*Todirhamphus ruficollaris*)
Problem: Small population; under stress of harassment by mynas in open areas.

Justification: Sensitive native species apparently being harassed by invasive species.

Action: Ongoing monitoring of numbers, nest success, etc., to get comparisons with existing baseline data. Possible other actions: provide nest sites in appropriate places; augment habitat; encourage habitat preservation; remove myna population.

Priority: Medium.

Important bird locality projects

Suwarrow Atoll
Problem: This is an uninhabited seabird island threatened by a proposed pearl farming development. It is feared that human settlement may result in uncontrolled bird harvesting.

Justification: As well as being nationally and regionally important, this is undoubtedly one of the most important bird islands in the South Pacific.

* The categories used to identify the conservation status of species are those used in BirdLife (2000), which are the IUCN Red List categories.

Action: Keep an eye on situation; repeat monitoring of bird populations as required; perhaps develop a sustained harvesting regime for sea birds in a proclaimed National Park.

Priority: High.

Takutea Cay

Problem: There is a possibility of increased uncontrolled access to Takutea, hence possible increased damage to bird colonies; excessive harvesting may have occurred in the past.

Justification*:* Takutea is culturally very significant to the Aronga Mana (traditional leaders) and people of Atiu.

Action: Ship visits need to be controlled, and more structured visitor flows should be designed (walkways, etc.). If Atiu residents desire to harvest various species, a sustainable harvesting system should be devised.

Priority: Medium.

Atiu Island

Problem*:* The three endemic birds on Atiu are threatened by environmental changes such as opening up of forest canopy. Increased ecotourism pressure in the kopeka (*Collocalia sawtelli*) caves is another problem, while the ship rat-free status needs to be preserved, as the island should remain a suitable repository for threatened species translocated from other islands.

Justification: Ship rat-free status indicates that Atiu Island could be a prime translocation site.

Actions: Continue watching for any further changes in habitat and/or bird numbers. Put quarantine measures in place to prevent colonisation by rats. Translocate single-island endemic (kopeka) to suitable alternative island.

Priority: High.

Mangaia

Actions: Implementing projects listed in the species section will be sufficient for this island.

Priority: Medium.

Inland Rarotonga

Problem: Two single-island endemics (io'i *Aplonis cinerascens*, and kakerori *Pomarea dimidiata*) live only in this area, which could be threatened by stochastic events or human activities such as roading, forestry, housing, etc.

Justification: The two species are more vulnerable on one island than on two.

Action: Translocate the two species; keep a watch on human development in the area.

Priority: Medium.

French Polynesia

Single-species projects

Upe, Marquesas pigeon (*Ducula galeata*)

Problem: A Critically Endangered endemic species reduced to about 200 birds in a remote area of one island (Nuku Hiva).

Justification: The Government and the local community are enthusiastic; the habitat is suitable; there are no rats; the area is protected; there is sub-fossil evidence of previous occupation; and the human resources are available.

Actions: (1) A recent five-month survey indicated that translocation to Ua Huka was the most practical solution. (2) A nearby island (Ua Huka is 70 km away from Nuku Hiva) is an appropriate translocation site.

Notes*: These steps are essential for risk management. Planned ecotourism ventures will benefit the local population. Additional biodiversity benefits.*

Priority: High, urgent

Tahiti flycatcher, Omama'o (*Pomarea nigra*)

Problem: A Critically Endangered species comprising only 20 birds split over four valleys on one island and declining rapidly (20% in last year). Rats are a confirmed major threat, and introduced birds are a likely threat.

Justification: The Tahiti flycatcher is an endemic species from a genus that is restricted to Eastern Polynesia. It is culturally significant, being named after a local family of chiefs (Pomare), and being incorporated into a legend concerning links and carrying messages between heaven and earth. Studies of the Tahiti flycatcher by Te Manu have begun with financial support from the Government and with the agreement of landowners and local authorities. It is an example of knowledge transfer (similar to the Kakerori Recovery Programme) in the region and promotes networking. Likely biodiversity impacts include assisting the sympatric Tahiti swiftlet (endangered) and three other native species.

Actions: (1) Control rats through poisoning and putting collars on nest trees (known to be effective). (2) Confirm the impact of introduced birds. (3) Involve Te Manu (a local environmental NGO) and local community to increase cost effectiveness.

Priority: High, urgent

Tuamotu sandpiper, kivi kivi (*Prosobonia cancellata*); Society ground-dove (*Gallicollumba e. erythroptera, G. e. pectoralis*)

Problem: The Endangered Tuamotu sandpiper is the sole remaining species in an endemic Polynesian genus. The Critically Endangered Society ground-dove has not been located in recent surveys of ten islands it formerly occupied, and 12 other potential islands. It has declined rapidly, with the last known population destroyed during a storm in 1987. The two species are threatened by habitat destruction for coconut plantations, accidental introduction of rats, and deliberate introduction of cats. The numbers and distribution of both species are currently unknown.

Justification: (1) Enthusiastic community support for rat eradication on coconut production islands which are near islands with the two endangered species and native vegetation. Coconut islands with rats are a serious threat to nearby islands without rats. (2) A protected area without rats is a potential translocation site in the central Tuamotus, and this could be extended, as landowners have agreed. (3) The leader of a northern Tuamotu community is keen to develop a Community Biodiversity Conservation Area in their area.

Actions: (1) Survey the islands where historical records indicate both species may persist. (2) Survey islands for the presence of rats and cats, and hence the suitability of islands for the two species, their potential as translocation sites, and the need for eradication programmes. (3) Develop a recovery plan for both species.

Priority: High, urgent

Important bird locality projects

Rapa Island

Problem: The threatened endemic Rapa Island fruit-dove *Ptilinopus huttoni* has been reduced to about 275 birds in 290 ha of remnant upland forest. Rapa Island is overgrazed by about 6000 goats and 600 cattle. Fires, which are used to control fern and increase grazing land, occasionally burn the forest edges.

Justification: Rapa is the sole island with a threatened endemic fruit-dove. Rapa's offshore islets are very important for seabirds, including an endemic subspecies of storm petrel *Nesofregetta fuliginosa*. Rapa Island is the southernmost island in French Polynesia and, because of its remoteness, has received little or no conservation input to date.

Actions: Discuss with local community the idea of forming a community-based protected area in upland forests. If local people agree: (1) fence forest remnants to reduce grazing pressure; (2) reduce goat numbers to control overgrazing; (3) get local people to exclude fires from upland areas; (4) consider possibility of establishment of second population of fruit-dove on Austral Islands to the north-west as a risk management policy.

Priority: Medium.

Nuku Hiva, Ua Huka

Problem: Not the highest priority, but nevertheless, very important for five endemic species, one of which is threatened, ultramarine lorikeet *Vini ultramarina*.

Priority: No rank recorded.

Gambier Islands

Problem: Islets in these islands are breeding sites for more than 14 seabird species which are threatened by rats, cats, goats, rabbits and feral junglefowl. The seabirds include: 3 petrels, 3 shearwaters, 1 storm petrel, 2 tropicbirds, 1 booby, 3 noddies, and 1 tern. Some of these species are in very low numbers.

Justification: (1) Pest eradication is essential to maintain the high level of seabird biodiversity in the south-east of eastern Polynesia. (2) Cost effective eradication techniques for parts of small islets are well established. (3) The landowner of Kamaka is keen to assist. (4) If the islets are pest-free, new species could be translocated there.

Action: Eradication of rats, cats, goats, rabbits and feral junglefowl has to be undertaken on three islets (Makaroa, Kamaka, and Manui) which are uninhabited by people.

Priority: High.

Mohotani

Problem: (1) The area has been protected by law since 1968, but no control of feral sheep has occurred and, indeed, hunting has been banned. (2) There are Polynesian rats and cats on the island which are a threat to three endemic land birds (Marquesas flycatcher *Pomarea mendozae*, Marquesas reed warbler *Acrocephalus caffer*, and Marquesas swiftlet *Collocalia leucophaeus*).

Justification: (1) Mohotani is owned by the Government and protected by law. (2) The local community is keen to participate in the hunting of feral sheep as they formerly did before the area was protected in 1968 (although there was a concerted feral sheep hunt in 1995). (3) The island is a suitable site for translocation of three endangered birds (ultramarine lorikeet *Vini ultramarina*, Marquesas kingfisher *Todirhamphus gambieri*, and Marquesas ground-

dove *Gallicolumba rubescens*) if cats can be eradicated (the Polynesian rat is not a problem for them).

Action: (1) Control feral sheep and eliminate if socially acceptable. (2) Fence part of the island to control grazing and protect the rare plants in the remaining primary forests.

Priority: High for eradication, Medium for control.

Other French Polynesian islands

Other French Polynesian islands that are important for individual species include:

Scilly (Fenua Ura) and motu (islets) for *Vini peruviana* (Vulnerable)

Rimatara for *Vini khulii* (Endangered).

Hatuta for *Gallicollumba rubescens* (Endangered).

Makatea for *Ducula aurorea* (Vulnerable) and *Ptilinopus chalcurus* (Vulnerable).

Niau for *Halcyon gambieri* (Endangered).

Pitcairn Islands

Important bird locality projects

Henderson

Problems: (i) Rat predation is impacting on ground-nesting seabirds (especially *Pterodroma* petrels, including the Endangered Henderson petrel *P. atrata*). (2) Local harvesting of miro and tao trees from beach-back flats is unsustainable.

Justification: Henderson Island is exceptional in that it is a nearly unmodified, large, raised coral island. It is Polynesia's only World Heritage Site. Pitcairn Islands hand-carving of Henderson wood should be encouraged and sustainably managed.

Actions: (1) Develop rat (*Rattus exulans*) bait; translocate landbirds to another island; eradicate rats; wait two years to confirm results; reintroduce locally extinct birds from French Polynesia to rebuild bird fauna. (2) Manage tree cutting sustainably by reducing cut rate and increase planting rate, possibly by writing and implementing Management Plan (Draft completed).

Priority: High.

Ducie

Problem: High risk of mammalian invasive species decimating local seabird populations or of invasive plant species over-running local vegetation. This could result from a shipwreck on the island or plant seeds arriving with visitors from cruise ships or cruising yachts.

Action: Develop videos and printed literature to illustrate fragile nature of isolated island flora and fauna. Set regulations to force cruise ships to employ professional biologists/quarantine specialists that check on and educate visitors.

Justification: Ducie is the most south-easterly atoll in the Pacific and is rat-free after an eradication project in 1997. Ducie contains the largest breeding colony of Murphy's petrel *Pterodroma ultima* in the world, plus regionally significant numbers of herald petrels *P. heraldis*, Kermadec petrels *P. neglecta*, and Christmas shearwater *Puffinus nativitatis*.

Samoa

Single-species projects

Manumea, tooth-billed pigeon *(Didunculus strigirostris)*

Problems: Lack of scientific information; population decline; habitat loss; hunting; predators/disease?

Justification: IUCN Endangered classification; cultural importance; national bird.

Actions: Conservation Areas; surveys; research programme; legislation; predator control; Government/NGO/community support; educational programme; survey/monitoring work.

Priority: High.

Puna'e, Samoan wood rail *(Pareudiastes pacificus)*

Problem: Insufficient knowledge; natural disasters; predators; possibly extinct.

Justification: IUCN Critically Endangered category; lack of scientific data.

Action: Establish conservation area; surveys/monitoring; predator control; legislation; community involvement; educational awareness.

Priority: High for initial survey.

Important bird locality projects

Samoan Conservation Areas (Uafato, Aleipata Islands, National Park & Savai'i uplands)

Problems: Loss of habitat; predators; lack of information; hunting; natural disasters; lack of wildlife management.

Justification: Identified in ecological surveys (Department of Environment and Conservation); the Aleipata Islands are part of IUCN's Marine Protected Area; cultural significance; linkages with other biodiversity activities; significant role of birds in maintenance of rainforest ecosystems (dispersal/pol-

lination); importance of uninhabited offshore islands as seabird breeding sites.

Actions: Surveys and monitoring; management plans; management awareness activities; community support; restoration; Government/NGO/community participation; implementation of management plans.

Priority: High.

Tokelau

Single-species project

Lupe, Pacific pigeon (*Ducula pacifica)*

Problem: Hunting – population decreasing; insufficient data and information; no legislation.

Justification: The lupe is decreasing in numbers. Absent now from some areas/motu (islet) where formerly it was common. Fear of extinction of special Tokelau species. Additional benefits: questionnaire can be used to obtain information on other important bird issues in Tokelau including information on seabirds.

Action: Scientific research/surveys; awareness; legislation/community "ban"; gain community and government support; funds for questionnaire/awareness; consultants to do initial surveys and training; funds to complete survey by resulting local expertise; monitoring.

Priority: High.

Tonga

Single-species projects

Malau, Tongan megapode (*Megapodius pritchardii)*

Problem: Pigs, rats, cats, ants, and people collecting eggs.

Action: Survey of the Niuafo'ou Island and also Tofua (for translocation); monitoring and protection of Late Island; public education for the people of Niuafo'ou; translocation to Tofua Island and monitoring. Niuafo'ou – eradication programme for rats, wild pigs, cats; set aside the area as a National Park, an Ecologically Protected Area Conservation Strategy needed. Hunting needs to be regulated to sustainable levels.

Justification: Conservation status (1994) Critically Endangered; less than 200 birds in Niuafo'ou; endemic to Tonga (Niuafo'ou), and one of 21 species in the world; Malau is the identity of the Niuafo'ou people because it is a food source for people. Added benefits to Endangered koki (red shining-parrot *Prosopeia splendens*), and landbirds and seabirds of Late.

Priority: High.

Important bird locality projects

'Eua

Problems: Deforestation; loss of habitats; change of habitats (e.g. introduction of a forestry pine plantation); cats; rats; shooting for feathers and food; chicks for sale.

Justification: Conservation. Establishment of the 'Eua National Park. An endangered species with a population of less than 400; high cultural significance; an icon for the people of 'Eua; feathers for decoration and other traditional and cultural uses; translocate to other islands.

Actions: Island survey. Translocation to Late/Tofua/Ata. Public education for 'Eua/Tongatapu. Improved management of the National Park. Law enforcement. Capacity building. Eradication programme as required, based on survey results in the National Park and other areas. Ban chick harvesting.

Priority: High.

Ata, Hunga-Tonga, Hunga-Ha'apai

Problem: On Ata, rats and cats prey upon the ground-dove (tu, *Gallicolumba stairii*). No predator or bird surveys have been done.

Actions: Island survey. Eradication programmes. Public education. Set aside land for a bird sanctuary.

Justification: Threatened species in the Pacific. Relative remoteness of the islands means that they are likely to be good sanctuaries. These islands are important for ground-dove and other landbirds and seabirds. Site for translocation of ground-dove and koki (red shining-parrot *Prosopeia splendens*).

Priority: High.

Tuvalu

Single-species projects

Lupe, Pacific pigeon (*Ducula pacifica)*

Problem: Hunting – population decreasing; insufficient data and information; no legislation.

Justification: The lupe, Tuvalu's sole resident landbird, apparently is decreasing in numbers. Absent now from some areas/motu (islets) where formerly it was common. Fear of extinction of special Tuvalu species. Additional benefits: questionnaire can be used to obtain information on other important

bird issues in Tuvalu including information on seabirds.

Action: Scientific research/surveys. Awareness, legislation/community "ban"; gain community and government support; funds for questionnaire/awareness, Tuvalu-wide. Consultants to do initial surveys and training (Conservation Area staff); funds to complete survey by resulting local expertise; monitoring.

Priority: High.

Important bird locality projects

Funafuti Conservation Area

Problem: Lack of information; hunting.

Justification: The only Conservation Area in Tuvalu.

Action: More surveys and monitoring; environmental awareness programme; Management Plan.

Priority: High.

Wallis and Futuna

Single-species projects

Eradication of myna birds

Problem: Two types of myna occur on the main island and settlement.

Justification: If they become established they will compete with native species.

Action: The mynas should be removed before they are given any chance to breed and become established.

Priority: High.

Important bird locality projects

Note: *This project includes single-species issues (Table 1) and one locality issue together.*

Alofi Island

Problem: The Wallis and Futuna islands host seven bird species of restricted range which are endemic to the Polynesian islands (Stattersfield *et al.* 1998) and of these, three birds are considered to be nationally threatened, *see* Table 1 derived from the Red Book for the French Overseas Departments and Territories (Thibault and Guyot 1988).

Justification: This project would enable the establishment of a Protected Area in the primary forested southern side of Alofi Island, an area which is poorly known ornithologically but would be expected to hold all the important species listed below. There are currently no Protected Areas in the country and this project would enable the development of a proper national legal framework for Protected Areas.

Table 1. Restricted-range birds of Wallis and Futuna (species considered nationally threatened are shown in bold).

Purple-capped fruit-dove	*Ptilinopus porphyraceus*
Shy ground-dove	***Gallicolumba stairii***
Blue-crowned lorikeet	***Vini australis***
Polynesian triller	***Lalage maculosa***
Fiji shrikebill	*Clytorhynchus vitiensis*
Wattled honeyeater	*Foulehaio carunculata*
Polynesian starling	*Aplonis tabuensis*

Actions: There are four main steps to the project: (1) Survey work to establish the presence/absence of key species and to identify an appropriate boundary for the site. (2) Formulate national legislation and policy for Protected Areas. (3) Undertake a small programme of information on the area for local people and the general public. (4) Enable the government to access the necessary resources to manage the Protected Area effectively.

Priority: High, Urgent.

Regional projects

Species projects

Pigeons (*Ducula* spp.)

Problem: Possibly unsustainable harvesting but data are required to tell. A similar scenario probably occurs for dove species.

Justification: Insufficient data. High cultural significance because lupe (Pacific pigeon *Ducula pacifica*) is a traditional protein source and focus for uniting the people of Polynesia. Keystone species for fruit dispersal.

First actions: Detailed study of productivity (including effects of rats), rate of harvesting and population dynamics of a case study on Niue with subsidiary studies on Tuvalu, Tokelau, and Wallis and Futuna. Include developing monitoring techniques applicable across Polynesia.

Priority: High, Less urgent.

Bristle-thighed curlew (*Numenius tahitiensis*)

Problem: Globally threatened species, declining probably because of predation, including harvesting by people.

Justification: IUCN – Vulnerable, culturally significant. Linkages to *Prosobonia*, *Gallicolumba* and kingfisher in French Polynesia. Acceptable risk; preventative spin-offs; cross-national linkages and with

Summary of country priority projects for species and locations

Country	Single-species project	Ranking	Important bird locality project areas	Ranking
American Samoa	Shy ground-dove	High	Tutuila	Medium
			Manu'a	High
Cook Islands	Rarotonga flycatcher	High	Suwarrow Atoll	High
	Atiu swiftlet	High	Takutea Cay	Medium
	Rarotonga starling	Medium	Atiu Island	High
	Mangaia kingfisher	Medium	Mangaia	Medium
			Inland Rarotonga	
French Polynesia	Marquesas pigeon	High/Urgent	Rapa Island	Medium
	Tahiti flycatcher	High/Urgent	Nuku Hiva/Ua Huka	No rank recorded
	Society ground-dove, Tuamotu sandpiper	High/Urgent	Gambier Islands	High
			Mohotani	High for rat eradication, medium for control
Pitcairn Islands			Henderson	High
			Ducie	Medium
Samoa	Tooth-billed pigeon	High	Samoan Conservation Areas (Uafato, Aleipata Islands, National Park and Savai'i Uplands)	High
	Samoan wood-rail	High for initial survey		
Tokelau	Pacific pigeon	High		
Tonga	Tonga megapode	High	'Eua	High
			Ata, Hunga-Tonga, Hunga-Ha'apai	High
Tuvalu	Pacific pigeon	High	Funafuti Conservation Area	High
Wallis and Futuna	Shy ground-dove, blue-crowned lorikeet, Polynesian triller, purple-capped fruit-dove, Fiji shrikebill, wattled honeyeater, Polynesian starling	High/Urgent	Forested southern side of Alofi	High
	Eradication of myna birds	High		

North American projects (US Fish & Wildlife Service); low cost and can easily be an added-value project feeding off other initiatives.

First actions: Survey key historical sites. Country-wide assessments. Education package. Assess the harvesting rate.

Priority: Medium, Less urgent.

2. Generic issues

Processes, threats and actions

Note: *Taxonomy: Any scientifically accepted future changes in bird taxonomy would be incorporated into planning priorities for species and localities.*

1. Information-sharing protocols

Problem: Information is not being repatriated to Pacific island countries and territories. This information comes from researchers and workers within and outside the Pacific. Information is often not user-friendly.

Justification: Avoiding duplicating work; maximising use of existing knowledge; maintaining good faith in the value of science; links with other issues; ensuring decision makers have relevant information; opportunity to influence work that might be done; community acknowledged as the appropriate repository of customary knowledge.

First actions and solutions: Model protocols and advocacy at appropriate meetings (e.g. Pacific Science Congress). SPREP-funded projects to observe set protocol (e.g. DNA samples belong to national Governments).

Priority: High, Less urgent.

2. Legislation
Problem: Inadequate or non-existent statutes to protect native birds.

Justification: Legal basis for conservation measures for birds – improved leverage, etc.

First actions: Write model legislation for those Pacific island countries and territories with particularly significant conservation needs.

Priority: Medium, Less urgent.

3. Invasive species
Problem: Inadequate knowledge of which invasive species are threatening native bird populations and the extent of their impact.

Justification: In some localities we are ignorant of the impact of pest species on native birds but they are threatening bird species survival.

First actions: Linkages with other projects, e.g. invasive species technical review.

Priority: High, Urgent.

4. Capacity-building
Problem: Lack of locally skilled people to manage threatened bird species.

Justification: Few species recovery programmes can be sustained locally without skilled resident personnel.

First actions: Fund "bonded" locals to established training schemes, including NGO members – preferentially on-site training with experts associated with the project.

Priority: High, Urgent.

5. Standardised methodologies
Problem: No standard methods exist for monitoring changes in population numbers of species in the region. Hence it is difficult to assess objectively the true status/trends in numbers of given species.

Justification: Need for accurate and reliable information for species recovery programmes; harvested species; input into information/databases. Management planning. Environmental impact assessments (EIAs). Educational materials, etc.

First actions: Identify relevant material from the BP Conservation Programme/BirdLife International field survey manual, *Bird Surveys* (Bibby et al. 2000), to determine its application for the Pacific Region's bird species. Extract and redraft relevant sections of this bird survey manual, based on field trials, and translate into relevant languages.

Priority: Medium, Less urgent.

6. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and other international agreements
Actions: Identify which member states and territories have ratified various treaties which relate to bird conservation and ensure that these countries are aware of their obligations under the treaty and are encouraged to take appropriate action.

Priority: Medium, Less urgent.

7. Diseases
Problem: Risk of avian diseases compromising the survival of native species of birds, especially single-island endemics.

Justification: Disease has been implicated in the extinction of some populations of island birds, e.g. in Hawaii, but it is unknown exactly what threat disease truly presents to bird species in the Pacific, and this needs to be scientifically investigated.

First actions: Expert to review and give recommendations on risks presented and on practical measures for mitigating the problem.

Priority: Medium, Less urgent.

8. Biosecurity
Problem: Some rat- and cat-free islands have wildlife at risk from invasion. A similar situation exists with plant invasions.

Justification: Least modified islands contain the most intact numbers of bird species. If invasions occur, there is a high risk of extinction of large numbers of species.

First actions: Complete or initiate trapping surveys of islands already identified as possibly being free of *Rattus* species or cats, e.g. Aitutaki, Atiu, and some of the Marquesas Islands. Put bait stations on wharves and inter-island boats, etc. These may link to single-species recovery programmes (e.g. flycatchers).

Priority: High (just), Urgent.

9. Translocation and reintroductions
Problem: No translocation protocols exist for Pacific birds. Non-observance of protocols may result in: damaging introductions; wasted effort; disease transmission, compromising the source population; compromising genetic identity – all of this can reduce local income.

Justification: Avoiding these problems.

First actions: Review existing protocols and revise for the Pacific situation. Disseminate information.

Priority: High, Urgent.

10. Sustainable harvest of seabirds

Problem: Sustainability of harvest is unknown regionally.

Justification: Mechanism for ensuring sustainable harvest in Palmerston in the Cook Islands may be applicable elsewhere. Cultural significance, traditional food resource, fishing aids.

First actions: Understand the traditional mechanism regulating harvest. Analyse natural variations in productivity in a site like Palmerston in the Cook Islands. Review the traditional practices regarding harvest of seabirds elsewhere in Polynesia.

Priority: Medium, Less urgent.

11. Solution for rats

Problem: Rats, particularly *Rattus rattus*, are one of the leading causes of species losses in the Pacific and remain a large threat. There is a need to develop cost effective, ecologically sustainable control and eradication techniques.

Justification: Best single action towards restoration of bird communities on small islands.

Actions: Opportunities exist to test in the Pacific new toxins and baits, etc., being developed in cold temperate climates. Measure the effectiveness of control efforts on species requiring protection. Seek partnerships for added value from existing research. Select an island or island group and undertake a demonstration rat eradication project.

Priority: High, Very urgent.

12. Accessible sources of bird information

Problem: There are few readily accessible up-to-date comprehensive and well illustrated guides to the birds of the Pacific which can be used by managers and interested members of the public.

Justification: SPREP has received requests for assistance with the production of field guides to the birds of individual countries, where a single guide could cover the whole region.

First action: Commission bird artist to paint coloured plates and publisher willing to undertake such a venture and find authors to prepare species accounts (identification, status, distribution, conservation measures, ecology, behaviour and literature).

Priority: Medium, Less urgent.

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Review of avifauna conservation needs in Polynesia

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1. Introduction

The purpose of this issues and options paper is to summarise the important needs of bird conservation in Polynesia. We will identify places with endangered species or particular concentrations of important species, and briefly describe the priority bird conservation problems. Collectively, this information should be useful for developing an avian conservation strategy for Polynesia. This account is not exhaustive; it is written to help identify the sort of bird conservation projects suitable for funding.

The paper is based on the relevant literature available in libraries in New Zealand and on the wisdom of Pacific ornithologists. As presented to the workshop, conservation categories were those used in a draft of BirdLife International's *Birds to Watch 3* [now published as *Threatened Birds of the World* (BirdLife 2000)]. These listings have been updated here to conform to those in BirdLife (2000), where details of the criteria for the various categories may be found. The summary of the conservation status of individual species was drawn from Hay (1986), and has been updated where possible. For the purposes of this report, Polynesia includes: American Samoa; Cook Islands; French Polynesia; Niue; Pitcairn Islands; Samoa; Tokelau; Tonga; Tuvalu; and Wallace and Futuna.

2. What has happened to the birds of the region?

The islands of Polynesia are clear examples of the vulnerability of remote and isolated ecosystems to human impact. That impact is all the more visible here because it is so recent—one or two thousand years for the first inhabitants and a few hundred for those of us who came from the north.

For example, as shown by Steadman (1993), since humans arrived on 'Eua Island in Tonga, gone are at least two megapodes, two flightless rails, five pigeons and doves, two parrots, a white-eye and a thrush, not to mention a number of seabirds. On remote Henderson Island, which is today regarded as near pristine, half of the landbirds and most of the small ground-nesting seabirds became extinct in the 600 years following the arrival of humans in AD 1000 (Wragg 1995). This pattern of human-induced extinction of endemic island avifauna has been widespread and involved many species (see Steadman 1995).

The causes are familiar—loss of habitat, over-hunting, and invasive species. Many of those early losses were caused directly by humans but others were doubtless caused by predation of a native fauna by other predatory colonisers. The Polynesian rat was bad enough, but Europeans added to the woes of Polynesian birds by bringing mice, ship rats, Norway rats, mongoose, other birds, and numerous other animal and plant species not conducive to the survival of the residents. The effects of some of these more recent arrivals are still being felt.

The picture, worldwide, is of birds disappearing, but the Pacific part of the canvas is painted slightly differently from the rest. Firstly, small population size and vulnerability to predation are the key issues here alongside habitat loss. Secondly, around half of the world's endangered birds are island species. The number of bird species found nowhere else in the world is far greater per unit land area in the Pacific Islands than all continental areas, even in the hotbeds of diversity in South America and Southeast Asia. The Pacific Islands average more than one endemic bird species per 1000 km^2 while the world's continents average one-third of that number. This means that both the problems are great but often the solutions may be more attainable.

3. Issues relating to the conservation status of Polynesian birds

Scale and vulnerability

Small island size, endemic bird species, and small population size all make birds vulnerable to pest introductions, harvesting, and habitat modification and/or destruction. Examples include the Tongan megapode *Megapodius pritchardii*, *Vini* lorikeets,

Polynesian monarchs *Pomarea* spp., and tooth-billed pigeon *Didunculus strigirostris*.

Illegal harvesting

Illegal harvesting by foreign fishing boats continues, especially of seabirds (and turtles). While not referring to the Polynesian islands, Engbring (1983) cites Johannes (1981) describing Korean fishermen stopping off and "devastating" seabird colonies in the south-west islands of the Marianas (e.g. Palau). More evidence included the *Lindblad Explorer* finding a Taiwanese fishing boat in Helen Lagoon (Palau) in 1979. Engbring (1983) concludes by saying that: "Pillaging by outside boats is a common occurrence."

Conservation status of remnant populations

Remnant populations exist of species with historically much wider distribution, but now facing imminent extinction; there is an extremely urgent need for surveys to determine their conservation status. Species include Tahitian red-billed rail *Rallus pacificus* and moho (another rail, *Cacroenis inornatus*) (Bruner 1972), Tuamotu sandpiper *Prosobonia cancellata*, shy ground-dove *Gallicolumba stairii* (west Polynesia) and even species assumed to be common, such as *Vini peruviana*. Both of the rail species are probably extinct—last known from small single islands. But there are many small uninhabited islands in the Tuamotus (French Polynesia), for example, which need thorough survey to determine if other populations exist.

Hunting of migratory birds

Migratory birds may be concentrated at sites where they are hunted, and hunting these locally "abundant populations" may have disproportionate effects on the status of the species. Examples are the waders such as bristle-thighed curlew *Numenius tahitiensis* in French Polynesia (known as "uea") and found widespread in some island groups, e.g. Marquesas Group and Tuamotus (Bruner 1972).

Species dependent on lowland habitats

Species dependent on coastal habitats, such as the Tuamotu sandpiper (kivi kivi, *Prosobonia cancellata*), and other lowland habitats may be particularly affected by development and introduced predators (Bruner 1972). Hence kivi kivi and other species such as rails which occupy habitats at low altitude may only exist on uninhabited islands where there are no pest mammals. For similar reasons the existence of the Tahiti fruit pigeon *Ducula aurorae* on Tahiti and Makatea needs to be checked.

Hunting of pigeons

Traditional hunting is done for pigeons (and bats) as a delicacy food rather than for subsistence needs. Populations are at such low levels that any harvesting has a huge impact on species survival, and the population's decline is being accelerated every year. Hunting effectiveness is being increased with larger numbers of shotguns and increasing availability of ammunition. No monitoring of the birds or bats is carried out and little enforcement of hunting restrictions such as season and limit bags is done. High-risk species include the large fruit pigeon *Ducula galeata* ("upe" to the Marquesans, Bruner 1972). Holyoak and Thibault (1984) reported the population in 1975 was between 200 and 400 birds. Another example is the tooth-billed pigeon *Didunculus strigirostris* in Samoa—harvesting is certainly unsustainable at present levels.

Birds with exceptional habitats

The exceptional life history of certain species requires specific habitat and locations. Therefore, options for future wildlife management are limited. An example is the Tongan megapode *Megapodius pritchardii*, which is endemic to Niuafo'ou (northernmost island of Tonga). This species lays its eggs in the loose soil and gravel associated with warm volcanic ducts where the chicks will hatch after about three months at 30–32° Celsius (Rinke 1986). Chicks have been translocated to new islands by the Tongan Wildlife Centre. Details on whether a successfully reproducing population has been created have not yet been reported.

Locations with high species diversity

Some locations are particularly important because they are examples of high diversity for a particular taxon. Because these species occupy similar locations and face similar threats, the benefits of conservation efforts can be maximised. An example consists of the seven *Ptilinopus* fruit doves which occur in French Polynesia (see Bruner 1972 for a discussion on their conservation status).

Ground-feeding doves

Ground-feeding doves such as *Gallicolumba* and *Ptilinopus* species may have weak flight and may be adapted to feed on the ground because the small atolls on which they occur do not have fruiting trees. They are particularly vulnerable to hunting and introduced predators and may need uninhabited, mammal-free islands to survive.

Translocation problems

For island-restricted endemics which may be threatened, the options for translocation may be limited because of the presence of congenerics on other islands with whom they may hybridise. An example is the Makatea fruit dove *Ptilinopus purpuratus chalcurus*, which occurs on Makatea on the western edge of the Tuamotu archipelago (Bruner 1972).

Competition from introduced passerines

Unwanted introductions of aggressive passerines such as the Indian and jungle mynas and red-vented bulbuls into islands which are relatively free of introduced passerines may compromise native species, for example by displacing native cavity-nesters such as *Vini*, *Halcyon* and *Aplonis* species. Restricting introductions of exotic species will prevent competitive interactions, displacement and the risks of introducing diseases. A similar argument applies to the rock-pigeon *Columba livia* and barred dove *Geopelia striata*, both of which may compete with native Columbidae.

Seabird harvesting

In some places where there is still demand to collect seabirds and eggs, traditional harvesting and conservation practices are being re-introduced. This might include restricting harvest to offspring of the year and/or eggs, and to particular parts of the colony.

Priorities for species/habitat

Conservation priority for species and their habitat may be determined by the exceptional quality of the habitat and the presence of remnant populations that were once widespread in the area but are now restricted to a particular island. For example, Tofua island has one of the only remnants of primary forest in Tonga; bird species remaining on Tofua include two that are extinct on all other islands in the Ha'apai group, *Ptilinopus perousii* and *Clytorhynchus vitiensis* (Steadman 1998). Tofua probably also supports the greatest populations in Ha'apai of *Circus approximans*, *Ptilinopus porphyraceus*, *Ducula pacifica*, *Foulehaio carunculata*, and *Aplonis tabuensis*.

Ability to recolonise

A factor to consider in ranking conservation work is the ability of a species to disperse over water and therefore the likelihood that it will recolonise of its own accord. Examples are *Gallicolumba stairii*, *Ptilinopus perousii* and *Clytorhynchus vitiensis* (Steadman 1998), and *Vini australis.* These species are remnants of a once-larger community of forest obligate species now much reduced in number.

4. Important islands for bird conservation

The following species rankings are those reported in BirdLife (2000). Some species and subspecies which do not occur there are described in Section 5, below; they are not listed here because their conservation status has not been assessed using the same criteria.

American Samoa

Species restricted to the ***Manu'a Group***: *Gallicolumba stairi*, *Vini australis*, *Porzana tabuensis* and *Clytorhyncus vitiensis* are all at least locally vulnerable (not at a global level *sensu* BirdLife 2000) with the exception of *P. tabuensis* which may be extinct in American Samoa (Holly Frefield pers. comm.) but not elsewhere in the Pacific. Tahiti petrel *Pseudobulweria rostrata* is Near Threatened. Seabirds nesting in the montane forest may be threatened as well.

Summary

American Samoa, 3 Vulnerable (at least locally), 1 Critical (locally), 1 Near Threatened.

Cook Islands

Rarotonga and Atiu: Cook Islands fruit dove *Ptilinopus rarotongensis*, Vulnerable (although the authors question this categorisation); ***Aitutaki***: blue lorikeet *Vini peruviana*, Vulnerable; ***Atiu***: Atiu swiftlet *Collocalia sawtelli*, Vulnerable; ***Mangaia***: Mangaia kingfisher *Todiramphus ruficollaris*, Vulnerable; Rarotonga monarch (flycatcher, kakerori) *Pomarea dimidiata*, Endangered; ***Rarotonga***: Rarotonga starling *Aplonis cinerascens*, Vulnerable; ***Cook Islands***: Cook Islands reed warbler *Acrocephalus kerearako*, Near Threatened, bristle-thighed curlew *Numenius tahitiensis*, Vulnerable.

Summary

Cook Islands, 1 Endangered, 6 Vulnerable, 1 Near Threatened.

French Polynesia

Austral Islands

Rapa: Rapa fruit-dove *Ptilinopus huttoni*, Endangered; ***Rimatara***: Kuhl's lorikeet *Vini kuhlii*, Endangered; Rimatara reed warbler *Acrocephalus rimatarae*, Vulnerable.

Summary

Austral Islands, 2 Endangered, 1 Vulnerable.

Marquesas Islands

Hatuta'a and Fatu Huku: Marquesan ground-dove *Gallicolumba rubescens*, Endangered; ***Nuku Hiva***: Marquesan imperial-pigeon *Ducula galeata*, Critical; ***Ua Pou, Nuku Hiva, Ua Huka, and Fatu Hiva***: ultramarine lorikeet *Vini ultramarina* (gone from first two islands and introduced to Fatu Hiva), Endangered; ***Ua Huka***: Iphis monarch *Pomarea iphis*, Vulnerable; ***Mohotani***: Marquesan monarch *Pomarea mendozae*, Endangered; ***Fatu Hiva***: Fatuhiva monarch *Pomarea whitneyi*, Critical.

Summary

Marquesas Islands, 2 Critical, 3 Endangered, 1 Vulnerable

Society Islands

Many islands and therefore complicated, so see BirdLife (2000), Polynesian ground-dove *Gallicolumba e. erythroptera* and *G. e. pectoralis*, Critical; ***Motu One and Manuae***: blue lorikeet *Vini peruviana*, Vulnerable; ***Tahiti***: Polynesian imperial-pigeon *Ducula aurorae*, Vulnerable; Tahiti swiftlet *Collocalia leucophaeus*, Endangered; Tahiti reed warbler *Acrocephalus caffer*, Vulnerable; Tahiti monarch *Pomarea nigra*, Critical.

Summary

Society Islands, 2 Critical, 1 Endangered, 3 Vulnerable.

Tuamotu archipelago

Many islands: Tuamotu sandpiper *Prosobonia cancellata*, Endangered; Polynesian ground-dove *Gallicolumba e. erythroptera* and *G. e. pectoralis* with a complicated distribution (see BirdLife 2000), Critical; ***Makatea***: Makatea fruit-dove *Ptilinopus chalcurus*, Vulnerable; Polynesian imperial-pigeon *Ducula aurorae*, Vulnerable; ***northern atolls***: blue lorikeet *Vini peruviana*, Vulnerable; ***Niau***: Tuamotu kingfisher *Todiramphus gambieri*, Vulnerable.

Summary

Tuamotu archipelago, 1 Critical, 1 Endangered, 4 Vulnerable.

Pitcairn Islands

Henderson: Henderson petrel *Pterodroma atrata*, Endangered; Henderson crake *Porzana atra*, Vulnerable; Henderson fruit-dove *Ptilinopus insularis*, Vulnerable; Henderson lorikeet *Vini stepheni*, Vulnerable; Henderson reed warbler *Acrocephalus taiti*, Vulnerable, ***Pitcairn***: Pitcairn reed warbler *Acrocephalus vaughani*, Vulnerable; ***Pitcairn Group***: bristle-thighed curlew *Numenius tahitiensis*, Vulnerable; phoenix petrel *Pterodroma alba*, Vulnerable; Murphy's petrel *P. ultima*, Near Threatened.

Summary

Pitcairn Group, 1 Endangered, 7 Vulnerable, 1 Near Threatened.

Samoa

Savai'i: Samoan moorhen *Gallinula pacifica*, Critical, possibly extinct; Samoan white-eye *Zosterops samoensis*, Vulnerable; ***Upolu and Savai'i***: tooth-billed pigeon *Didunculus strigirostris*, Endangered; Samoan flycatcher *Myiagra albiventris*, Vulnerable (although the authors question this status); mao *Gymnomyza samoensis*, Endangered; ***various islands***: seu-ta-peau (Samoan storm petrel) *Nesofregetta moestissima*, Vulnerable; bristle-thighed curlew *Numenius tahitiensis*, Vulnerable; shy ground-dove *Gallicolumba stairii*, Vulnerable.

Summary

Samoa, 1 Critical, 2 Endangered, 5 Vulnerable.

Tonga

Niuafo'ou: Malau (Niuafo'ou scrubfowl, Polynesian megapode) *Megapodius pritchardii*, Critical; Tongan whistler *Pachycephala jacquinoli*, Near Threatened.

Summary

Tonga, 1 Critical, 1 Near Threatened.

Totals for Polynesia

8 Critical, 11 Endangered, 29 Vulnerable, 4 Near Threatened.

5. Species summaries of conservation status

After Hay (1986). Where applicable, the BirdLife (2000) conservation status is noted.

American Samoa and Samoa

Peregrine falcon *Falco peregrinus nesiotus*

May be scarce naturally, subspecific status may need to be confirmed, widespread, little known about ecology or threats. Priority work is to gather local knowledge and traditional knowledge.

Samoan moorhen or Samoan wood rail (puna'e) *Gallinula pacifica*; Critical/extinct

Once known from Savai'i and now regarded as extinct. One unconfirmed sighting in August 1984 by K. Poai "high on Savai'i" (Mark Bellingham pers. comm. cited by Hay (1986)). Urgent survey required, along with other species in Samoa.

Tooth-billed pigeon (manumea) *Didunculus strigirostris*; Endangered
Referred to by Hay (1986) as "vulnerable", but he noted the threat to it from the decline of old forest. Clearing mature forest for agricultural plantations, agro-forestry plantations, and logging is seriously reducing available habitat and hunting is further reducing numbers. One conservation suggestion is translocating birds to establish a population on a predator-free island safe from saw logging. However, the opportunities for this are very limited. Urgent need to know the conservation status and distribution of manumea and then to establish suitable reserves.

Samoan storm petrel (seu-ta-peau) *Nesofregetta moestissima*; Vulnerable
A melanistic form of the white-throated storm petrel (*N. albigularis*). Breeding may be local although breeding sites have never been found. Survey of small islets and stacks is required offshore of the main Samoan islands. Nesting probably occurs in niches under vegetation, amongst rocks or in small burrows and all year round. Probably at risk from rat species.

Cook Islands

Rarotonga starling *Aplonis cinerascens*; Vulnerable
Endemic to Rarotonga (66 km^2). Inhabits forested interior in an even distribution but has declined in recent history. Most likely threatened by rats and cats. Study to determine the conservation status is urgently required.

Rarotonga flycatcher (Rarotonga monarch, kakerori) *Pomarea dimidiata*; Endangered
Restricted to the forested interior of Rarotonga, the kakerori is the subject of intensive species recovery work focusing on rat control. Numbers have risen in the last nine years, and ecotourism based on the Takitumu Conservation Area seems to be leading to a self-sustaining conservation programme.

French Polynesia

Tuamotu sandpiper (kivi kivi) *Prosobonia cancellata*; Endangered
Once known (in Cook's time) from Christmas Island (Kiribati). Collected in 1839 on Raraka and Pukapuka and in the 1920s from the Tuamotu archipelago. Recent records include Marutea du Sud and Maturei-Vavao – probably breeding as at 1974. Also Pinaki, Nukutavake and Rangiroa. Threats include all introduced mammals. Survey required of: Fakareva, Kauehi, Taenga, Katiu, Tuanake, Hiti, Tepoko, Vanavana, Tenararo, Vahanga, Tenarunga and Maria. Breeding habits need to be studied on Marutea du Sud, Maturei-Vavao, or Nukutavake. Reserve establishment possible on Maturei-Vavao.

Prosobonia leucoptera
Almost certainly extinct from Tahiti and Eimeo of the Society Group. Only known from three specimens collected in 1744.

Marquesan imperial-pigeon (upe) *Ducula galeata*; Critical
Found only on Nuku Hiva and restricted to its valleys: Haatepuna, Hatineu and Taipi. Numbers seem extremely low. The pigeon is hunted heavily by locals despite laws prohibiting this. Law enforcement and protection of remaining habitat are urgently required as well as survey to assess the status of the remaining population.

Society Islands pigeon (Polynesian imperial-pigeon, rupe) *Ducula aurorae*; Vulnerable
May be a subspecies of *D. pacifica*. Relict populations on Makatea (in the Tuamotus) and on Tahiti. The population on Tahiti in 1975 was only 10–12 individuals and is probably extinct today, with the threats it was facing then, i.e. overgrazing causing deforestation. However, the Makatea population then numbered around 500 and may be secure. The Makatea population needs to be surveyed urgently.

Society Islands ground-dove (Polynesian ground-dove) *Gallicolumba erythroptera*; Critical
Two French Polynesian species are in BirdLife International (2000). Experienced dramatic contraction of distribution. Now only on several small islands in the Tuamotu archipelago. Subspecies *G.e. erythroptera* has only recently (1974) been found on Maturei-Vavao. Another subspecies *G. e. pectoralis* was once on eight islands but has not been recorded recently (Hay 1986, p. 65). Maturei-Vavao must be kept rodent- and cat-free, and further survey of the Tuamotu Islands is required.

Marquesan ground-dove *Gallicolumba rubescens*; Endangered
Confined to predator-free islands of Hatutu and Fatuhuku. Status on the latter uncertain, but on Hatutu there were 200 to 250 birds in 1984. Status of ground-doves on Hatutu needs to be established, although the island is small and few could live there. Other islands need surveys as to their suitability for receiving transferred doves. Species should be listed as vulnerable or endangered as at 1986.

Marquesan fruit-dove *Ptilinopus mercierii*
Two subspecies described: *P. m. tristrami* from Hiva Oa and *P. m. mercierii* from Nuku Hiva. Vague reports from other islands need to be confirmed; now

extinct on Nuku Hiva. Possibly threatened on Hiva Oa by great horned owl (*Bubo virginianus*). Dove reported on Hiva Oa in 1980, but survey to establish status is urgently required.

Rapa fruit-dove *Ptilinopus huttoni*; Endangered
Endemic to Rapa (22 km^2) in the Austral Group. Threatened by deforestation and erosion from overgrazing by 5000 goats and 500 cattle. Not hunted, and reasonably common where forest remains. Hence may be some potential for recovery. Forest reserve urgently required.

Tahiti lorikeet (blue lorikeet) *Vini peruviana*; Vulnerable
One of five species with contracting ranges. Once occurred throughout the Society Islands and Tuamotus but now only survives on some of the Tuamotus, two of the Societies, and Aitutaki in the Cook Islands, where it was apparently introduced by Polynesians. Total population less than 400 in 1981. Conservation status needs to be established. This species has potential for introductions to other islands such as Tetiaroa (Society Islands).

Ultramarine lorikeet *Vini ultramarina*; Endangered
Reduced range, now on only three of the Marquesas Islands. Once widely distributed on Uapou (population 250–300 pairs in 1975, but in very low numbers in 1989), similarly low numbers now on Nuku Hiva but still reported as relatively common on Ua Huka (where it was introduced earlier this century). An apparently successful translocation to Fatu Hiva originated from Ua Huka. Appears to favour montane forest but may be found in banana plantations and coastal areas. Habitat protection urgently required (deforestation and overgrazing serious in the Marquesas). Hunting ban needs to be enforced. Survey for status required, and the occurrence of avian malaria needs to be established.

Eiao Polynesian warbler *Acrocephalus caffer aquilonis*
Endemic to Eiao (50 km^2). Dependent on the remnant forest patches, which are threatened by overgrazing from feral sheep and pigs. Restricted numbers reported late 60s and early 70s on the central plateau. Eradication or control of sheep and pigs and protection of the remnant forest are essential.

Hatutu Polynesian warbler *A. c. postremus*
Endemic to Hatutu (Hatutaa) (18 km^2), a relatively unmodified island in the Marquesas. In 1975 there were probably 30 to 50 pairs in restricted areas.

Moorea Polynesian warbler *A. c. longirostris*
Restricted to Moorea and considered near to extinction in 1986. Only two pairs seen in the interior of the island in 1973. A census and study of the significance of avian malaria is urgently needed.

Eiao flycatcher *Pomarea iphis fluxa*
Endemic to Eiao in the Marquesas, it has suffered serious reduction in range. May still survive in remnant areas of forest; possibly seen in 1977. Threatened by deforestation from pigs and sheep. These need to be eradicated for the sake of this and other species. A survey to determine conservation status is urgently required.

Hiva Oa flycatcher *P. mendozae mendozae*
Now only found in critically low numbers on Hiva Oa having become extinct from Tahuata. A single female was seen on a ridge between Puamau and Ootua in 1975, and several were seen in July 1977. The species probably prefers woody habitat in valleys. Feral mammal control and fencing are essential, and a survey to determine the distribution and status of the species is required urgently.

Ua Pou flycatcher *P. m. mira*
Endemic to Ua Pou in the Marquesas, this species has declined in distribution since the Whitney South Seas Expedition in 1921. It was estimated that 300–400 birds survived between 1971 and 1975 above 550 m above sea level, with the densest population in the Hohoi Valley. Conservation requires protection of remaining forest, and control and fencing out of feral stock. Wharf erected in 1985, and the population has subsequently declined dramatically, possibly as a result of the arrival of ship rats. It has more recently been reported extinct (Anon 1998).

Nuku Hiva flycatcher *P. m. nukuhivae*
Known to once occur on Nuku Hiva, it has not been seen in surveys in 1922 and 1975. If it still exists, the bird probably occurs in the wooded valleys at the western end of the island. Habitat is threatened by cattle and goats. Urgent survey is required to establish if the species is extinct.

Tahiti flycatcher (monarch) *P. nigra nigra*; Critical
One of three subspecies; the others are extinct. In his 1998 survey, Gaze (unpublished) observed at least 13 birds in four separate lowland localities – two in Papehue, three in Tiapa, five or six in a tributary of the Orofero, and two in the Maruapo. Some birds are still attempting to breed. The populations are effectively isolated from each other, so their plight is extreme.

Other Pomarean flycatchers (monarchs) *Pomarea* spp.
Further subspecies (not listed in summary statistics) about which little can be reported but which require survey to determine their conservation status and threats include: *Pomarea iphis iphis* on Ua Huka, *Pomarea mendozae motanensis* on Mohotani.

Pitcairn Islands

Henderson rail (chickenbird) *Nesophylax ater*
Endemic to Henderson, flightless, at high risk from introduced mammals. Population status of this and other species on Henderson has been described by Wragg (1995).

Tonga

Malau (Niuafo'ou scrubfowl, Polynesian megapode) *Megapodius pritchardii*; Critical
Main threat is over-harvesting of eggs. Suitable habitat limited by requirement for hot volcanic soils. Some knowledge on ecology. Distribution may be limited to one island, although it has been translocated to Tafua Island.

6. Species conservation priorities

The following birds are suggested for consideration in order of importance based on criteria (which are open to discussion) such as urgency, feasibility, return for effort and cost, and perceived "value" (e.g. cultural values).

First priority (n = 17)

Tooth-billed pigeon *Didunculus strigirostris*
Society Islands pigeon (rupe) *Ducula aurorae*
Samoan wood-rail (puna'e) *Pareudiastes pacificus*
Malau (Niuafo'ou megapode) *Megapodius pritchardii*
Henderson rail (chickenbird) *Nesophylax ater*
Tuamotu sandpiper (kivi kivi) *Prosobonia cancellata*
Eimeo sandpiper *Prosobonia leucoptera*
Marquesan imperial-pigeon (upe) *Ducula galeata*
Hatutu Polynesian warbler *Acrocephalus caffer postremus*
Moorea Polynesian warbler *A. c. longirostris*
Eiao flycatcher *Pomarea iphis fluxa*
Hiva Oa flycatcher *P. mendozae mendozae*
Nuku Hiva flycatcher *P. m. nukuhivae*
Tahiti flycatcher *P. nigra nigra*
Rarotonga starling *Aplonis cinerascens*
Pomarean flycatcher subspecies (*Pomarea iphis*, *P. mendozae*)

Second priority (n = 9)

Society Islands ground-dove (Polynesian ground-dove) *Gallicolumba erythroptera*
Marquesan ground-dove *G. rubescens*
Marquesan fruit-dove *Ptilinopus mercierii*
Rapa fruit-dove *P. huttoni*
Tahiti lorikeet *Vini peruviana*
Ultramarine lorikeet *V. ultramarina*
Eiao Polynesian warbler *Acrocephalus caffer aquilonis*
Ua Pou flycatcher *Pomarea mendozae mira*
Samoan storm-petrel *Nesofregetta moestissima*

7. Options for conservation projects

Core bird survey group

Establish a bird survey group to determine the conservation status of little-known species, train government professionals, involve locals in survey, and carry out allied work, as a core group enhanced with local public and local government support. Focus this work initially in French Polynesia in the following rank-ordered island groups: Marquesas, Society, and Tuamotu Islands. Survey group would be funded by SPREP and would serve as a nucleus for training local government and community personnel, centrally organised and funded to ensure consistency of method, standards and reliable reporting. The final order of survey may be dictated partly by the perceived urgency of critically endangered birds.

Pigeon and dove monitoring

Develop methods for systematically monitoring those pigeons and doves that are declining. If they are also harvested, the monitoring method(s) should be integrated into monitoring harvesting so that changes due to human and non-human causes can be distinguished.

Public awareness and education

Organise specific cases of public awareness and education linked to particular problems such as over-harvesting of endemic Columbids and particular breeding species which interact with human practices.

Scientific investigation of particular species

Some critical cases include birds which almost certainly will become extinct and therefore need urgent investigation before they disappear forever.

Species recovery plans

Commission species recovery plans for all critically endangered species and endangered species currently

listed which may qualify for critical status (*sensu* BirdLife 2000) following a conservation status survey.

Recovery programmes

After the conservation status survey, establish recovery programmes for species which qualify for critical and endangered status based on the threats to their survival.

8. Acknowledgements

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Melanesia and Nauru workshop, Nadi, 5–10 March 2000

1. Priority avifauna conservation projects

Fiji

Saving the Fiji petrel from extinction

Problem: No recent work has been conducted for the Fiji petrel *Pterodroma macgillivrayi*. In addition, it is suspected that new threats from predators in the petrels' most likely breeding habitat have been created recently through human development.

Justification: This species is Critically Endangered* and is endemic to Gau, Fiji. This project stems directly from the Fiji Biodiversity Strategy and Action Plan: *Objective 2.4: Achieve a detailed knowledge of the occurrence and status over time of Fiji's biodiversity resources, in particular the threatened endemic forms – Action 36. Objective 4.1: Effectively manage threatened species – Actions 60, 61, 63.*

Actions: Employ petrel specialists to use spotlighting and radio tracking to undertake surveys of the size of the population; concurrent with the surveys above, develop local expertise to assist with, or carry out, surveys; develop a species management plan; reinforce the existing community awareness programme.

Priority: Extremely urgent.

Surveys of poorly known, threatened Fijian birds

Problem: Populations of the red-throated lorikeet *Charmosyna amabilis*, long-legged thicketbird* *Trichocichla rufa* (sometimes known as the long-legged warbler), and pink-billed parrotfinch *Erythrura kleinschmidti* are extremely rare and suspected to be declining. There is a lack of information on Fiji's forest birds.

Justification: No conservation actions can be taken until more information is obtained. This project stems directly from the Fiji Biodiversity Strategy and Action Plan: *Objective 2.4: Achieve a detailed knowledge of the occurrence and status over time of Fiji's biodiversity resources, in particular the threatened endemic forms – Action 36. Objective 4.1: Effectively manage threatened species – Actions 60, 61, 63.*

Actions: Conduct forest surveys and threat assessments on Viti Levu; develop local expertise in survey methodology; identify suitable areas for conservation.

Priority: Extremely urgent

Monitoring programme for the forest birds of the Fiji Islands.

Problem: There is currently no monitoring programme for forest birds in Fiji, meaning that declines in population, and the initiation of threatening processes could well go unnoticed. In addition, the expertise does not exist within Government to institute such a programme.

Justification: Instituting a monitoring programme using national expertise and resources is the most effective method of reliable and on-going data collection. This project stems directly from the Fiji Biodiversity Strategy and Action Plan: *Objective 2.4: Achieve a detailed knowledge of the occurrence and status over time of Fiji's biodiversity resources, in particular the threatened endemic forms – Action 36. Objective 4.1: Effectively manage threatened species – Actions 60, 61, 63*

Action: Develop on-the-job training in bird monitoring techniques during data collection. This will be a Government-focused programme that will incorporate regional monitoring models.

Priority: Immediate

Legislative framework and guidelines regarding trade and captivity of Fijian parrots

Problem: Existing legislation regarding capture and holding of wild parrots is inadequate and unenforceable, and there has been a recent increase in interest in the trade of parrots, leading to concern over the future health of their populations.

Justification: These parrots are Fijian endemics, flagship species, and attract income from tourism. The problem is compounded by increasing loss of key forest habitat through clearing and logging. This project stems directly from the Fiji Biodiversity Strategy and Action Plan: *Objective 6.1: Enact legislation to establish an institutional framework and administrative capacity for ecologically sustainable development, protected area management and biodiversity management – Actions 89, 90, 94.*

* The categories used to identify the conservation status of species are those used in BirdLife (2000), which are the IUCN Red List categories.

Action: Advocate Government review of existing legislation and advocate setting standards for keeping parrots in captivity.

Priority: Immediate

Conservation of a flagship bird, the Vanua Levu silktail

Problem: Essential breeding habitat for the Vanua Levu silktail (*Lamprolia victoriae*) has been lost due to logging and underplanting with mahogany to form a plantation.

Justification: This is a flagship species for Vanua Levu, having cultural as well as conservation significance. Suspension of further mahogany planting in its habitat would provide an immediate reduction in the risks faced by this species. This project stems directly from the Fiji Biodiversity Strategy and Action Plan: *Objective 1.3: Minimise the loss and fragmentation of community-owned native forests – Action 16. Objective 2.4: Achieve a detailed knowledge of the occurrence and status over time of Fiji's biodiversity resources, in particular the threatened endemic forms – Action 36. Objective 4.1: Effectively manage threatened species – Actions 60, 61, 63.*

Actions: Determine population size and trends incorporating on-the-job training from within local communities; advocate that the Government ceases mahogany planting at this site and implements the existing reserve proposal; raise awareness of the threat to the silktail within local communities, with special reference to relevant landowners.

Priority: Urgent

Nauru

Monitoring of the Nauru reed warbler

Problem: There is inadequate knowledge of the population size and trends of the Nauru reed warbler and of the threats it faces.

Justification: This species is categorised as Vulnerable on the basis of its extremely small range. Possible threats include cyclones and introduced predators.

Actions: Develop this proposal in collaboration with the Nauru Government; assess whether outside experts are required; identify the best survey techniques and season; train a Nauru fieldworker to perform future surveys; establish an on-going monitoring programme; identify potential threats.

Priority: This species may not be under immediate threat, but the project would be an excellent vehicle to raise conservation awareness in Nauru.

New Caledonia

Rat eradication and control

Problem: Rats significantly reduce breeding success of Polynesian storm-petrel *Nesofregetta fuliginosa*, horned parakeet *Eunymphicus cornutus*, New Caledonia owlet-nightjar *Aegotheles savesi*, island thrush *Turdus poliocephalus*, and probably others.

Justification: Several species are believed to be threatened by rat predation. The removal or reduction of rats will probably improve their conservation status. Rodent control technology is well developed and has been shown to be effective. A successful rat eradication programme has already been implemented in the Southern Province.

Actions: Conduct a programme of eradication on islets and seabird breeding sites in the Northern Province, and all outlying islands. Investigate the feasibility/identification of rat control needs in mainland location(s). Monitor effectiveness of management actions.

Priority: Extremely urgent (rank 1st)

Control of pigs at petrel colonies

Problem: V. Bretagnolle's research (pers. comm.) indicates that pigs are major predators of ground-nesting seabirds, such as Tahiti petrel *Pterodroma rostrata*, Gould's petrel *P. leucoptera*, and have the ability to eradicate colonies. Dogs, cats and rats may also be predators.

Justification: Both petrels are threatened and the technology to control pigs is well developed and effective.

Actions: Identify suitable colonies; identify other predators; consider feasibility of live-trapping; establish fences/traps; monitor effectiveness of management actions.

Priority: Immediately urgent (rank 2nd)

Long-term conservation of the kagu

Problem: The kagu population (*Rhynochetos jubatus*) is secure in a single location but is threatened elsewhere, especially by dogs which require local control.

Justification: Through the establishment of a managed reserve system, this, the only representative of the Family Rhynochetidae in the world, and a national emblem, with potential tourism value, should benefit, and other species such as horned parakeet *Eunymphicus cornutus*, crow honeyeater *Gymnomyza aubryana*. Management has been recommended by Hunt (1997, Hunt et al. 1996), Y. Létocart (pers. comm.) and the Diadema expedition (Ekstrom et al.

2000). Kagu is listed in BirdLife (2000) as Endangered.

Actions: Identify appropriate sites (good kagu population; controllable access; other conservation values) to manage viable kagu populations in both north and south provinces. Establish effectively managed reserves (including staff, access control, predator control, population monitoring). Feasibility of ecotourism development with local communities. Monitor effectiveness of management actions.

Priority: Immediate (rank 3rd)

Genetic integrity of the indigenous Pacific black duck.

Problem: Pacific black duck *Anas superciliosa* is known to hybridise with mallard, and these have been introduced. Two percent of ducks are mallards or show signs of mallard hybridisation.

Justification: There is a threat of loss of genetic integrity of the Pacific black duck in New Caledonia. This is already a severe problem in other countries, e.g. New Zealand. The project may serve as a model for other countries within the region.

Actions: Collect material for genetic analysis; eradicate naturalised mallards and hybrids; enforce current legislation; monitor effectiveness of management actions.

Priority: Immediate (rank 4th)

Baseline survey of threatened birds

Problem: There is a lack of knowledge of the endemic and threatened birds (with particular reference to horned parakeet *Eunymphicus cornutus*, New Caledonia owlet-nightjar *Aegotheles savesi*, crow honeyeater *Gymnomyza aubryana*, New Caledonia grassbird *Megalurulus mariei*, New Caledonia rail *Gallirallus lafresnayanus*, New Caledonia lorikeet *Charmosyna diadema*, red-fronted parakeet *Cyanoramphus novaezelandiae*, island thrush *Turdus poliocephalus*, and New Caledonia nightjar *Eurostopodus exul*) throughout the country. Population trends of these species are unknown.

Justification: This knowledge is required for conservation management.

Actions: Conduct field surveys and identify threats and management needs, then publish results. Encourage provinces to extend their crow honeyeater survey outside the River Blue Reserve.

Priority: Immediate (rank 5th)

Monitoring the conservation status of New Caledonia's birds

Problem: The impact of most previous conservation actions on New Caledonia's birds (with particular reference to the better known threatened species which have had extensive research and/or management – petrels *Pterodroma* spp., fairy tern *Sterna nereis*, kagu *Rhynochetos jubatus*, Uvea parakeet *Eunymphicus uvaeensis*) has not been sufficiently and systematically measured.

Justification: On-going and future management action will benefit from the evaluation of previous conservation work. The need for future conservation action also depends on on-going population trends.

Actions: Conduct regular scientific surveys of populations and threats, and assess the effectiveness of previous and ongoing management. Publish the results.

Encourage the efforts for Uvea parakeet by the Association pour la Sauvegarde de la Perruche d'Ouvéa.

Priority: Immediate (rank 6th)

Papua New Guinea

Pilot training scheme for local bird observers

Problem: There is a lack of trained local observers with bird survey skills.

Justification: Many conservation and development projects require the measurement of their impact on the environment. Birds are ideal subjects for monitoring the impact of land use, but there are no skilled people in the communities to undertake such work. This pilot project would concentrate on assessing the status of some threatened bird species, e.g. Victoria crowned pigeon *Goura victoriae*, southern cassowary *Casuarius casuarius*.

Actions: Two to four weeks training of two trainers and 12 young community people in bird identification, survey techniques and measuring the size and impact of hunting of susceptible species. Prepare new resource materials, including a basic field manual (e.g. modifying the BP Conservation Programme/ BirdLife International manual, *Bird Surveys* (Bibby et al. 2000)), acceptable to people with a Grade 6 education level. The training should take place in the context of an existing project which is supporting local communities committed to on-going conservation action. The exact location of the project is to be decided in consultation but ideally at a site with threatened species. Return after four to six months for follow up support and to evaluate the programme. Assess whether this type of project can be replicated in other areas in PNG and other Pacific Islands.

Priority: Immediate (rank 1st)

Survey of Sudest and Rossel Island birds

Problem: Survey of Sudest and Rossel Island birds with particular reference to species categorised as Data Deficient is needed. No information is on record which describes the conservation status of the following species: white-throated white-eye *Zosterops meeki* (Sudest), white-chinned myzomela *Myzomela albigula* (Rossel and tiny islands), Tagula honeyeater *Meliphaga vicina* (Sudest), Tagula butcherbird *Cracticus louisiadensis* (Sudest).

Justification: Some of these birds may be Critically Endangered. This project could be linked with existing training projects.

Actions: Liaise with Conservation International project in the area. Contact Commonwealth Scientific and Industrial Research Organisation (CSIRO) Wildlife and Ecology, Australian National University, and Office of the Environment and Conservation (Port Moresby) to determine what information might exist from earlier surveys on mammals; a preliminary visit by one expedition representative is needed to liaise with landowners and gain endorsement/permission, etc.; gain support of the provincial government; where possible, link to existing training projects and their expertise; survey key areas.

Priority: Immediate (rank 2nd)

Integrating conservation of threatened birds into community awareness programmes

Problem: Many PNG birds are threatened by logging. Bird conservation is not addressed in existing community awareness programmes.

Justification: It is possible to reduce the impact of logging on birds by better logging practice and by training staff to make local people aware of this.

Actions: Meeting of fieldworkers. Discuss issues and design materials. Organisations involved may include PNG government, Conservation Melanesia, Village Development Trust, Bismarck Ramu, World Wide Fund for Nature, The Nature Conservancy, Conservation International, PNG Trust, Foundation for People and Community Development, and National Association of Non Government Organisations. Monitor effectiveness of actions.

Priority: Immediate (rank 3rd)

Community awareness of logging effects on wildlife, especially the fire-maned bowerbird

Problem: The fire-maned bowerbird *Sericulus bakeri*, classified as Vulnerable, is threatened by logging.

Justification: The fire-maned bowerbird is Vulnerable and endemic to a small area of Adelbert Mountains. The area is subject to many logging concessions. It also includes the recently rediscovered cuscus *Phalanger rufoniger*, the lesser bird of paradise *Paradisaea minor*, and Wahnes's parotia *Parotia wahnesi* (classified as Vulnerable). If this approach is successful it can be used widely in PNG where logging is taking place.

Actions: Produce posters, leaflets and other educational materials. Explain to the local communities the legal obligations of the logging companies to observe the logging code of practice and why that code has been established, i.e. to ensure that the forest will continue to provide them with the material and traditional things which they value. Suggest to the communities that it is in their interest to ensure that the logging companies observe the code of practice rather than rely on government to do it for them. Training of local communities will be necessary; liaise with the Forest Department; buy global positioning system (GPS), clinometers, measuring equipment, tree-diameter tapes; ensure that local people can identify the tree species involved; also target Provincial Government and schools. Monitor effectiveness of management actions.

Priority: Immediate (rank 4th equal)

Community awareness of the effects of logging practices on the Huon Peninsula

Problem: Wahnes's parotia *Parotia wahnesi* (Vulnerable) and emperor bird of paradise *Paradisaea guilielmi* (Near Threatened), as well as the Huon tree-kangaroo (Vulnerable) will be negatively affected by proposed logging concessions and the subsequent agricultural development.

Justification: Logging concessions are being discussed; an Office of the Environment and Conservation report recommends setting up a Protected Area.

Actions: Produce posters, leaflets and other educational materials. Explain to the local communities the legal obligations of the logging companies to observe logging code of practice and why that code has been established, i.e. to ensure that the forest will continue to provide them with the material and traditional things which they value. Suggest to the communities that it is in their interest to ensure that the logging companies observe the code of practice rather than rely on government to do it for them. Training will be necessary; liaise with Forest Department; buy GPS, clinometers, measuring equipment, tree-diameter tapes; ensure that local people can identify the tree species involved; target Provincial Government and schools. Monitor effectiveness of actions.

Priority: Immediate (rank 4th equal)

Community awareness programme in New Britain lowlands

Problem: Lowland forest birds on New Britain threatened by logging and oil palm plantations.

Justification: This Endemic Bird Area has the sixth largest number of endemic birds in the world. Five bird species are classified as Vulnerable (black honey-buzzard *Henicopernis infuscatus*, New Britain sparrowhawk *Accipiter brachyurus*, slaty-mantled goshawk *A. luteoschistaceus*, New Britain bronze-wing *Henicophaps foersteri*, and Bismarck kingfisher *Alcedo websteri*). Very little primary lowland forest survives.

Actions: Community-based awareness campaign about impacts of logging and oil palm plantations on bird communities; identify suitable areas for the project; liaise with Conservation International in developing the programme; monitor effectiveness of action.

Priority: Immediate (rank 4th equal)

Community awareness project to reduce hunting of cassowary

Problem: Over-hunting of cassowaries for meat and cultural use.

Justification: Throughout Papua New Guinea cassowaries are thought to be declining due to over-hunting. Northern cassowary *Casuarius unappendiculatus* and southern cassowary *C. casuarius* are listed as Vulnerable.

Actions: Priority locations across PNG for conducting awareness programmes need to be determined and supportive communities identified; the awareness programme should stress the cultural value of cassowary so that the bird is valued for its own sake. Liaise with other projects such as ICAD (Integrated Conservation and Development projects); produce radio programmes, work with curriculum development unit for school programmmes, produce posters, etc. These should be produced in three languages (English, Tok Pisin, Motu); combine with other threatened species programmes, e.g. crowned pigeons *Goura victoriae* and *G. scheepmakeri*, both classed as Vulnerable. Investigate alternative protein sources and alternatives for cultural uses. Also investigate the potential for farming. Monitor effectiveness of actions.

Priority: Immediate (rank 7th)

Solomon Islands

Population survey of the commercially exploited parrots

Problem: In the past, trade in parrots from the Solomon Islands has occurred. However, under CITES requirements there is not enough scientific information on parrot populations to indicate what level of harvesting is sustainable. Similarly, there is not enough information on the impacts of logging on parrot populations.

Justification: There is pressure to re-open the parrot export trade, and there is still insufficient information on the parrot populations to set sustainable quotas for export. Some of the parrot species are widespread and numerous whilst others have restricted distribution, but the size of the population is not known for any species.

Actions: Undertake surveys to assess the population size of key trade species; conduct ecological studies on the breeding success and recruitment rates for key trade species such as Solomons cockatoo *Cacatua ducorpsi*, duchess lorikeet *Charmosyna margarethae*, yellow-bibbed lory *Lorius chlorocercus*, cardinal lory *L. cardinalis*, eclectus parrot *Eclectus roratus*, rainbow lorikeet *Trichoglossus haematodus*, and singing parrots *Geoffroyus heteroclitus*; obtain other data needed to adequately model the population and set export trade quotas which are sustainable; focus the survey on Isabel and Choiseul Islands; ensure that the survey and studies are carried out by highly trained staff and the results analysed by competent statisticians because the results will have to stand up to rigorous scrutiny.

Priority: Immediate (rank 1st)

Bird conservation status in Temotu Province

Problem: The status of bird populations in Temotu Province is poorly known.

Justification: The Santa Cruz ground-dove *Gallicolumba sanctaecrucis* is classified as Endangered. Temotu Province is remote and has received insufficient survey and no training of local people in wildlife assessment and survey.

Actions: Survey all habitats in both big islands and also on smaller islets; train local people in survey techniques and standards of scientific accuracy before fieldwork starts and also during the survey; train local people in how to train others; survey bats and turtles as well as birds as part; disseminate results to Vanuatu.

Priority: Immediate (rank 2nd)

Status and threats to the thick-billed ground dove on Ramos Island

Problem: Thick-billed ground dove *Gallicolumba salamonis* may exist on Ramos Island but there are no records since 1927.

Justification: The thick-billed ground dove is a Critically Endangered bird. Only two specimens have been recorded – one from 1927 allegedly on Ramos Island and another in 1882 on Makira Island. There is a chance that critical predators have not yet been introduced on to Ramos Island but could appear anytime. If the dove is present and predators are absent, measures can be put in place to reduce the likelihood of predators being introduced. It has not been found during surveys of Makira and there have been no surveys of Ramos Island. The project is a good opportunity to include a training element from the Environment and Conservation Division and from the Conservation International project on Makira. The resulting trained people can undertake surveys of Temotu and elsewhere.

Actions: Obtain landowners' permission (may be complicated – many groups claim ownership); the project requires a charter boat and fuel; survey thick-billed ground dove on the island; survey mammals and turtle nests; train surveyors in the course of the work.

Priority: Immediate (rank 3rd)

Survey and community awareness of white-eyes endemic to the Western Province

Problem: There are insufficient data on white-eye species endemic to Western Province to determine their conservation status. The local communities are also unaware of the significance of their species.

Justification: Ghizo white-eye *Zosterops luteirostris* is listed as Endangered, the Ranongga white-eye *Z. splendidus* is Vulnerable and the Vella Lavella or banded white-eye *Z. vellalavella* is Near Threatened. The conservation status of all species needs verification with systematic survey. The species are internationally significant to science as examples of island speciation.

Actions: Undertake survey of the Ghizo white-eye to assess population size and document threats to the species and its habitat; survey primary and degraded forests on Ranongga and Vella Lavella to assess the endemic white-eye species' tolerance to degraded forest. Initiate an educational programme highlighting the importance of these species and the concept of island speciation; liaise with relevant organisations and link up with a training proposal from the Melanesian workshop.

Priority: Not immediate (rank 4th)

Development of an educational programme on endemic birds

Problem: Lack of understanding of the significance of Solomon Islands endemic birds.

Justification: The Solomon Islands Endemic Bird Area (EBA) has the greatest number of endemic and restricted-range bird species in the world yet Solomon Islanders do not appreciate the significance of their avifauna.

Actions: Develop an educational programme on endemic species and EBAs with Curriculum Development Unit in the Education Department; produce and distribute posters and other educational materials. Use radio, written media and posters. Incorporate the concepts of pride in unique birds and that birds need forests. This approach can be dealt with on a national and island-by-island basis.

Priority: Not ranked

Conservation status of Makira moorhen and thick-billed ground-dove

Problem: The Makira moorhen *Gallinula sylvestris* and the thick-billed ground-dove *Gallicolumba salamonis* are listed as Critically Endangered. Conservation International/Solomon Islands Development Trust have a project "Conservation In Development" in Makira Island where these species were last known, and they have indicated that they intend to survey for these species but may require funding or provision of technical advice.

Justification: Makira moorhen last seen on Makira in 1953. Thick-billed ground dove last seen on Makira and Ramos in 1927. Need for advice indicated by project staff.

Action: Develop a project proposal with above organisations.

Priority: Immediate (no rank recorded)

Wildlife and environment information centre

Problem: No information on Solomon Islands birds (or other wildlife) is available to Solomon Islanders (or visitors).

Justification: No in-country central repository of information. No educational centre.

Actions: Build information centre; buy relevant books and posters; gather relevant reports and papers; produce additional information materials needed.

Priority: High priority (but not ranked)

Vanuatu

Monitoring the Vanuatu megapode on Ambrym Island

Problem: From 1995 to 1998, a survey was carried out to determine the numbers of the Vulnerable species, Vanuatu megapode *Megapodius layardi*, and to raise public awareness of the species on Ambrym. However, no follow-up survey has been carried out to determine if any benefits from these actions have occurred.

Justification: This work is needed to determine the effectiveness of the previous project's attempts to strengthen traditional management. It has been included in Vanuatu's National Biodiversity Action Plan, and has gained the support of the local community and Government.

Work required: Undertake a population and habitat survey; research ecological requirements particularly on the nesting grounds; determine effectiveness of traditional management.

Priority: Immediate

Baseline survey of bird abundance and distribution

Problem: A baseline survey of bird abundance and distribution in Vanuatu is needed, with special reference to threatened and endemic species and those dependent on restricted or threatened habitats. There is little detailed up-to-date information on many of the forest birds, leaving threatened and endemic species at great risk of unrecognised decline.

Justification: Detailed knowledge of population trends and threatening processes is vital for effective management. Surveys using local expertise have been started on projects dealing with general biodiversity. Although these have proven highly effective, they need to be developed further specifically to address threats to Vanuatu's avifauna and to enhance the technical capacity of in-country fieldworkers. This project has the endorsement of Vanuatu's National Biodiversity Strategy Action Plan.

Actions: Conduct baseline field surveys; identify threats and management needs; provide training in survey methods to develop in-country expertise.

Priority: Immediate

Bird survey of the proposed Lake Letas Reserve on Gaua, with particular reference to threatened species

Problem: The royal parrotfinch *Erythrura regia* and green palm lorikeet *Charmosyna palmarum* are both threatened for unknown reasons in Vanuatu, and are known from a few islands only. The proposed Lake Letas Reserve on Gaua has been identified as a suitable location for a reserve, owing to its apparently viable populations of these two species, its remote location, and the absence of historic logging. This site, which surrounds an isolated volcanic lake, is ideal for studying these species in the relative absence of anthropogenic influences.

Justification: This work will enable an essential comparison with areas on the main islands from which these species have greatly declined. The area has been identified in Vanuatu's Biodiversity Strategy Action Plan as a priority site for the establishment of a reserve, and is supported by members of the local community, who recognise the lake for its cultural value.

Actions: Survey the population size and trends of the two species; assess predators and other threats; integrate the bird findings into the reserve proposal; discuss any local concerns through discussions with landowning communities.

Priority: Immediate

Poster on Vanuatu's threatened birds for conservation awareness in local communities

Problem: Local communities are often the key to the successful conservation of endemic birds. However, this can only be effective where communities are well informed. In Vanuatu, communities may be supportive of conservation efforts, but do not have up-to-date information on their local avifauna. In 1992, the Vanuatu Environment Unit produced a poster that focused on the country's threatened bird species. Although it was well-received, its effectiveness was limited by the small numbers produced. This poster now needs updating, and redistributing, so that its vital information can be disseminated widely, including to new groups, e.g. youth groups, women's community groups, etc., which have developed since 1992.

Justification: Conservation posters, in general, have been proven to be greatly effective within local communities, with significant benefits for conservation. This poster was recommended in Vanuatu's Biodiversity Strategy Action Plan. The Biodiversity Project with funding from GEF-UNEP is producing similar posters on other faunal groups. However, funding for this project was due to finish in April 2000.

Action: Update existing bird poster; reproduce, laminate and distribute widely; associate production and dissemination with community awareness workshops; monitor the effectiveness of actions.

***Note**: It is especially important that project costs include those needed to distribute the material.*

Priority: Immediate.

Fiji and Vanuatu

Conservation of the peregrine falcon subspecies found in the Fiji Islands and Vanuatu

Problem: Populations of the peregrine falcon subspecies *Falco peregrinus nesiotus* in Fiji and Vanuatu are extremely small and may be in decline.

Justification: The peregrine falcon is a nationally significant bird with high cultural value in the Fiji Islands and Vanuatu.

For Fiji, this project stems directly from the Fiji Biodiversity Strategy and Action Plan: *Objective 4.2: Effectively manage species of cultural significance – Action 68. Objective 2.4: Achieve a detailed knowledge of the occurrence and status over time of Fiji's biodiversity resources, in particular the threatened endemic forms – Action 36. Objective 4.1: Effectively manage threatened species – Actions 60, 61, 63.*

Action: Work in Fiji and Vanuatu to build on the existing peregrine initiative by the Peregrine Fund. Eventually extend the work over the full range of the subspecies (including New Caledonia).

Priority: Important

Regional projects

Training qualified workers in bird survey techniques

Problem: This consists of separate projects in each country (PNG, Solomon Islands, New Caledonia, Vanuatu, and Fiji Islands) to train qualified workers in bird survey techniques. There are too few trained Melanesian field workers to carry out necessary avifauna conservation projects including survey and wildlife management. There is a lack of equipment for field workers.

Justification: Training is essential in order to build a base of fully skilled national bird surveyors. Many birds require survey and monitoring but the skilled staff required to undertake these surveys do not exist. Training of skilled personnel will lead to follow-up management projects on threatened birds.

Actions: This training is aimed at professionals in government and NGO employment, and new graduates. Training courses as required in each country; provision of basic equipment such as binoculars and field guides; individual micro-projects designed during the course and supported afterwards with supervision and finance; produce training materials/ manual.

Priority: Immediate (rank 1st for PNG and Solomon Islands).

Forum for exchange on information relating to pigeon harvesting

Problem: Few data exist relating to the sustainability of harvesting pigeons and there is currently no mechanism for information exchange.

Justification: Over-harvesting of pigeons across the Pacific is thought to be responsible for declines in the populations of a number of species. This has been studied by various workers but there has been a poor exchange of information and sharing of lessons learned.

Actions: Create a working group to share ideas and project results; this group should liaise with existing projects in New Caledonia, French Polynesia, Samoa, and Solomon Islands.

Priority: Immediate

2. Workshop recommendations

The New Zealand Department of Conservation and the Australian (Federal and State) Governments National Parks and Wildlife Services be encouraged to become more involved in conservation in the Pacific Islands including facilitating their expert staff to assist Pacific country governments and implementing Memoranda of Understanding.

SPREP and BirdLife encourage the activity of existing Non-Government Organisations as well as local Government expertise. In many countries NGOs have proven very effective managers of bird conservation projects.

There is a need to develop an outlying islands bird survey. This should include predator surveys and publication of results in-country and in international scientific journals. Many of these islands will hold internationally significant seabird populations and some have never been visited by bird researchers.

All SPREP-funded projects should include capacity building and transfer of skills to Pacific islanders.

SPREP should seek local expertise to carry out projects within countries where available, such that if expertise is lacking the projects should be implemented in a way that caters for local capacity building – in particular, with monitoring the abundance of birds.

SPREP should publish bird survey, monitoring and management manuals that are appropriate for the Pacific island countries and territories.

SPREP should develop awareness of the necessity for bird conservation in all Melanesian nations.

Countries working on their National Biodiversity Strategy and Action Plan should seek to include bird conservation priorities within the plans.

Projects on bird conservation should build on existing related projects and seek to implement the National Biodiversity Strategy and Action Plan and other similar initiatives.

SPREP in-country projects in Melanesia which relate to each other should maximise networking, including mutual skill sharing and lessons learnt.

The Programme Officer for the Regional Avifauna project should be consulted and included where appropriate in other related programmes administered by SPREP.

SPREP avifauna conservation projects should take into account subspecies and isolated sub-populations.

The final recommendations and information directly relevant for the French Pacific countries and territories should be translated. This should apply to other appropriate local languages.

In each project include and budget for an assessment of the success the project has had in achieving its goals.

Disseminate the results of every project through scientific publications (where appropriate), to the general public through popular articles, e.g. *World Birdwatch*, and to local communities in a suitable format.

SPREP recognises that some issues are best dealt with on a sub-regional or regional basis.

SPREP should encourage participation of relevant NGOs in project planning and implementation.

SPREP and BirdLife International should give priority to acquiring large-scale funding (such as Global Environment Facility) for implementing bird conservation projects as described in the sub-regional workshop proceedings.

3. Projets proposés pour la Nouvelle-Calédonie et recommandations finales

Traduit par Nicolas Barré

Projets proposés pour la Nouvelle-Calédonie

Eradication et contrôle des rats

Problème: Il est connu que les rats réduisent significativement le succès de la reproduction de nombreuses espèces. Eradication et contrôle des rats sont indispensables pour la sauvegarde de l'océanite à gorge blanche *Nesofregetta fuliginosa*, de la sterne néréis *Sterna nereis* et autres oiseaux marins (sternes, pétrels, fous, phaétons et puffins), de la perruche de la chaîne *Eunymphicus cornutus cornutus*, de l'égothèle de Calédonie *Aegotheles savesi*, du merle des îles *Turdus poliocephalus*, ainsi que d'autres espèces terrestres.

Justification: Plusieurs espèces à faible effectif (dont l'égothèle récemment redécouvert) sont fortement suspectées d'être menacées du fait de la prédation par les rats. L'élimination ou la réduction de ce prédateur peut certainement améliorer leur statut. La technique de contrôle des rats est bien au point et a démontré son efficacité. Par exemple, une campagne efficace d'éradication des rats a été mise en œuvre sur les îlots du lagon en Province Sud.

Actions: Conduire un programme d'éradication sur les îlots et les sites côtiers de reproduction des oiseaux de mer en Province Nord, ainsi que dans les îles éloignées de la Nouvelle-Calédonie riches en colonies d'oiseaux (Surprises-Chesterfield, Walpole, Hunter, Mathew). Etudier la possibilité de conduire des opérations (à définir) de contrôle sur des sites appropriés de Grande Terre pour les oiseaux terrestres ou les colonies d'oiseaux de mer. Evaluer l'efficacité des mesures prises.

Délai de mise en œuvre: Extrêmement urgent (rang de priorité 1).

Contrôle des cochons sauvages au sein et à proximité des colonies de pétrels

Problème: D'après les travaux de V. Bretagnolle (comm. pers.), les cochons sont des prédateurs majeurs des oiseaux de mer (pétrel de Tahiti *Pterodroma rostrata*, pétrel de Gould *P. leucoptera*) nichant au sol ou dans des terriers, et sont susceptibles d'éradiquer leurs colonies. Les chiens, chats et rats sont également des prédateurs importants.

Justification: Les deux espèces de pétrels ci-dessus sont menacées et la technologie pour contrôler les cochons est couramment développée ailleurs dans la région et s'avère efficace.

Actions: Identification de colonies candidates et appropriées. Inventaire des prédateurs. Evaluation de la faisabilité de la capture des animaux vivants et de la mise en place de clôtures et de pièges. Evaluation de l'efficacité des mesures prises.

Délai de mise en œuvre: Urgent (rang de priorité 2).

Sauvegarde définitive du cagou

Problème: Les populations de cagou *Rhinochetos jubatus* ne sont réellement en sécurité que dans un seul site (la réserve de la Rivière Bleue) et sont menacées ailleurs, notamment par les chiens.

Justification: Par l'établissement d'un système de réserves effectivement surveillées et gérées, le seul représentant au monde de la famille des Rhynochetidae, emblème de la Nouvelle-Calédonie, ayant une valeur touristique (et donc économique) potentiellement élevée. D'autres espèces patrimoniales présentes sur les sites pourraient bénéficier de ces mesures de protection comme la perruche de la chaîne et le méliphage toulou. Le cagou figure dans la liste IUCN des espèces en voie de disparition. Ces propositions de gestion sont faites suite aux travaux récents de Y. Létocart (Province Sud, comm. pers.), de Hunt (1997, Hunt et al. 1996), et de l'expédition Diadema (Ekstrom et al. 2000).

Actions: Identifier des sites appropriés (population importante de cagous, accès contrôlable, présence d'autres espèces cibles à protéger) pour assurer le maintien de populations viables de cagou en Province Nord et Sud. Etablir des réserves effectivement gérées (incluant du personnel de gardiennage, une surveillance de l'accès, le contrôle des prédateurs, et le suivi des populations). Evaluer la faisabilité d'un développement éco-touristique au profit des communautés locales. Suivre l'efficacité des mesures de gestion prises.

Délai de mise en œuvre: Immédiat (rang de priorité 3).

L'intégrité génétique du canard à sourcils

Problème: On sait que le canard à sourcils *Anas superciliosa* s'hybride avec le canard colvert *A. platyrhinchos*, espèce qui a été introduite en Nouvelle-Calédonie. Une étude récente (Barré et Dutson 1999) a montré que deux pour cent des canards en milieu naturel sont des colverts ou des hybrides.

Justification: Il y a un risque important de perte de l'intégrité génétique d'une espèce indigène par une espèce introduite par l'homme, comme cela a été démontré en Nouvelle-Zélande pour ce même canard à sourcils. Le projet calédonien peut ensuite servir de modèle pour d'autres pays de la région également concernés ou qui pourraient l'être dans un proche avenir.

Actions: Collecter du matériel biologique pour des analyses génétiques. Eradiquer les canards colverts et les hybrides. Renforcer la législation sur l'importation du colvert. Suivre l'impact des mesures prises.

Délai de mise en œuvre: Immédiat (rang de priorité 4).

Acquisition de données de base initiales sur les espèces menacées

Problème: On constate une insuffisance des connaissances sur les espèces endémiques et menacées (avec une attention particulière pour la perruche de la chaîne *Eunymphicus cornutus*, l'egothèle calédonien *Aegotheles savesi*, le méliphage toulou *Gymnomyza aubryana*, la fauvette calédonienne *Megalurulus mariei*, le râle de Lafresnaye *Gallirallus lafresnayanus*, le lori calédonien *Charmosyna diadema*, l'engoulevent calédonien *Eurostopodus exul*, le merle des îles *Turdus poliocephalus*, et la perruche à front rouge *Cyanoramphus novaezelandiae*) dans l'ensemble de la Nouvelle-Calédonie (statut, distribution, écologie, menaces). L'évolution de ces populations est inconnue.

Justification: Ces informations sont nécessaires pour établir un programme de conservation efficace pour les espèces qui en ont besoin.

Actions: Mener des enquêtes de terrain; identifier les menaces et les mesures de gestion souhaitables et publier les résultats obtenus. Encourager les Provinces à étendre au territoire l'actuelle enquête sur le statut du méliphage toulou conduite par la Province Sud à la Réserve de la Rivière Bleue.

Délai de mise en œuvre: Urgent (rang de priorité 5).

Suivi de l'efficacité des mesures de conservation mises en œuvre

Problème: L'impact de la plupart des mesures de conservation jusqu'alors mises en œuvre (en particulier pour des espèces menacées mais les mieux connues ou qui sont déjà l'objet de mesures spécifiques comme les pétrels *Pterodroma* spp., la sterne néreis *Sterna nereis*, le cagou *Rhynochetos jubatus*, et la perruche d'Ouvéa *Eunymphicus uvaeensis*) n'ont généralement pas été évaluées de

façon systématique ou suffisante (sauf en partie pour la perruche d'Ouvéa).

Justification: Les actions de conservation actuelles ou futures pourraient bénéficier de l'évaluation de l'efficacité des actions de conservation entreprises antérieurement. L'intérêt de ces suivis pour des actions futures de conservation dépend aussi de la connaissance de l'évolution spontanée des populations.

Actions: Conduire des suivis scientifiques réguliers pour mesurer l'évolution des populations et la persistance des menaces et évaluer l'efficacité des mesures de conservation entreprises. Publier les résultats de ces suivis et de ces évaluations. Encourager les efforts de l'Association pour la Sauvegarde de la Perruche d'Ouvéa.

Délai de mise en œuvre: Urgent (rang de priorité 6).

Projet Régional

Un réseau d'échange d'informations sur les pigeons et la chasse

Problème: Il existe peu de données sur une gestion durable de ces oiseaux et il n'existe pas non plus de forum pour des échanges d'informations sur ce thème.

Justification: On peut penser que la surexploitation des pigeons dans le Pacifique est responsable du fort déclin ou de la disparition de certaines espèces. Cela a été étudié par différents auteurs, mais on dispose de peu d'échanges d'informations sur le sujet et on n'a pas de données sur les expériences passées.

Actions: Créer un groupe de travail pour échanger des informations et les résultats de travaux. Ce groupe aura des contacts avec les projets existants en Nouvelle-Calédonie et en Polynésie, aux Samoa et Salomons.

Délai de mise en œuvre: Immédiat.

Recommandations finales

Le 'New Zealand Department of Conservation' et les 'Australian (Federal and State) Governments' National Parks and Wildlife Services' soient encouragés à être d'avantage impliqués sur des programmes de conservation dans les îles du Pacifique, notamment en permettant à leurs experts d'assister les gouvernements du Pacifique et en mettant en place des accords de partenariat.

SPREP et BirdLife encouragent les activités des Organisations Non Gouvernementales existantes (Associations…) ainsi que l'acquisition d'expertise par les institutions gouvernementales. Dans de nombreux pays, les ONG ont prouvé leur efficacité dans la gestion des projets de conservation de l'avifaune.

Il existe des besoins pour mettre en place des recensements d'oiseaux dans les îles de la région. Ces enquêtes devront inclure l'évaluation des prédateurs et les résultats finaux devront être publiés localement et dans des revues scientifiques. Beaucoup de ces îles hébergent des populations d'oiseaux de mer à un niveau internationalement important mais peuvent n'avoir jamais été visitées par des ornithologues.

Tous les projets financés par le SPREP devront inclure l'accroissement des compétences locales et le transfert des méthodes et du savoir faire.

SPREP recherchera localement des expertises pour conduire les projets dans les pays concernés ; si celles-ci ne sont pas disponibles, le projet sera mis en oeuvre en privilégiant l'accroissement de la formation et du savoir faire, en particulier pour la mise en oeuvre du recensement des populations d'oiseaux.

SPREP publiera des manuels sur les techniques de recensement ainsi que pour le suivi et la gestion des oiseaux, qui soient adaptés aux besoins régionaux et locaux.

SPREP développera un programme de sensibilisation sur la nécessite d'assurer la conservation de l'avifaune dans les nations de Mélanésie.

Les pays développant un programme stratégique national pour la biodiversité ("National Biodiversity Strategy and Action Plan") s'assureront que la conservation des oiseaux est une des actions prioritaires de ces plans d'action.

Les projets de conservation de l'avifaune s'appuieront sur les projets existants et rechercheront a s'insérer dans les plans stratégiques nationaux et les initiatives équivalentes.

Les projets locaux du SPREP chercheront à maximiser le travail en réseau en incluant le partage des compétences et des résultats acquis.

Les personnels impliqués dans les programmes régionaux de conservation de l'avifaune seront consultés et impliqués autant que faire se peut dans les autres projets gérés par le SPREP.

Les projets SPREP de conservation de l'avifaune prendront en compte le niveau taxinomique de la sous-espèce et s'intéresseront aux sous populations isolées.

Les recommandations finales de ce séminaire et les informations impliquant les pays français du Pacifique seront traduites en français. Ce principe

pourra s'appliquer à d'autres langues en fonction des besoins.

Dans chaque projet on devra inclure et budgéter des mesures destinées à évaluer la réussite du projet et l'adéquation des résultats aux objectifs initiaux.

Il conviendra de diffuser les résultats de chaque projet par le biais de publications scientifiques, ou à destination du grand public par des revues de vulgarisation (comme World Birdwatch) ainsi qu'auprès des communautés locales sous une forme appropriée à rechercher.

Le SPREP considère que certains problèmes sont traités plus efficacement à un niveau régional ou sous-régional.

Le SPREP encourage les ONG qui en ont la compétence à participer à la planification et à la réalisation des projets.

Le SPREP et BirdLife donneront la priorité à l'acquisition de financements importants (comme le 'Global Environment Facility') pour la mise en œuvre des projets de conservation de l'avifaune, comme cela est décrit dans les compte rendus des Séminaires sous-régionaux.

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Issues and options for bird conservation priorities in Melanesia and Nauru

Greg Sherley

1. Introduction

The purpose of this paper is to summarise the conservation status of bird species and conservation management needs for them in the six countries included in the Melanesian Avifauna Conservation Workshop (Fiji, Nauru, New Caledonia, Papua New Guinea, Solomon Islands, Vanuatu) held in Nadi, Fiji Islands, 5–10 March 2000. As presented to the workshop, conservation categories were those used in a draft of BirdLife International's *Birds to Watch 3* [now published as *Threatened Birds of the World* (BirdLife 2000)]. These listings have been updated here to conform to those in BirdLife (2000), where details of the criteria for the various categories may be found. The information will inevitably change as experts alter their opinion on the conservation status of individual species. However, the data present a generally accurate account of the relative situation between countries. While it is acknowledged that there is a certain amount of biological artificiality segregating species/topics by country, the reality is that funding and administrating the projects is best managed this way.

In the paper written for the Polynesian Avifauna Conservation Workshop held in Rarotonga, Cook Islands, 26–30 April 1999, species-by-species accounts were given. This has not been possible this time because of the relatively large number of species at risk and the paucity of information available for each one. In reviewing the information it became obvious that the conservation status and needs for most species were almost identical and need not be repeated. The distribution, population numbers and size, threats, and ability to cope with habitat loss or changes of most species were poorly known. These data are needed if appropriate conservation measures were to be taken. For a much smaller number of species, specific projects could be identified, such as those described in recovery plans.

The categories used to identify the conservation status of the species are those used in BirdLife (2000) which are identical to the IUCN categories. These categories may be used to identify high-priority species for conservation projects. The paper does not identify some types of generic projects such as: (1) specific important bird localities which are threatened by logging or similar activities and require conservation work, or (2) mitigating common threats such as illegal trade, hunting, interspecific avian competition, and avian diseases. It is intended that the participants to the Melanesian workshop will be able to review the information presented, provide more of their own, and generate a series of priority project briefs which they would like to see actioned as soon as possible. The project briefs should state the subject of the conservation project (species, area, topic, etc.), the problem, justification for work to be done, and should briefly outline the work that is required. These project briefs are probably only practically possible to write for the endangered, critically endangered species or other extremely high-priority problems (such as important bird areas, or other generic issues) and would all be considered urgent. The briefs will serve as the basis for the Regional Avifauna Conservation Programme's work plan for the next five years.

2. Species accounts

Fiji Islands

Species status

Extinct in the Wild

Bar-winged rail *Nesoclopeus poecilopterus* (1973?)

Threatened

Critically Endangered (n = 2)

Peregrine falcon *Falco peregrinus nesiotus* (not listed in BirdLife publications for Fiji)
Fiji petrel *Pseudobulweria macgillivrayi*

Endangered (n = 2)

Red-throated lorikeet *Charmosyna amabilis*
Pink-billed parrotfinch *Erythrura kleinschmidti*

Vulnerable (n = 10)

Shy ground-dove *Gallicolumba stairii*
Silktail *Lamprolia victoriae*
Ogea monarch *Mayrornis versicolor*

Polynesian storm-petrel *Nesofregetta fuliginosa* (not listed in BirdLife publications for Fiji)
Bristle-thighed curlew *Numenius tahitiensis*
Crimson shining-parrot *Prosopeia splendens*
Masked shining-parrot *Prosopeia personata*
Black-throated shrikebill *Clytorhynchus nigrogularis*
Rotuma myzomela *Myzomela chermesina*
Giant forest honeyeater *Gymnomyza viridis*

Lower risk

Near Threatened (n = 3)
Not necessarily in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Collared petrel *Pterodroma brevipes*
Tahiti petrel *Pseudobulweria rostrata*
Whistling dove *Ptilinopus layardi*

Least concern

Data Deficient (n = 1)
Not in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Long-legged thicketbird *Trichocichla rufa*

Generic conservation issues

1. Species requiring survey to determine conservation status (number, size and distribution of populations, whether populations are increasing or declining), threats and management needs (n = 6).

Note that many of the species in category 2, below require similar work.

Fiji petrel *Pseudobulweria macgillivrayi*
Ogea monarch *Mayrornis versicolor*
Peregrine falcon *Falco peregrinus nesiotus*
Pink-billed parrotfinch *Erythrura kleinschmidti*
Silktail *Lamprolia victoriae kleinschmidt*
Long-legged thicket bird *Trichocichla rufa*

2. Species threatened by hunting or illegal trade, habitat loss or degradation, introduced predators (n = 9).

These species need to be the subject of education initiatives, habitat reserves, legislative protection or, if it exists, compliance enforcement. Also includes species for whom tolerance of degraded habitat is unknown but is suspected to be little. Thus research is also needed into habitat requirements and the impact of predators on survival.

Shy ground-dove *Gallicolumba stairi*
Whistling dove *Ptilinopus layardi*
Black-throated shrikebill *Clytorhynchus nigrogularis*
Kadavu fantail *Rhipidura personata*
Kadavu honeyeater *Xanthotis provocator*
Bristle-thighed curlew *Numenius tahitiensis*
Polynesian storm-petrel *Nesofregetta fuliginosa*
Crimson shining-parrot *Prosopeia splendens*
Masked shining-parrot *Prosopeia personata*

Specific species recovery projects

These are well enough known for workers to embark on targeted specific projects.

Peregrine falcon *Falco peregrinus nesiotus*. Wild population possibly less than five pairs, captive breeding in train, future re-introduction and breeding requires funding, research, planning and implementation. Protection of nests of remaining breeding pairs if any, needed and continued annual surveys.

Silktail *Lamprolia victoriae*, two subspecies *L. v. victoriae* and *L. v. kleinschmidti*. The latter is apparently restricted range/threatened on Vanua Levu (a few sites on the south side of Natewa Peninsula). Study on status and ecology needed, translocation required and reserve to be created.

Declining species, unknown cause

These are species for which no known or speculated causes of decline can be identified.

Peregrine falcon *Falco peregrinus nesiotus*

Nauru

Species status

Threatened

Vulnerable (n = 2)
Bristle-thighed curlew *Numenius tahitiensis*
Nauru reed warbler *Acrocephalus rehsei*

Generic conservation issues

1. Species requiring survey to determine conservation status (number, size and distribution of populations, whether populations are increasing or declining), threats and management needs (n = 1).

Nauru reed warbler *Acrocephalus rehsei*

2. Species threatened by hunting or illegal trade, habitat loss or degradation, introduced predators (n = 1).

This species needs to be the subject of education initiatives, habitat reserves, legislative protection or, if it exists, compliance enforcement. Also includes species for whom tolerance of degraded habitat is unknown but is suspected to be little. Thus research is also needed into habitat requirements and the impact of predators on survival.

Bristle-thighed curlew *Numenius tahitiensis*

Specific species recovery projects

These are well enough known for workers to embark on targeted specific projects.

None.

Declining species, unknown cause

These are species for which no known or speculated causes of decline can be identified.

None.

New Caledonia

Species status

Threatened

Critically Endangered (n = 3)
New Caledonian rail *Gallirallus lafresnayanus*
New Caledonian owlet-nightjar *Aegotheles savesi*
New Caledonian lorikeet *Charmosyna diadema*

Endangered (n = 4)
Kagu *Rhynochetos jubatus*
Crow honeyeater *Gymnomyza aubryana*
Horned parakeet *Eunymphicus cornutus*
Uvea parakeet *Eunymphicus uvaeensis*

Vulnerable (n = 4)
Australasian bittern *Botaurus poiciloptilus*
New Caledonia nightjar *Eurostopodus exul*
Gould's petrel *Pterodroma leucoptera*
Fairy tern *Sterna nereis**

Lower risk

Near Threatened (n = 6)
Not necessarily in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Tahiti petrel *Pseudobulweria rostrata*
White-bellied goshawk *Accipiter haplochrous*
Cloven-feathered dove *Drepanoptila holosericea*
New Caledonia imperial-pigeon (giant pigeon) *Ducula goliath*
Beach thick-knee *Esacus magnirostris*
Pacific duck *Anas superciliosa**

Least concern

Data Deficient (n = 1)
Not in "projects" listings – some species are only known from one or two sites and therefore poorly described.

New Caledonian grassbird *Megalurulus mariei*

Generic conservation issues

1. Species requiring survey to determine conservation status (number, size and distribution of populations, whether populations are increasing or declining), threats and management needs (n = 3).

Note that many of the species in category 2, below require similar work.

New Caledonian rail *Gallirallus lafresnayanus*
New Caledonian owlet-nightjar *Aegotheles savesi*
New Caledonian lorikeet *Charmosyna diadema*

2. Species threatened by hunting or illegal trade, habitat loss or degradation, introduced predators. Therefore these species need to be the subject of education initiatives, habitat reserves, legislative protection or, if it exists, compliance enforcement. Also includes species for whom tolerance of degraded habitat is unknown but is suspected to be little. Thus research is also needed into habitat requirements and the impact of predators on survival (n = 4).

Horned parakeet *Eunymphicus cornutus*
New Caledonia nightjar *Eurostopodus exul*
Gould's petrel *Pterodroma leucoptera*
Tahiti petrel *Pseudobulweria rostrata*

Specific species recovery projects

These are well enough known for workers to embark on targeted specific projects.

Australasian bittern *Botaurus poiciloptilus*: exact population estimates, dispersal ability, re-introductions, impact of predation mitigated.

Kagu *Rhynochetos jubatus*: see specific reports including Hunt's PhD thesis (1997).

Crow honeyeater *Gymnomyza aubryana*: see results of Létocart's (unpubl.) radio tracking study and determine next steps.

Uvea parakeet *Eunymphicus uvaeensis*: Action Plan in draft at least should be consulted for detailed conservation projects.

Fairy tern *Sterna nereis*: Recovery Plan written for New Zealand population and information from New Caledonia population need to be used together to generate a specific proposal.

Declining species, unknown cause

These are species for which no known or speculated causes of decline can be identified.

New Caledonia lorikeet *Charmosyna diadema*

* Ekstrom *et al.* (2000) includes this species in this category.

Papua New Guinea

Species status

Threatened

Critically Endangered (n = 1)
Beck's petrel *Pterodroma becki*

Endangered (n = 2)
Yellow-legged pigeon *Columba pallidiceps*
White-eyed starling *Aplonis brunneicapilla*

Vulnerable (n = 29)
Southern cassowary *Casuarius casuarius*
Northern cassowary *Casuarius unappendiculatus*
Heinroth's shearwater *Puffinus heinrothi*
Salvadori's teal *Salvadorina waigiuensis*
Black honey-buzzard *Henicopernis infuscatus*
Sanford's fish-eagle *Haliaeetus sanfordi*
Slaty-mantled sparrowhawk *Accipiter luteoschistaceus*
Imitator sparrowhawk *Accipiter imitator*
New Britain sparrowhawk *Accipiter brachyurus*
New Guinea harpy eagle *Harpyopsis novaeguineae*
Woodford's rail *Nesoclopeus woodfordi*
New Britain bronzewing *Henicophaps foersteri*
Victoria crowned pigeon *Goura victoriae*
Southern crowned pigeon *Goura scheepmakeri*
Pesquet's parrot *Psittrachas fulgidus*
Fearful owl *Nesasio solomonensis*
Bismarck kingfisher *Alcedo websteri*
Moustached kingfisher *Actenoides bougainvillei*
Superb pitta *Pitta superba*
Black-faced pitta *Pitta anerythra*
Fly river grassbird *Megalurus albolimbatus*
Manus fantail *Rhipidura semirubra*
Long-bearded melidectes *Melidectes princeps*
Atoll starling *Aplonis feadensis*
Fire-maned bowerbird *Sericulus bakeri*
Macgregor's bird of paradise *Macgregoria pulchra*
Black sicklebill *Epimachus fastuosus*
Wahnes's parotia *Parotia wahnesi*
Blue bird of paradise *Paradisaea rudolphi*

Lower risk

Near Threatened (n = 39)
Not necessarily in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Dwarf cassowary *Casuarius bennetti*
Black-necked stork *Ephippiorynchus asiaticus*
Forest bittern *Zonerodius heliosylus*
New Britain goshawk *Accipiter princeps*
Doria's goshawk *Megatriorchis doriae*
Gurney's eagle *Aquila gurneyi*
New Britain rail *Gallirallus insignis*
New Guinea flightless rail *Megacrex inepta*
Yellowish imperial pigeon *Ducula subflavescens*
Nicobar pigeon *Caloenas nicobarica*
Far eastern curlew *Numenius madascariensis*
Bush stone-curlew *Burhinus grallarius*
Asian dowitcher *Limnodromus semipalmatus*
Beach thick-knee *Esacus magnirostris*
Crested cuckoo-dove *Reinwardtina crassirostris*
Meek's lorikeet *Charmosyna meeki*
White-naped lory *Lorius albidinuchus*
Striated lorikeet *Charmosyna multistriata*
Duchess lorikeet *Charmosyna margarethae*
Green-fronted hanging parrot *Loriculus tener*
New Britain kingfisher *Todiramphus albonotatus*
New Britain thrush *Zoothera talaseae*
Solomon Islands cuckoo-shrike *Coracina holopolia*
Olive-yellow robin *Poecilodryas placens*
Black and white monarch *Monarcha barbatus*
Manus monarch *Monarcha infelix*
White-breasted monarch *Monarcha menckei*
Cockerell's fantail *Rhipidura cockerelli*
Matthias fantail *Rhipidura matthiae*
White-bellied pitohui *Pitohui incertus*
Black munia *Lonchura stygia*
Yellow-eyed starling *Aplonis mystacea*
Archbold's bowerbird *Archboldia papuensis*
Pale-billed sicklebill *Epimachus bruijnii*
Ribbon-tailed astrapia *Astrapia mayeri*
Yellow-breasted bird of paradise *Loboparadisea sericea*
Goldie's bird of paradise *Paradisaea decora*
Emperor bird of paradise *Paradisaea guilielmi*
Bougainville crow *Corvus meeki*

Least concern

Data Deficient (n = 19)
Not in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Manus masked owl *Tyto manusi*
Bismarck masked owl *Tyto aurantia*
Chestnut-shouldered goshawk *Erythrotriorchis buergersi*
Mayr's forest rail *Rallina mayri*
Mayr's swiftlet *Collocalia orientalis*
Papuan swiftlet *Collocalia papuensis*
Papuan hawk-owl *Uroglaux dimorpha*
Starry owlet-nightjar *Aegotheles tatei*
Wallace's owlet-nightjar *Aegotheles wallaci*
Blue-black kingfisher *Todiramphus nigrocyaneus*
Little paradise-kingfisher *Tanysiptera hydrocharis*
Papuan whipbird *Androphobus viridis*
Bismarck thicketbird *Megalurulus grosvenori*
Bougainville thicketbird *Megalurulus llaneae*
Obscure berrypecker *Melanocharis arfakiana*

White-throated white-eye *Zosterops meeki*
White-chinned myzomela *Myzomela albigula*
Tagula honeyeater *Meliphaga vicina*
Tagula butcherbird *Cracticus louisiadensis*

Generic conservation issues

1. Species requiring survey to determine conservation status (number, size and distribution of populations, whether populations are increasing or declining), threats and management needs (n = 3).

Note that many of the species in category 2, below require similar work.

Beck's petrel *Pterodroma becki*
Heinroth's shearwater *Puffinus heinrothi*
Imitator sparrowhawk *Accipiter imitator*

2. Species threatened by hunting or illegal trade, habitat loss or degradation, introduced predators (n = 55).

These species need to be the subject of education initiatives, habitat reserves, legislative protection or, if it exists, compliance enforcement. Also includes species for whom tolerance of degraded habitat is unknown but is suspected to be little. Thus research is also needed into habitat requirements and the impact of predators on survival.

Salvadori's teal *Salvadorina waigiuensis*
Black honey-buzzard *Henicopernis infuscatus*
Sanford's fish-eagle *Haliaeetus sanfordi*
Slaty-mantled sparrowhawk *Accipiter luteoschistaceus*
New Britain sparrowhawk *Accipiter brachyurus*
New Guinea harpy eagle *Harpyopsis novaeguineae*
Immaculate rail *Nesoclopeus immaculatus*
Yellow-legged pigeon *Columba pallidiceps*
New Britain bronzewing *Henicophaps foersteri*
Victoria crowned pigeon *Goura victoriae*
Southern crowned pigeon *Goura scheepmakeri*
Fearful owl *Nesasio solomonensis*
Bismarck kingfisher *Alcedo websteri*
Moustached kingfisher *Actenoides bougainvillei*
Superb pitta *Pitta superba*
Black-faced pitta *Pitta anerythra*
Long-bearded melidectes *Melidectes princeps*
Atoll starling *Aplonis feadensis*
White-eyed starling *Aplonis brunneicapilla*
Fire-maned bowerbird *Sericulus bakeri*
Macgregor's bird of paradise *Macgregoria pulchra*
Black sicklebill *Epimachus fastuosus*
Wahnes's parotia *Parotia wahnesi*
Blue bird of paradise *Paradisaea rudolphi*
Pied goshawk *Accipiter albogularis*
Forest bittern *Zonerodius heliosylus*
New Britain goshawk *Accipiter princeps*
Gurney's eagle *Aquila gurneyi*
New Britain rail *Gallirallus insignis*
New Guinea flightless rail *Megacrex inepta*
Yellowish imperial-pigeon *Ducula subflavescens*
Thick-billed ground-pigeon *Trugon terrestris*
Yellow-bibbed lory *Lorius chlorocercus*
Singing parrot *Geoffroyus heteroclitus*
Ducorps's cockatoo *Cacatua ducorpsii*
Blue-eyed cockatoo *Cacatua opthalmica*
Brown lory *Chalcopsitta duivenbodei*
Duchess lorikeet *Charmosyna margarethae*
Green-fronted hanging parrot *Loriculus tener*
Violaceus coucal *Centropus violaceus*
Manus masked owl *Tyto manusi*
Bismarck masked owl *Tyto aurantia*
Papuan hawk-owl *Uroglaux dimorpha*
New Britain kingfisher *Todiramphus albonotatus*
Blue-black kingfisher *Todiramphus nigrocyaneus*
Little paradise-kingfisher *Tanysiptera hydrocharis*
New Britain thrush *Zoothera talaseae*
Black and white monarch *Monarcha barbatus*
Manus monarch *Monarcha infelix*
Cockerell's fantail *Rhipidura cockerelli*
Yellow-eyed starling *Aplonis mystacea*
Archbold's bowerbird *Archboldia papuensis*
Ribbon-tailed astrapia *Astrapia mayeri*
Emperor bird of paradise *Paradisaea guilielmi*
Bougainville crow *Corvus meeki*

Specific species recovery projects

These are well enough known for workers to embark on targeted specific projects.

Southern cassowary *Casuarius casuarius*. Threats known, education needed, habitat protection/reserves required.

Fly river grassbird *Megalurus albolimbatus*. Specific threats of introduced deer and pigs on grassland habitat, even in protected areas, with the result that scrubland is taking over grassland habitat.

Nicobar pigeon *Caloenas nicobarica*. Statistics of hunting catch required to manage island populations in PNG and Solomons.

Black munia *Lonchura stygia*. Specific threats of introduced deer and pigs on grassland habitat, even in protected areas, with the result that scrubland is taking over grassland habitat.

Declining species, unknown cause

These are species for which no known or speculated causes of decline can be identified.

Manus fantail *Rhipidura semirubra*. Possibly disease or competition with introduced species.

Solomon Islands

Species status

Threatened

Critically Endangered (n = 4)
Beck's petrel *Pterodroma becki*
Thick-billed ground-dove *Gallicolumba salomoni*
Makira moorhen *Gallinula silvestris*
Ghizo white-eye *Zosterops luteirostris*

Endangered (n = 3)
Santa Cruz ground-dove *Gallicolumba sanctaecrucis*
Yellow-legged pigeon *Columba pallidiceps*
White-eyed starling *Aplonis brunneicapilla*

Vulnerable (n = 16)
Heinroth's shearwater *Puffinus heinrothi*
Sanford's fish-eagle *Haliaeetus sanfordi*
Imitator sparrowhawk *Accipiter imitator*
Immaculate rail *Nesoclopeus immaculatus*
Woodford's rail *Nesoclopeus woodfordi*
Chestnut-bellied imperial pigeon *Ducula brenchleyi*
Palm lorikeet *Charmosyna palmarum*
Fearful owl *Nesasio solomonensis*
Moustached kingfisher *Actenoides bougainvillei*
Black-faced pitta *Pitta anerythra*
Sombre leaf warbler *Phylloscopus amoenus*
Atoll starling *Aplonis feadensis*
Ranongga white-eye *Zosterops splendidus*
Guadalcanal thrush *Zoothera turipavae*
Malaita fantail *Rhipidura malaitae*
Black-throated shrikebill *Clytorhynchus nigrogularis*

Lower risk

Near Threatened (n = 19)
Not necessarily in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Nicobar pigeon *Caloenas nicobarica*
Beach thick-knee *Esacus magnirostris*
Meek's lorikeet *Charmosyna meeki*
Black and white monarch *Monarcha barbatus*
Roviana rail *Gallirallus rovianae*
Solomon Islands cuckoo-shrike *Coracina holopolia*
Crested cuckoo-dove *Reinwardtoena crassirostris*
White headed fruit-dove *Ptilinopus eugeniae*
Red-bellied myzomela *Myzomela malaitae*
Vanikoro monarch *Mayrornis schistaceus*
Sandford's white-eye *Zosterops lacertosa*
Rusty-winged starling *Aplonis zelandica*
Guadalcanal thicketbird *Megalurulus whitneyi*
Banded white-eye *Zosterops vellalavella*
Dusky fantial *Rhipidura tenebrosa*
Cockerell's fantial *Rhipidura cockerelli*
Ochre-tailed flycatcher *Myiagra cervinicauda*
Kolombangara monarch *Monarcha browni*
Duchess lorikeet *Charmosyna margarethae*

Least concern

Data Deficient (n = 2)
Not in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Mayr's swiftlet *Collocalia orientalis*
Makira thrush *Zoothera margaretae*

Generic conservation issues

1. Species requiring survey to determine conservation status (number, size and distribution of populations, whether populations are increasing or declining), threats and management needs (n = 3).

Note that many of the species in category 2, below, require similar work.

Beck's petrel *Pterodroma becki*
Heinroth's shearwater *Puffinus heinrothi*
Imitator sparrowhawk *Accipiter imitator*

2. Species threatened by hunting or illegal trade, habitat loss or degradation, introduced predators (n = 25).

These species need to be the subject of education initiatives, habitat reserves, legislative protection or, if it exists, compliance enforcement. Also includes species for whom tolerance of degraded habitat is unknown but is suspected to be little. Thus research is also needed into habitat requirements and the impact of predators on survival.

Woodford's rail *Nesoclopeus woodfordi*
Immaculate rail *Nesoclopeus immaculatus*
Makira moorhen *Gallinula silvestris*
Chestnut-bellied imperial pigeon *Ducula brenchleyi*
Palm lorikeet *Charmosyna palmarum*
Fearful owl *Nesasio solomonensis*
Moustached kingfisher *Actenoides bougainvillei*
Black-faced pitta *Pitta anerythra*
Sombre leaf warbler *Phylloscopus amoenus*
Atoll starling *Aplonis feadensis*
White-eyed starling *Aplonis brunneicapilla*
Pied goshawk *Accipiter albogularis*
Crested cuckoo-dove *Reinwardtoena crassirostris*
Banded white-eye *Zosterops vellalavella*
Dusky fantial *Rhipidura tenebrosa*
Cockerell's fantial *Rhipidura cockerelli*
Ochre-tailed flycatcher *Myiagra cervinicauda*
Kolombangara monarch *Monarcha browni*
Black-throated shrikebill *Clytorhynchus nigrogularis*
Black and white monarch *Monarcha barbatus*
Duchess lorikeet *Charmosyna margarethae*
Ducorp's cockatoo *Cacatua ducorpsii*

Singing parrot *Geoffroyus heteroclitus*
Yellow-bibbed lory *Lorius chlorocercus*
Bougainville crow *Corvus meeki*

Specific species recovery projects

These are well enough known for workers to embark on targeted specific projects.

None.

Declining species, unknown cause

These are species for which no known or speculated causes of decline can be identified.

None.

Vanuatu

Species status

Threatened

Endangered (n = 1)
Santa Cruz ground-dove *Gallicolumba sanctaecrucis*

Vulnerable (n = 6)
Palm lorikeet *Charmosyna palmarum*
Royal parrotfinch *Erythrura regia*
Vanuatu scrubfowl *Megapodius layardi*
Vanuatu imperial pigeon *Ducula bakeri*
Chestnut-bellied kingfisher *Todiramphus farquhari*
Santo mountain starling *Aplonis santovestris*

Lower risk

Near Threatened (n = 4)
Not necessarily in "projects" listings – some species are only known from one or two sites and therefore poorly described.

Tanna fruit-dove *Ptilinopus tannensis*
Beach thick-knee *Esacus magnirostris*
Rusty-winged starling *Aplonis zelandica*
Guadalcanal thicketbird *Megalurulus whitneyi*

Least concern

Data Deficient (n = 0)
Not in "projects" listings – some species are only known from one or two sites and therefore poorly described.

None.

Generic conservation issues

1. Species requiring survey to determine conservation status (number, size and distribution of populations, whether populations are increasing or declining), threats and management needs (n = 2).

Note that many of the species in category 2, below require similar work.

Royal parrotfinch *Erythrura regia*
Chestnut-bellied kingfisher *Todiramphus farquhari*

2. Species threatened by hunting or illegal trade, habitat loss or degradation, introduced predators (n = 5).

These species need to be the subject of education initiatives, habitat reserves, legislative protection or, if it exists, compliance enforcement. Also includes species for whom tolerance of degraded habitat is unknown but is suspected to be little. Thus research is also needed into habitat requirements and the impact of predators on survival.

Santa Cruz ground-dove *Gallicolumba sanctaecrucis*
Vanuatu scrubfowl *Megapodius layardi*
Vanuatu imperial pigeon *Ducula bakeri*
Chestnut-bellied kingfisher *Todiramphus farquhari*
Santo mountain starling *Aplonis santovestris*

Specific species recovery projects

These are well enough known for workers to embark on targeted specific projects.

None.

Declining species, unknown cause

These are species for which no known or speculated causes of decline can be identified.

None.

3. Regional summary

See Table 1.

4. Generic conservation issues

Endemic Bird Areas

Endemic Bird Areas (EBAs) have been identified, categorised and ranked in Stattersfield *et al.* (1998). There is no need to restate their information except to relate the essential statistics which can be used to gauge the importance of single-species projects and those (obviously related) which involve habitat protection and/or restoration, and other conservation measures.

In Table 2, EBAs occurring in the six Micronesian countries are listed (Stattersfield *et al.* 1998). The first column shows the name used by Stattersfield *et al.* (1998), with abbreviations such as "W.", "N.", "H." and "L." meaning "West", "North", "High" and "Low" respectively. The priorities assigned to the EBAs included in this column in bold relate to the given priority ranking for conservation action. One of three categories have been assigned: Critical, Ur-

Table 1. Summary of single-species conservation status in Melanesia. Based on BirdLife (2000).

	Critically Endangered	Endangered	Vulnerable	Near Threatened	Data Deficient	Total
Fiji Islands	3	2	11	3	1	20
Nauru	0	0	2	0	0	2
New Caledonia	3	4	4	6	1	18
Papua New Guinea	1	2	29	39	19	90
Solomon Islands	4	3	16	19	2	44
Vanuatu	0	1	6	4	0	11
Total	11	12	68	71	23	185

gent or High. The priority is based on its biological importance and current threat levels. The second column gives an abbreviated version of the threats reported in Stattersfield *et al.* (1998). The third column refers to each EBA's biological importance on a scale of three (three being highest). This ranking is based on the EBA's number of restricted-range bird species (and whether they are shared with other EBAs), the taxonomic uniqueness of those species, and the size of the EBA. The "Current threat level" (score of three highest levels of threat) is based on the percentage of each EBA's restricted-range avifauna which are threatened and the categories of threat of these species. The fifth column describes the number of threatened (critically endangered, endangered and vulnerable) bird species that occur only in that EBA and the next column the total number of endemic species including ones that are not threatened. In the last column, two data are presented – the first describes the number of bird species found in the EBA referred to and also found in one or more other EBAs and the second similarly but also found in one or more Secondary Areas (SAs). A Secondary Area is an area which supports one or more restricted-range bird species, but does not qualify as an EBA because fewer than two species are entirely confined to it (Stattersfield *et al.* 1998).

Generic topics

Taxonomy

The taxonomy of the avifauna of the species in the Pacific region has generally not been sufficiently studied to be sure of the number of species which are at risk. For example, the Columbidae may include species which are unrecognised at present. This taxonomic research is fundamental to identifying which species require conservation work.

Conservation status

Conservation status refers to the number and size of populations still extant, their rate of decline if any, and the density of populations. Some analysis of the threats to the species is included in a description and the extent to which these threaten the species survival over a given period. This information is the minimum required to create project proposals for conservation management of the species and is, in itself, often the subject of a project proposal because there is simply so little known about the conservation status of species.

Options for conservation projects

1. Establish a bird survey group to determine the conservation status of little-known species, train government professionals, and involve locals in survey, and carry out allied work, as a core group enhanced with local public and local government support. Core group preferably funded by SPREP. Decide where this work should be focused first (e.g. Solomons, other critical EBAs). Survey group would be funded by SPREP and would serve as a nucleus for training local government and community personnel. The centrally organised and funded group is required to ensure consistency of method, standards and reliable reporting. The final order of survey may be dictated partly by the perceived urgency of critically endangered birds.
2. Pigeon and dove monitoring. Develop methods for systematically monitoring pigeons and doves which are declining. If these are also harvested, the monitoring method(s) should be integrated into monitoring harvesting so that changes due to human and non-human causes can be distinguished.

Table 2. Endemic Bird Areas in the Melanesian region. Summary data from Stattersfield et al. (1998).

Name/ Priority	Threats	Biol. importance	Current threat level	No. of threatened endemics	No. of endemics	No. present in other EBAs/SAs
Fiji **High**	Habitat loss, pest spp	2/3	1/3	5	24	0,11
W. Papua L.lands **High**	Moderate habitat loss	1/3	1/3	2	9	0,10
W. Papua H.lands **High**	Limited habitat loss	2/3	1/3	1	9	0,11
N. Papua H.lands **High**	Possible habitat loss	1/3	1/3	0	3	0,3
N. Papua L.lands **High**	Limited habitat loss	1/3	1/3	1	5	0,4
Adelbert/Huon Ranges **High**	Unquantified habitat loss	1/3	1/3	2	6	0,5
Cent. Papuan Mntns **Urgent**	Moderate habitat loss	3/3	1/3	5	39	0,14
South Papuan L.lands **High**	Limited habitat loss	1/3	1/3	0	3	0,3
Trans-Fly **High**	Moderate Habitat loss	1/3	1/3	1	3	0,3
Admiralty Islands **High**	Limited habitat loss	2/3	1/3	3	6	0,7
St Matthias Islands **High**	Possible habitat loss	1/3	1/3	0	2	0,6
New Britain + Ireland **High**	Moderate habitat loss	2/3	1/3	2	35	1,19
D'Entrecasteaux/ Trobriand Is **High**	Unquantified habitat loss	1/3	1/3	1	2	0,0
Louisiade Archip. **Urgent**	Moderate habitat loss	3/3	1/3	0	5	0,2
Solomon Grp **Critical**	Moderate habitat loss, pest species	3/3	2/3	13	61	1,17
Vanuatu + Temotu **High**	Moderate habitat loss	1/3	1/3	6	15	0,15
N. Caledonia **Urgent**	Major habitat loss	2/3	2/3	8	22	0,9

3. Specific cases of public awareness and education linked to particular problems such as overharvesting of endemic Columbids and seabirds or particular breeding species which are affected by human practices.
4. Scientific investigation of particular species. Some critical cases include birds which almost certainly will become extinct and therefore need urgent investigation before they disappear forever.
5. Commission species recovery plans for all critically endangered species and for endangered species currently listed which may qualify for critical status (*sensu* BirdLife 2000) following a conservation status survey.
6. Establish recovery programmes for species which qualify for critical and endangered status after the conservation status survey, based on the threats to their survival.

Generic topics reported from the Polynesia workshop

Various generic issues identified at the Polynesia workshop, Rarotonga, April 1999 (see this volume, pages 8–10) are considered to have relevance to the Micronesia sub-region.

5. Acknowledgements

Thanks to Alison Stattersfield (BirdLife International) for permission to use drafts of *Birds to Watch 3* [now published as *Threatened Birds of the World* (BirdLife 2000)] and therefore the latest categories for the conservation status of bird species in Melanesia. Also to Ms Julia Jones for kindly lending me a late draft of their excellent Project Diadema '98 (New Caledonia) report [now published as Ekstrom *et al.* 2000]. Thanks to Anna Tiraa for helping to compile other information.

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Micronesia workshop, Guam, 5–10 November 2000

1. Priority avifauna conservation projects

Commonwealth of the Northern Mariana Islands (CNMI)

Assessment of impacts on the Rota bridled white-eye

Problem: Abundance and distribution of the Rota bridled white-eye *Zosterops conspicillata* (Critically Endangered*) has declined over the last two decades. Causal factors have not been determined.

Justification: No management strategy can be formulated without first identifying factors causing the decline of this species. Captive breeding has also been unsuccessful to date.

Action: Initiate a comprehensive study of the species, to include reproductive requirements, nesting success, habitat use and interspecies interactions.

Priority: Extreme.

Establish a monitoring programme for populations of the Mariana crow on Rota

Problem: Trends in abundance and distribution of the Mariana crow *Corbus kubaryi* (Endangered) are unclear, but the population appears to be declining.

Justification: Information on populations is needed to take management actions on Rota. This information is also urgently needed on Guam, where translocations from Rota are under way.

Actions: (1) Initial assessment of the species' population status by US Fish & Wildlife Service in consultation with all agencies represented in the Recovery Team. (2) Design a population monitoring programme to determine trends in abundance and distribution. (3) Undertake monitoring for three to five years.

Priority: Extreme.

Programme for the control of cats and rats on Rota

Problem: It is strongly suspected that cats and rats are affecting breeding success of native threatened species.

Justification: The Mariana crow (Endangered) and Rota bridled white-eye (Critically Endangered) are declining and Guam rail *Gallirallus owstoni* (Extinct in the Wild) is currently being introduced. Continued success of these species depends on an understanding of the impact of cats and rats, coupled with a control programme.

Action: Develop and conduct control measures for cats and rats on Rota in areas where rails, crows, and white-eyes exist.

Priority: Extreme.

Population status and natural history of the golden white-eye

Problem: Insufficient knowledge of the golden white-eye *Cleptornis marchei* (Vulnerable) exists to allow its conservation.

Justification: Natural history and population information is required to implement future management plans, specifically if captive breeding measures are necessary. Brown tree snakes, which would threaten this species, may already be established.

Actions: (1) Monitor population trends of this species through detailed censuses and conduct a comprehensive study on its natural history. (2) Develop captive breeding protocols.

Priority: Pressing.

CNMI and Palau

Assessment of the abundance and distribution of the Micronesian megapode

Problem: Insufficient information on populations of the Micronesian megapode *Megapodius laperouse* (Endangered) exists in the Marianas to choose between a range of possible management actions. In Palau, this species suffers from many threats. They include egg harvesting and predation by humans, introduced monitor lizards (*Varanus indicus*), pigs, cats and dogs, as well as human disturbance to nesting grounds.

Justification: Available information is inadequate to implement conservation initiatives. Examples of possible management options include translocation, control of predators or ungulates, and changes to current legislation or policy. There is a particular need for up-to-date information on the effects of invasive species on the Micronesian megapode.

* The categories used to identify the conservation status of species are those used in BirdLife (2000), which are the IUCN Red List categories.

Actions: (1) After obtaining technical advice, initiate a monitoring programme for this species, with particular reference to key threatening processes. (2) Contribute to awareness and enforcement of the protected status of this species. (3) Conduct censuses. (4) Develop a protected areas programme.

Priority: Pressing.

Assistance for the development of a conservation NGO in Rota

Problem: There is a lack of structure to empower local people in Rota to participate in conservation of natural resources and to make decisions regarding the environment.

Justification: Given how poor public opinion is of bird conservation, there is clear need for an NGO. Similar organisations have been formed in Palau and Pohnpei and strong interest has been expressed in Rota. Rota is also important in terms of biodiversity, being home to many threatened endemic bird species.

Actions: (1) Hold a meeting among stakeholders (including advisory organisations such as the Palau Conservation Society) to determine the interest and feasibility of establishing an conservation NGO in Rota. (2) Secure necessary training and assistance from regional and international organisations. (3) Launch the organisation.

Priority: Pressing.

Federated States of Micronesia (FSM)

Re-evaluation of conservation status of Near Threatened species and identification of threats to them

Problem: The most recent survey for the plain white-eye *Zosterops hypolais*, Yap monarch *Monarcha godeffreyi*, Yap olive white-eye *Z. oleagineus*, and white-throated ground-dove *Gallicolumba xanthonura* was conducted in 1983, making their current status, including abundance and distribution, unclear.

Justification: Despite indications of trends, high-quality information does not exist for these species. Although all of them are listed as Near Threatened, it is likely that their populations have declined in the intervening years since the last survey.

Actions: (1) Survey and study these species using existing methods for standardised sampling (e.g. circular plots) used locally by the US Fish & Wildlife Service. (2) Identify threatening processes to key species.

Priority: Pressing.

Promoting protection of Chuuk's forests through community pride in the Chuuk monarch – A conservation education campaign in Chuuk State

Problem: There currently exists very limited conservation awareness within Chuuk (Truk) regarding the value of local forests and avifauna. A rapidly increasing human population presents serious threats. Efforts to create community awareness about the environment have so far been small or non-existent.

Justification: Chuuk's forests are home to the Faichuk white-eye *Rakia ruki* (Critically Endangered), and the Chuuk monarch *Metabolus rugensis* (Endangered). A lack of technical expertise, resources and funding prevent development and implementation of conservation and awareness programmes. There has been strong interest from Government to implement a campaign using the Chuuk monarch as a flagship species.

Action: Implement an intensive conservation education campaign, using the Chuuk monarch as the flagship species to promote community pride in endemic birds and convey key messages about forest conservation.

Priority: Pressing.

Ecological restoration and establishment of Ant Atoll Reserve on Pohnpei

Problem: High density of rats may be causing the decline of the most important seabird breeding islands in the eastern Carolines. Seabirds are regularly hunted on the atoll, and pigeons may also be at risk.

Justification: The Conservation Society of Pohnpei will work with the local landowner to designate Ant Atoll as a reserve. This goal is practicable because the landowning family is involved and supportive. The site is appropriate because Micronesian pigeons *Ducula oceanica* are well established, and it is the breeding ground for thousands of masked boobies *Sula dactylatra*, brown and black noddies *Anous stolidus* and *A. minutus*, greater and lesser frigatebirds *Fregata minor* and *F. ariel*,and red-tailed tropicbirds *Phaethon rubricauda*. It may also be a suitable site to translocate the Caroline Islands ground-dove *Gallicolumba kubaryi* (Vulnerable).

Actions: (1) Work with landowner to designate Ant Atoll as a reserve. (2) Develop and implement a plan of action for management, including rat eradication, in conjunction with the local landowner. (3) Design and implement a monitoring scheme for priority bird species. (4) Implement a policing system.

Priority: Pressing.

Protection of Mount Winipot (Chuuk) montane forest

Problem: Mount Winipot (Chuuk) montane forest is subject to invasive species and continually encroaching deforestation. It is the only habitat for the Chuuk monarch *Metabolus rugensis* (Endangered) and the Faichuk white-eye *Rukia ruki* (Critically Endangered). Protection initiatives have lost momentum in recent years and need to be revitalised.

Justification: This site is the only substantial original forest remnant left in the Chuuk group, and 13 or 14 regionally endemic bird species reside there. It is one of the highest areas of biodiversity of the subregion.

Actions: (1) Re-survey the area and re-evaluate the conservation status of the endemic birds and other species in the area. (2) Develop a proposal to the state/municipal governments for the area to be managed as a reserve.

Priority: Pressing.

Conservation status and action plan for Threatened and Near Threatened species

Problem: It is known that the following species occur at low densities but it is uncertain whether they are declining or what is the nature or the identity of potential and current threats: Pohnpei mountain starling *Aplonis pelzelni* (Critically Endangered), short-eared owl *Asio flammeus ponapensis* (threatened subspecies), long-billed white-eye *Rukia longirostra* (Near Threatened), Caroline Islands ground-dove *Gallicolumba kubaryi* (Vulnerable), Caroline Islands reed-warbler *Acrocephalus luscinia* (apparent decline).Conservation action plans are needed for at least some of these species.

Justification: All these species are Threatened or Near Threatened. Some may go extinct if action is not taken. Gathering more information is fundamental to making informed management decisions.

Actions: (1) Determine the status of the these species. (2) Develop recommendations to prevent extinction and recover the species. (3) Develop a video about this project for regional conservation education. (4) Implement recommendations.

Priority: Extreme.

FSM, Marshall Islands and Palau

Conservation of the Micronesian pigeon in FSM, Marshall Islands and Palau

Problem: Many factors threaten the Micronesian pigeon *Ducula oceanica* throughout its range, including hunting and trade of pigeons as food, as well as cultural issues. In addition, there are inadequate data on population size and trends coupled with inadequate public awareness and law enforcement.

Justification: These problems have resulted in rapid declines of this species across its range.

Action: Establish a regional conservation programme which would include public awareness, capacity-building, research, law enforcement, trade control, and investigation of captive breeding for food.

Priority: Pressing.

Establishment of standardised permanent monitoring programme for forest birds on FSM, Marshall Islands and Palau

Problem: The last comprehensive surveys were carried out nearly 20 years ago. Since that time, significant habit loss has occurred, and invasive species have made substantial inroads into all islands/habitats.

Justification: About 50 bird species are resident in forests of Palau, eight are endemic to Palau and 4 species classified as threatened or near threatened. The construction of the 51-mile US$150 million perimeter road represents a significant new threat. Up to 11 species of birds on FSM, and one on Marshall Islands require standardised monitoring, using local resources. There is currently a lack of expertise and resources to carry out any of this work.

Actions: (1) Hold local workshops for partners to train observers in field methods, begin data gathering and to build a base for continuity over time and among locations. (2) Using, in part, Engbring's surveys (see Engbring and Pratt 1985), periodically re-survey birds along the original transects where possible. (3) Using local capability, establish island-specific data processing, according to circumstance.

Priority: Extreme in Palau, Pressing in FSM (Extreme in Kosrae) and the Marshall Islands.

Programme of quarantine and protection to prevent the establishment of the brown tree snake in Micronesia, with particular reference to FSM, Marshall Islands and Palau

Problem: Air and ship transport between Guam, Saipan and the rest of Micronesia presents an ongoing pathway for the brown tree snake (*Boiga irregularis*) to be transported to new localities where, if established, it will extirpate native species. Governments have been slow to take action in providing support, and the solution to the problem is largely underfunded.

Justification: The brown tree snake is responsible for an ecological catastrophe for Guam. It has extirpated or made extinct 75% of the island's forest bird species and caused continuing declines in reptiles,

bats and other birds. The loss of these pollinators and seed dispersers threatens native forest recovery and perpetuation. Using this example, it is critical to keep this species from colonising new areas where it is certain to cause similar problems. Although past prevention methods have been useful, they have not been kept current or active. The regular transport of cargo from Guam and Saipan to the rest of Micronesia makes the eventual invasion of the snake a strong probability, underscoring the need for action.

Actions: (1) Develop and implement a model quarantine programme against the brown tree snake, perhaps similar to that on Saipan. (2) Re-evaluate, and reinstate previous programmes that have gone into disuse. (3) Develop and implement a public awareness campaign focusing on positive aspects and urgency of protection activities. (4) Request technical assistance from Guam and CNMI to advise on necessary action.

Priority: Pressing.

Improving wildlife conservation legislation in FSM, Marshall Islands and Palau

Problem: Laws protecting wildlife in Micronesia are inadequate or non-existent. Also, FSM and Republic of Marshall Islands do not have agencies dedicated to wildlife and aquatic resource management.

Justification: If we are to improve wildlife management and conservation in the three nations, enabling legislation must be introduced to establish wildlife management agencies, and wildlife legislation must be improved considerably.

Actions: (1) Carry out a legislative review of the wildlife conservation laws of the three countries. (2) Develop model wildlife conservation laws. (3) Develop model enabling legislation establishing wildlife resource management agencies in the FSM and Marshall Islands.

Priority: Pressing.

Guam

Promoting recolonisation of Guam swiftlet caves, using area-wide snake control

Problem: The Guam swiftlet population (*Collocalia* [*vanikorensis*] *bartschi* (Endangered)) is limited to two nesting caves on Guam, leaving the population vulnerable to detrimental stochastic events and predation by brown tree snakes.

Justification: The brown tree snake (*Boiga irregularis*) has eliminated Guam swiftlets from all but two caves on Guam, and population expansion is limited by a lack of secure nesting sites.

Action: Control snakes at active and potential nesting caves with perimeter fencing, trapping and baiting.

Priority: Pressing.

Repatriation of the endemic Guam rail from captivity

Problem: The existing area for Guam rail *Gallirallus owstoni* (Extinct in the Wild) is small and predation pressures are poorly understood.

Justification: There is currently only one 60-acre area where Guam rail exists in the wild. Any serious attempt to re-establish this species requires more sites where rails can persist (i.e. sufficiently free from predation by invasive pests, such as brown tree snakes).

Actions: (1) Identify suitable locations for release and establishment of wild populations under a range of predation regimes. (2) Repatriate the Guam rail. (3) Determine the maximum densities of brown tree snakes under which a non-enclosed population of rails would remain viable.

Priority: Pressing.

Development of a captive breeding facility on Guam for Micronesian birds

Problem: There are insufficient facilities on Guam to breed native birds (e.g. Micronesian kingfisher *Halcyon cinnamomina* and golden white-eye *Cleptornis marchei*) for conservation action.

Justification: Despite 15 years of effort in zoos in the continental USA, attempts to breed the Micronesian kingfisher (Guam subspecies Extinct in the Wild) have not been completely successful. In addition, the golden white-eye (Vulnerable) is still in sufficient numbers to make it suitable for establishment of a captive population. There are also many environmental requirements which do not occur in captive breeding facilities on the US mainland. This facility will also serve as a sub-regional service.

Actions: (1) Build a captive breeding facility for Micronesian birds. (2) Staff this facility, using outside expertise and local trainees.

Priority: Extreme.

Construction of snake barriers around Guam ports of exit

Problem: Transport of brown tree snakes (*Boiga irregularis*) from Guam and other islands poses a catastrophic threat to Pacific island birds and other animals.

Justification: The accidental introduction of just one gravid female would result in the destruction of an island's avifauna. Barriers are needed to limit ingress

of snakes to ships and aircraft travelling among islands. Concrete barriers are the most durable type and require the least ongoing maintenance.

Actions: Construct snake barriers around Guam ports of exit (Andersen Air Force Base, A. B. Won Pat Airport, commercial port and naval station docks). Concrete barriers were suggested as a successful option.

Priority: Extreme.

Guam and CNMI

Mariana Islands avifauna monitoring programme

Problem: There is a need to monitor Mariana Islands forest bird communities using standardised methods in order to determine long-term trends in abundance and distribution, and compare information among locations.

Jusification: It is necessary to use standardised surveys to detect changes in avifauna composition and population trends. This information is necessary for management decisions.

Actions: (1) Create and implement an avifauna monitoring and and assessment programme for CNMI and Guam. (2) Link with other similar programmes in the sub-region.

Ungulate control on Guam and CNMI

Problem: Feral ungulate populations are destroying native forest habitat, preventing its regeneration and changing species composition.

Justification: Habitat degradation must be stopped to enable successful re-introductions of threatened birds and to ensure the survival of resident species.

Actions: (1) Enclose areas of forest, to be identified. (2) Remove ungulates contained within the enclosures. (3) Monitor forest recovery. (4) This should be linked to other related projects in the area.

Priority: Pressing.

Guam and surrounding islands

Implement high-priority actions for brown tree snake control

Problem: The presence of brown tree snake (*Boiga irregularis*) on Guam poses a continual threat to birds across the Pacific.

Justification: There is an agreed plan of action for control of the brown tree snake, which is underresourced. This project would address two of the highest-priority actions.

Actions: (1) Develop and implement interdiction protocols for other Pacific islands which are at risk of accidental introductions of brown tree snakes. (2) Implement unfunded components of the brown tree snake control plan.

Priority: Extreme.

Kiribati

Conservation of seabirds on Kiritimati Island

Problem: The 18 species of seabirds breeding on Kiritimati Island are all in varying rates of decline due to poaching, cat and rat predation. The issues are: (1) the conservation status of the various colonies is incompletely known, (2) methods for data collection on seabirds and cats are inadequate, (3) technical expertise is not available locally to establish adequate protection measures and (4) there are potential threats from infrastructural development and social impacts from the Japanese Space Agency HOPE X space vehicle recovery facility.

Justification: Kiritimati Island is considered one of the most important seabird locations in the world because of the presence of at least 18 species of breeding seabirds (Watling, unpublished report to SPREP). Poaching and cat/rat predation is causing a dramatic decline in bird numbers. Thus urgent action is required. Training existing Wildlife Conservation Unit officers in modern wildlife management and public education techniques would reduce the risks to breeding seabirds from cat and rat predation, and poaching by local islanders.

Actions: (1) Train staff of the Wildlife Conservation Unit in seabird survey and monitoring, cat and rat control, and public education techniques. (2) Action described in (1) needs to be implemented in collaboration with agencies responsible for implementing any wildlife management work associated with the HOPE X Environment Management Protection Plan.

Priority: Extreme.

Marshall Islands

Awareness programme promoting bird conservation and establishment of reserve areas, using Jaluit as a model island

Problem: Sanctuaries for pigeons and seabirds are required on islands where populations of these species have declined due to bombing during WWII and subsequent nuclear testing, as well as the introduction of invasive species.

Justification: A South Pacific Biodiversity Conservation Programme (SPBCP) Conservation Area al-

ready exists on Jaluit. It is thus a good location to create a pilot project to design a reserve to promote population recovery and sustainable harvesting.

Action: Work with SPBCP, Jaluit Conservation Area Support Officer, and the Environmental Protection Agency to include bird conservation in the Conservation Area Management Plan in conjunction with the Regional Avifauna Conservation Programme.

Priority: Pressing.

Monitoring bristle-thighed curlews wintering in the Marshall Islands

Problem: The bristle-thighed curlew *Numenius tahitiensis* (Vulnerable) is threatened by predation and hunting on its wintering islands in the tropical Pacific.

Justification: The last asssessment of bristle-thighed curlews wintering in the Marshall Islands estimated over 300 birds. (The world population is estimated to be 17 000 birds, but no more than 400 are known from any one wintering island.)

Actions: (1) Undertake feasibility study, with respect to the cost of visiting multiple outlying islands and select survey islands. (2) Train local surveyors. (3) Design and implement a monitoring programme. (4) Assess threats. (5) Initiate any necessary conservation action. (6) Consider expansion to other islands or countries.

Priority: Pressing.

Palau

Technical assistance to the Government of Palau to assist in planning and development of eradication projects

Problem: Technical assistance is required to help in planning and developing a national eradication programme covering cats, dogs, pigs, monkeys, monitor lizards, and cockatoos, in addition to rats. There is also a need for heightened public awareness of these issues.

Justification: The National Government of Palau has expressed concern over the increasing threats from invasive species on the islands. In addition to environmental issues, human health and welfare (from destruction of local gardens) are compromised by alien invasive species. Rats are a particularly serious threat in the Rock Islands of Koror. Among those species to suffer is the Micronesian megapode *Megapodius laperouse* (Endangered).

Action: Request the New Zealand Department of Conservation, DOC (in collaboration with the US Fish & Wildlife Service), to design a programme. As part of this, DOC should assess the feasibility and costs of eradicating invasive species from the Palau Islands. The Southwest Islands will be addressed in a second phase.

Priority: Extreme.

Capacity building for information gathering and collection in the forests of Babeldaob

Problem: Insufficient data exist on terrestrial flora and fauna to assess the effects of destructive activities such as logging and wildfires on avifauna populations on Babeldaob. There is no mechanism in place to allow for continued monitoring. Moreover, impending large-scale development as a result of construction of a perimeter highway seriously threatens forest ecosystems. There is currently a low level of community awareness regarding potential negative impacts from road construction and related developments on avifauna and forests.

Justification: Palau has at the moment very limited technical capacity, human resources and funding to carry out appropriate terrestrial scientific surveys. The forests of Babeldaob are the habitat for many endemic birds and the following threatened birds: Micronesian megapode *Megapodius laperouse* (Endangered), Palau ground-dove *Gallicolumba canifrons* (Near Threatened), Nicobar pigeon *Caloenas nicobarica* (Near Threatened), giant white-eye *Megazosterops palauensis* (Near Threatened).

Actions: (1) Secure assistance to build technical capacity in agencies and communities. (2) Identify Palauan students of environmental sciences currently studying abroad to carry out and coordinate survey work as interns. (Technical experts will work with interns to build community capacity to carry out survey work.) (3) Conduct a series of community meetings to identify key concerns.

Priority: Extreme.

Regional

Regional identification and documentation of globally significant sites for biodiversity conservation through the Important Bird Areas process

Problem: There is no systematic synthesis of the key areas for bird and other biodiversity conservation in the region, and this hinders the ability of national governments and intergovernmental agencies to identify priorities for site-based conservation.

Justification: National Biodiversity Strategy and Action Plans (NBSAPs) and the provisions under the United States Endangered Species Act offer opportunities to feed this information into mechanisms

which will have significant impact. The process of putting sites into a global context helps both governments and local communities to appreciate and value their biodiversity heritage. In addition to species-specific research and actions, site-based measures are crucial to long-term *in situ* survival of globally threatened species and seabird colonies in the region.

Actions: (1) Establish a regional steering committee. (2) Liaise with NBSAP teams and other priority setting projects (such as Conservation International's 'hotspots' programme). (3) Undertake national projects as joint NGO–government initiatives in key countries – including community awareness and survey programmes. (4) Undertake desk-based research in the remaining countries.

Priority: Pressing.

Micronesia including Nauru

Bird resource information package for Micronesia, including a resource textbook

Problem: An accessible information source on the biology, conservation and identification of birds for schools, villages and other stakeholders does not currently exist. Such a work would need to be comprehensive, readable and free to non-profit organisations.

Justification: No single resource is available on the conservation biology and identification of birds for non-profit institutions and schools.

Actions: (1) Determine appropriate target audience. (2) Develop a bird resource textbook. (3) This could be supplemented by a CD including bird calls, as well as a Micronesian poster showing birds and their habitats. (4) Determine appropriate recipients.

Priority: Pressing.

2. Workshop recommendations

It was suggested that all recommendations be tabled at the next full SPREP Meeting.

It must be made clear that the brown tree snake (BTS - *Boiga irregularis)* causes ecological catastrophes, including extinction and extirpation of native island bird species. It is currently impossible to eradicate the snake once established. Highest priority should be given to the containment, control and eradication of this invasive species. Containment of the BTS at their source (Guam/Saipan and their native range) is more cost effective than the removal of established populations. For this reason, efforts to deal with the problems associated with this species should first seek solutions at their source. The success of Pacific islands avifauna conservation is contingent upon BTS containment.

Governments should commit themselves to full implementation of bird conservation projects, promoting environmentally sound development, informing the public on bird conservation priorities and to promoting and facilitating community participation.

SPREP and BirdLife International should assist in securing funds and technical assistance to Micronesia for avifauna conservation projects.

Micronesian governments should promote regional cooperation on bird conservation.

The Governments of FSM and Marshall Islands are encouraged to establish fish and wildlife management agencies to oversee and manage their nations' respective terrestrial faunal biodiversity.

All Micronesian SPBCP-sponsored/assisted Conservation Area Projects (CAP) (Jaluit, Kosrae/Utwa Walung Marine Park, Pohnpei Watershed, Palau Rock Islands, and Palau Ngaremeduu) should be encouraged to include bird conservation.

SPREP should seek opportunities to connect avifauna conservation and management projects with climate change initiatives (e.g. Pacific Islands Climate Change Asistance Programme).

SPREP should attempt to consolidate resources and professional expertise, to get the most out of the limited funds.

Public education targeting the benefits of conservation should be emphasised where possible, such as the retention of cultural heritage, alternative employment opportunities, and maintenance of a clean environment.

SPREP and BirdLife International should assist national agencies to identify and prioritise areas of greatest conservation need.

Information and recommendations from this workshop should be given to government agencies, private sector groups and the general public to generate avifauna conservation and sustained utilisation of avifauna resources.

Recommendations from the Regional Avifauna Strategy should be incorporated into National Avifauna Strategies.

SPREP and BirdLife International should encourage and support opportunities for conservation education at colleges and universities in Micronesia, emphasising regional cooperation.

All SPREP-funded education and awareness activities should show clear linkages to measurable goals and conservation priorities.

The workshop recognises that the birds of Micronesia indicate the health of island environments and that there is a need for influencing the attitude of the local communities to be willing to practise bird conservation. Thus promoting bird conservation will engender conserving the whole ecology of islands.

4. References

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Issues and options for bird conservation priorities in Micronesia

Greg Sherley

1. Introduction

The purpose of this paper is to summarise the conservation status of bird species and conservation management needs for the six countries included in the Micronesian Avifauna Conservation Workshop (Guam, Commonwealth of Northern Mariana Islands, Federated States of Micronesia, Palau, Marshall Islands, Kiribati) held in Guam, 5–10 November 2000. The information is based on *Threatened Birds of the World* (BirdLife 2000). Although this information will inevitably change as experts alter their opinion on the conservation status of individual species, it gives an accurate indication of the relative situation between countries. While it is acknowledged that there is a certain amount of biological artificiality segregating species/topics by country, the reality is that funding and administrating the projects is best managed this way. The discussion is restricted to avifauna in Member States of the South Pacific Regional Environment Programme because the Regional Avifauna Conservation Programme under which this workshop has been organised is mandated only to these States.

In the paper written for the Melanesia workshop (this volume, pages 30–39), species-by-species accounts were not given because of the large number of birds, the similarity of issues relating to each species, and the need for brevity in the review. However, in this review, single accounts have been given, as in the review for the Polynesia workshop (pages 10–17). Conservation status rankings adhered to are those given in BirdLife (2000) but, in addition, species ranked by the Guam Government and the US Fish & Wildlife Service have been cited for the Commonwealth of the Northern Mariana Islands and Guam.

The categories used to identify the conservation status of the species are those used in BirdLife (2000), which are also the IUCN Red List categories. These rank the global status of all bird species, but not subspecies or national or local populations of more widespread species, into the following objective categories:

NE Not Evaluated,
DD Data Deficient (insufficient information to categorise),
LC Least Concern (threat to species much less severe than defined for VU),
NT Near Threatened (threat to species close to that defined for VU),
VU Vulnerable,
EN Endangered,
CR Critically Endangered,
EX Extinct,
EW Extinct in the Wild.

These categories may be used to identify high-priority species for conservation projects. The present paper does not identify some types of generic projects such as: (1) specific important bird localities which are threatened by logging or similar and need conservation work, or (2) reducing common threats such as illegal trade, hunting, interspecific avian competition and avian diseases. It was intended that the participants to the Micronesian workshop would be able to review the information presented, provide more of their own, and generate a series of priority project briefs which they would like to see implemented as soon as possible. The project briefs developed stated the subject of the conservation project (species, area, topic, etc.), the problem, justification for work to be done, and briefly outlined the work that is required. These project briefs are probably only practically possible to write for the endangered, or critically endangered species or other extremely high-priority problems (such as important bird areas, or other generic issues) and would all be considered urgent. The briefs will serve as the basis for the Regional Avifauna Programme's work plan for the next five years.

2. Species accounts

Commonwealth of the Northern Mariana Islands (CNMI)

Species status

Threatened

Critically Endangered (n = 1)

This species is listed by US Fish & Wildlife Service as Endangered and by BirdLife (2000) as Critically Endangered.

Rota bridled white-eye *Zosterops rotensis* (*Z. c. conspicillata* is the name used by US Fish & Wildlife Service).

Endangered (n = 8)
Micronesian megapode *Megapodius laperouse**
Guam swiftlet *Collocalia bartschi*
Nightingale reed-warbler *Acrocephalus luscinia**
Mariana crow *Corvus kubaryi*
Mariana mallard *Anas platyrhynchos oustaleti*
Common moorhen *Gallinula chloropus guami*
Micronesian starling *Aplonis opaca guami*
Micronesian honeyeater *Myzomela rubrata saffordi*

Vulnerable (n = 3)
Golden white-eye *Cleptornis marchei*
Tinian monarch *Monarcha takatsukasae*
Bristle-thighed curlew *Numenius tahitiensis*

Lower risk

Near Threatened (n = 2)
White-throated ground-dove *Gallicolumba xanthonura**
Mariana fruit-dove *Ptilinopus roseicapilla*

Species summaries of conservation status

Mariana crow *Corvus kubaryi*
See the species account in the Guam section

Rota bridled white-eye *Zosterops rotensis* (or *Z. c. conspicillata* used by US Fish & Wildlife Service)
This species is endemic to Rota and its range and population size have contracted dramatically. Its ecology is not well understood, nor are some of the reasons for its decline. The black drongo *Dicrurus macrocercus* is implicated in the decline due to its predatory behaviour but the ship rat *Rattus rattus* may also be a predator. Extensive habitat loss and modification has occurred following cyclones and agricultural development and this may account for most of the decline. If the brown tree snake were accidentally introduced, it would probably present a further threat. Habitat which may suit the white-eye is earmarked for protecting the Mariana crow. Ecological research (including breeding and habitat requirements), monitoring, habitat protection, and quarantine against brown tree snake are needed.

Micronesian megapode *Megapodius laperouse*
Although it is extinct on Guam, it is still extant on Palau as well as CNMI. The Palau race may be locally common on various islands, and the Northern Mariana race *M. l. laperouse* is mainly restricted to islands north of Saipan. Small populations occur on Agiguan, Tinian and Saipan, the remnants of early re-introductions. Their incubation ecology may have specific habitat requirements. Threats from human activities include existing introduced mammals and the monitor lizard *Varanus indicus*, and the potential threat of the brown tree snake *Boiga irregularis*. Use of favoured beaches by tourists may also present a threat. The species is protected, and a recovery plan exists. Re-introductions have been occurring, and some islands are wildlife sanctuaries. Work is required on the extent of harvesting and disturbance by humans, habitat protection, and quarantine against the accidental introduction of brown tree snake.

Nightingale reed-warbler *Acrocephalus luscinia*
Once known from Guam, now it is only known from CNMI, with the biggest populations on Saipan and Alamagan. The population on Saipan has probably declined. The species prefers seral/edge habitat, including wetlands. Reduction in numbers has probably been due to habitat loss and introduced predators. The remaining biggest threat is the introduction of brown tree snake to islands where they still occur. A recovery plan exists, but little management has been implemented. However, they have benefited from habitat protection measures. Brown tree snake quarantine measures are in place and are probably successful. Apart from habitat protection and introduced mammal control where appropriate, translocation of warblers is the most relevant management action required.

Golden white-eye *Cleptornis marchei*
This species is numerous on Saipan and Agiguan and relatively successful in modified and introduced forest. However, it is most numerous in native limestone forest. Being restricted to two islands, it is vulnerable to the effects of an accidental introduction of brown tree snake. Thus quarantine measures are the most important requirements for their protection, especially on Saipan, given the relative inaccessibility of Agiguan.

Tinian monarch *Monarcha takatsukasae*
This species is represented by one large population on Tinian occupying all types of woody habitat, although the native limestone forest is assumed to be crucial. Its vulnerability lies with its probable dependence on native forest for breeding and this forest being subject to destruction from hurricanes and removal or modification for agriculture. It is also vulnerable to brown tree snake predation should the snake be introduced accidentally. Thus conservation measures need to revolve around quarantine and habitat protection. On 2 March 1999, the US Fish & Wildlife Service (Pacific Region) announced that the monarch would be removed from the Endangered list,

*Listed as Endangered by the Federal system of the US Fish & Wildlife Service and the Guam Government under its Endangered Species Act (R. Beck pers. comm.).

since it had reached a population size of about 57,000 from about 50 during World War II.

Bristle-thighed curlew *Numenius tahitiensis*

This species breeds in western Alaska, USA, but overwinters on the north-western and main Hawaiian Islands, FSM, Marshall Islands, Kiribati, Tuvalu, Tokelau, Fiji, Tonga, Niue, Samoa, American Samoa, Cook Islands, French Polynesia, Solomon Islands, Norfolk Islands, Kermadec Islands, Pitcairn Islands and Easter Island. About half of the birds (3000) remain on Pacific islands during the breeding period. They are considered to be declining due to predation from cats and dogs (and even pigs). There is some localised hunting by humans and there are threats to breeding birds from native predators. Survey and monitoring is required to better gauge country population numbers of overwintering birds, and public advocacy is required to protect habitat in the Pacific.

Mariana fruit dove *Ptilinopus roseicapilla*

Described as "fairly common" in four of the CNMI islands in BirdLife (2000), but extinct on Guam (probably due to predation from brown tree snake). The dove is fully protected from hunting and trapping in CNMI. The main threats to conservation are from the introduction of brown tree snake into its remaining range, habitat modification, and hunting.

White-throated ground-dove *Gallicolumba xanthonura*

Widespread in CNMI and Yap (Federated States of Micronesia), occurring in all forest but apparently more numerous in native forest. It is obviously vulnerable to brown tree snake predation because it has gone extinct on Guam since the snake's introduction there. Thus quarantine against this and other alien invasive species is a priority for its conservation.

Federated States of Micronesia (FSM)

Species status

Threatened

Critically Endangered (n = 2)
Faichuk white-eye *Rukia ruki*
Pohnpei mountain starling *Aplonis pelzelni*

Endangered (n = 1)
Chuuk monarch *Metabolus rugensis*

Vulnerable (n = 2)
Caroline Islands ground-dove *Gallicolumba kubaryi*
Bristle-thighed curlew *Numenius tahitiensis*

Lower risk

Near Threatened (n = 5)
White-throated ground-dove *Gallicolumba xanthonura*
Yap monarch *Monarcha godeffreyi*
Plain white-eye *Zosterops hypolais*
Yap olive white-eye *Zosterops oleagineus*
Long-billed white-eye *Rukia longirostra*

Species summaries of conservation status

Faichuk white-eye *Rukia ruki*

Probably dependent on old growth native forest in tiny remnants on four small islands in the Faichuk Group of the Chuuk (Truk) lagoon and likely to be declining. Hay (1986) reports that the bird only occurs on the largest of the Chuuk group—Tol Island (34 km^2). On that island he reports that it is restricted to a tiny 12 ha habitat centred around Mt Winibot. However, BirdLife (2000) reports four small populations from a 1984 survey: 382, 19, 32, and 93 birds. The bird may be dependent on a native tree *Semecarpus kraemeri* which is destroyed because it is considered a pest by locals. This and the threat of the accidental introduction of brown tree snake present the biggest dangers to the bird. The conservation of the bird needs to be promoted, with protection of key habitat such as that on Mt Winibot. Clarification is also needed on the number of extant populations remaining and which islands are involved.

Pohnpei mountain starling *Aplonis pelzelni*

BirdLife (2000) record that this species has only been seen once in 50 years, but a remnant population is assumed to survive on Pohnpei to which it is endemic, possibly preferring montane forest. The post-1930 decline was possibly due to hunting and rat predation, but, since the 1990s, high-country forest conversion into kava *Piper methysticum* has probably been destroying habitat. Intensive survey and advocacy is needed, but care needs to be taken to avoid confusing the species with juvenile *Aplonis opaca*.

Chuuk monarch *Metabolus rugensis*

This species belongs to a monotypic genus and is restricted to a number of tiny populations in high lagoon islands and some outer reef islands of Chuuk. All of its habitat is apparently under threat from locals. It appears to prefer dense foliage of native upland species but does occupy exotic forest and scrub. Survey to determine key habitats is required and these need protection. Hay (1986) describes the bird as active and vocal, and therefore it should be relatively easy to assess for population size.

Caroline Islands ground-dove *Gallicolumba kubaryi*

Numbers of this ground-dwelling dove are declining due to habitat conversion for growing kava. Other threats include predation from introduced mammals. An attempt to reduce forest loss (especially upland areas) in Pohnpei and Chuuk has been made by encouraging locals to plant kava in the lowlands, but this is facing problems. Conservation efforts require preserving native and mixed forest remnants, especially on atolls where human disturbance can be minimised; hunting impacts need to be assessed.

Yap monarch *Monarcha godeffreyi*

This passerine is endemic to the Yap islands and widespread on Maap, where it successfully occupies modified habitat. Because of its limited distribution to the four islands of Yap, it is considered at risk from accidental introductions of brown tree snake.

Plain white-eye *Zosterops hypolais*

This white-eye is endemic to the four islands of Yap and occupies all types of habitat. Because of its limited distribution to these four islands, it is considered at risk from accidental introductions of brown tree snake.

Yap olive white-eye *Zosterops oleagineus*

This species is another Yap endemic and is found in woody habitat, but recently it has apparently been declining. Because of its limited distribution to the four islands of Yap, it is considered at risk from accidental introductions of brown tree snake.

Long-billed white-eye *Rukia longirostra*

This species is endemic to Pohnpei. Its population is declining while its range appears to be contracting. It may be dependent on flowering upland species because of its nectivorous habit. However, this habitat has been destroyed by conversion to kava production. Thus habitat destruction appears to be threatening this species.

Yap cicadabird *Coracina tenuirostris nesiotus*

(Not evaluated by BirdLife 2000)

Pratt *et al*. (1977) discuss the taxonomy of this bird and its relative rarity in Yap. Their account suggests that the species is rare and possibly deserves its own specific status. Obviously the taxonomy and conservation status of this species need evaluation.

Guam

Species status

Extinct in the Wild (n = 5)

These species and subspecies have been reported Extinct in the Wild (R. Beck, US Fish & Wildlife Service, pers. comm.).

Guam rail *Gallirallus owstoni*
Micronesian kingfisher *Halcyon c. cinnamomina*; this species is alive in captivity
Guam flycatcher *Myiagra freycineti*
Rufous fantail *Rhipidura fufifrons uraniae*
Bridled white-eye *Zosterops c. conspicillata*

Threatened

Endangered (n = 3)

These species have been listed as Endangered by BirdLife (2000) and the crake subspecies by US Fish & Wildlife Service.

Guam swiftlet *Collocalia bartschi*
Mariana crow *Corvus kubaryi*
White-browed crake *Porzana cinerea micronesiae*

Species summaries of conservation status

Micronesian kingfisher *Halcyon c. cinnamomina*

Captive breeding has been attempted with some success and is ongoing. In future it is planned to continue captive breeding on Guam as well as the US mainland. The work is being led by the US Fish & Wildlife Service, Guam Division of Aquatic and Wildlife Resources. The status of wild birds is assumed to be Critically Endangered or Extinct, and long-term management of this species will rely on successful reduction of predation from the brown tree snake *Boiga irregularis*.

Guam flycatcher *Myiagra freycineti*

Rufous fantail *Rhipidura fufifrons uraniae*

Bridled white-eye *Zosterops c. conspicillata*

These taxa are assumed Extinct in the Wild, with no living birds in captivity. Thus, unless they are rediscovered in the wild there is virtually no chance of their ever being seen again. However, the Yap subspecies of the fantail and white-eye are relatively common (Pratt *et al.* 1977).

Guam rail *Gallirallus owstoni*

Once widespread on Guam, it declined due to predation by brown tree snakes and cats. A captive breeding and release programme in train since 1982 has had some success, as released birds have bred in the wild. More species recovery work intended by Guam's Division of Aquatic and Wildlife Resources will include cat control in release areas, further cap-

tive breeding, and release of captive-bred birds into managed areas.

Mariana crow *Corvus kubaryi*

A recovery plan exists for this species implemented by the Guam Division of Aquatic and Wildlife Resources. Management has included protecting wild nests from brown tree snake predation and captive breeding with release of captive-bred birds. Wild birds have also been transferred to Guam from Rota. The species is still Critically Endangered, although there is cause for optimism because wild-caught and captive-bred birds transferred to the wild will breed. However, the number of birds in the wild in Guam is not likely to be more than seven. Intensive species recovery work on the crow is continuing. The medium- and long-term protection of the species will rely on keeping brown tree snake from being introduced to Rota, which harbours the last stable wild population.

White-browed crake *Porzana cinerea micronesiae*

Little is known about the current status of this species in the wild. Like other avifauna in Guam, it has probably suffered from predation from brown tree snake.

Guam swiftlet *Collocalia bartschi*

The species occurs on islands in CNMI (extinct on Rota and Tinian, but still extant on Saipan, Agiguan and Oahu) as well as Guam. It has declined dramatically in the last 17 years, probably due to predation from brown tree snake in Guam and possibly the historical use of pesticides. Declines elsewhere may be more apparent than real, given equivocal survey results. A management plan exists and is implemented by the Guam Division of Aquatic and Wildlife Resources. Management work is focusing on surveys, study of the swiftlet's natural history and trapping brown tree snakes in the principal breeding cave.

Kiribati

Species status

Threatened

Endangered (n = 1)
Kuhl's lorikeet *Vini kuhlii*

Vulnerable (n = 3)
Polynesian storm-petrel *Nesofregetta fuliginosa*
Phoenix petrel *Pterodroma alba*
Bristle-thighed curlew *Numenius tahitiensis*

Species summaries of conservation status

Kuhl's lorikeet *Vini kuhlii*

This parrot is endemic to the following islands: Rimatara in the Tubuai Islands (French Polynesia), Teraina (Washington), Tabuaeran (Fanning) and Kiritimati (Christmas) although there are historical reports from other islands, even as far away as Atiu in the southern Cook Islands (palaeo-ecological remains). The numbers surviving are highly variable between islands, with most surviving on Teraina. The greatest threat is posed by the ship rat and, on Kiritimati, possibly cats. There is an urgent need to ensure quarantine against further introductions of ship rat in the islands which do not yet have this species. This in turn requires some survey work such as determining whether ship rat has yet reached Rimatara. At the time of writing there is a proposal to re-introduce the bird to Atiu from Rimatara, but this has yet to be approved by the French Polynesian Government. Approvals at island level have been granted (Gerald McCormack, Rarotonga, pers. comm.).

Polynesian storm-petrel *Nesofregetta fuliginosa*

The species has declined over the last 50 years, probably due to the introduction of predatory mammals. However, it is possible that more information than that supplied by the few studies reported may change the classification. The known distribution includes the following island groups: Line, Phoenix, Austral, Society, Gambier, Marquesas, New Caledonia, Sala y Gomez, Vanuatu, Samoa, and Fiji. Widely ranging numbers have been reported from these island groups. The consensus is that this species is seriously affected by cats and rodents—and even mice during breeding. Human-induced habitat modification is also reducing numbers.

Phoenix petrel *Pterodroma alba*

This species is assumed to be declining in numbers and distribution (numbers of breeding colonies). The decline is assumed because of observed drops in numbers in two motu where their numbers have been systematically monitored. The species occurs in the Line, Phoenix, Marquesas and Pitcairn Islands with the greatest numbers on Kiritimati (Christmas) Island, where they have almost certainly declined. More work is needed on distribution (being careful of the fact that it may be confused with similar looking species) and control of cats and rats on Kiritimati is also needed. Predator-free islands need quarantine protection from the introduction of rats and cats. Phoenix petrel on Kiritimati will most likely benefit from new conservation projects planned under the HOPE

X spacecraft recovery programme (belonging to the Japanese Space Agency), the South Pacific Biodiversity Conservation Programme (managed from SPREP), and the Regional Avifauna Conservation Programme (SPREP) joint programme for training Wildlife Conservation Unit staff on seabird monitoring and cat control techniques.

Marshall Islands

Species status

Threatened

Vulnerable (n = 1)
Bristle-thighed curlew *Numenius tahitiensis*

Palau

Species status

Threatened

Endangered (n = 1)
Micronesian megapode *Megapodius laperouse*

Lower risk

Near Threatened (n = 3)
Nicobar pigeon *Caloenas nicobarica*
Palau ground-dove *Gallicolumba canifrons*
Giant white-eye *Megazosterops palauensis*

Species summaries of conservation status

Nicobar pigeon *Caloenas nicobarica*
This species has a distribution outside the Pacific in parts of Asia. The Palau subspecies *C. n. pelewensis* is confined to small wooded offshore islets, although it may forage as far as the mainland. These islets are progressively being used for plantations, and this occupation has resulted in habitat loss and probably the introduction of predatory mammals.

Palau ground-dove *Gallicolumba canifrons*
This Palau endemic is found on many islands but varies considerably in population size from island to island. Its conservation status is difficult to assess because it is secretive, but it is probably secure. The main threat to its conservation is from the possibility of brown tree snake and predatory mammals being introduced to their islands.

Giant white-eye *Megazosterops palauensis*
This bird species only occurs on two islands (Ngeruktabl and Peleliu) in limestone forest. Its numbers could be declining due to habitat modification with the invasion of introduced species, but the main threat is from the introduction of brown tree snake and predatory mammals.

3. Regional summary

Specific species recovery projects

These are well enough known to embark on targeted specific projects

Mariana crow *Corvus kubaryi*
Guam rail *Gallirallus owstoni*
Micronesian kingfisher *Halcyon c. cinnamomina*
Micronesian megapode *Megapodius laperouse*

Declining species, unknown cause

These are species and subspecies for which no known or speculated causes can be identified.

Guam swiftlet *Collocasia vanikorensis bartschi*
Palau jungle nightjar *Caprimulgus indicus phalaena*
Pohnpei short-eared owl *Asio flammeus ponapensis*
Palau nicobar pigeon *Caloenas nicobarica pelewensis*
Pohnpei mountain starling *Aplonis pelzelni*

4. Independent assessments of conservation status

The following authors have written their own summaries of the conservation status and needs of birds of Micronesia. Information from their accounts that is not mentioned in BirdLife (2000) is included here.

Table 1. Summary of single-species conservation status in Melanesia. Based on BirdLife (2000).

Note: Because the purpose of this table is to indicate national priorities, where the same species is listed in two countries it is scored twice.

	Critically Endangered	Endangered	Vulnerable	Near Threatened	Data Deficient	Total
CNMI	1	8	3	2	0	14
FSM	2	1	2	5	0	10
Guam	1 (EW)	3	0	0	0	4
Kiribati	0	1	3	0	0	4
Marshall Is.	0	0	1	0	0	1
Palau	0	1	0	3	0	4
Total	4	14	9	10	0	37

Some of their findings may be redundant now in view of survey data which post-date their papers. Nevertheless, their information is included here at least to promote verification from the workshop of the correct status of the species concerned.

Jenkins and Aguon

Jenkins and Aguon (1981) made the following recommendations based on a drive-through survey and station counts. The recommendations apply to islands of the Commonwealth of the Northern Mariana Islands: Saipan, Tinian and Rota. The authors do not define their terms such as "endangered" but one must assume they are using terms as defined in the United States Federal Endangered Species Act of 1973. This Act is not available to the author of this report at time of writing.

Mariana common moorhen *Gallinula chloropus guami*
Endangered throughout its range.

White-throated ground-dove *Gallicolumba x. xanthonura*
Endangered on Saipan, Tinian, Rota and Guam. They note that populations on Asuncion, Pagan, Alamagen and Yap remain undetermined, at least at the time of writing their paper.

Mariana fruit-dove *Ptilinopus roseicapilla*
Endangered on Guam, threatened on Saipan and Tinian, and not listed on Rota. The authors claimed this species had declined since the 1940s.

Guam (= gray) swiftlet *Collocalia vanikorensis bartschi*
Endangered throughout its range.

Marianas crow *Corvus kubaryi*
Endangered throughout its range. The authors noted that the Rota population was the species' stronghold and it was already by then rare on Guam.

Micronesian (= cardinal) honeyeater *Myzomela cardinalis saffordi*
Endangered on Guam, threatened on Saipan and Tinian, no listing of the Rota population. Populations on Agiguan, Alamagan, Pagan, Agrihan, and Asuncion were undetermined.

Engbring and Pratt

These two notable authors of birds of the Pacific, and especially Micronesia, summarise the conservation status of birds from five of the countries considered in this overview, but excluding Kiribati (Engbring and Pratt 1985). Their data are based on those available as at 1981 and they report the conservation status of species under four classification methods: United States (Federal), International Council for Bird Preservation (now Bird Life International), Trust Territory of the Pacific Islands (the political status of countries such as Palau before becoming independent from the United States of America), and the Guam Government classification. The various categories under these classification methods (Endangered, Rare, Vulnerable, Potentially Endangered and Critically Endangered) were not well defined in their paper, although they cited some definitions in statute (for example the US Federal Government's Endangered Species Act). Given this and that the data are about 20 years out of date, their conservation status data are not repeated here. Instead it is assumed the data reported in BirdLife (2000) are more accurate and useful for comparative purposes. However, Engbring and Pratt's (1981) observations on generic conservation issues such as causes of decline have been included in this summary.

Some of these generic observations follow:

1. The main island of Pohnpei harbours one of the most intact bird communities of the sub-region and therefore offers a unique opportunity to conserve a whole ecosystem.
2. Within Truk [Chuuk], the forest around the top of Tol Island is particularly valuable, as it is probably the biggest area of "original" forest remaining. This area is the habitat for the endemic Truk greater white-eye [= Faichuk white-eye] *Rukia ruki*. Human density is high and poses a threat to forest cover, with conversion to agriculture gaining progressively greater heights. As at 1981, no land birds are known to have become extinct on Truk.
3. The Yap avifauna is apparently still intact and also offers an opportunity to preserve an essentially original avifauna.
4. The Palau avifauna is the richest in Micronesia and is essentially intact and is therefore valuable, as for Yap and Pohnpei. The southern islands are particularly significant, being virtually unmodified by human occupation in contrast to the other islands in the group.
5. The central Marianas (Saipan, Tinian and Agiguan) probably have not lost any of their original [presumably meaning pre-European] species except the presumed endemic duck *Anas oustaleti*.
6. Rota should be monitored carefully as a first signal for the spread of the brown tree snake from Guam. The island has already lost two

species (Micronesian megapode *Megapodius laperouse* and Guam swiftlet *Collocalia bartschi*). It is particularly significant as harbouring the main population of the Mariana crow *Corvus kubaryi*.

7. The losses of the Guam bird species due to the introduction of the brown tree snake is testimony to the potential impacts this snake may have on other islands if quarantine practices are not put in place to contain it.

8. Some species have declined or occur at low numbers for unknown reasons, so the threats to them or whether they occur at low numbers naturally are unknown. Such species include: the Guam swiftlet *Collocalia bartschi*, Palau jungle nightjar *Caprimulgus indicus phalaenus*, Pohnpei short-eared owl *Asio flammeus ponapensis*, Palau Nicobar pigeon *Caloenas nicobarica pelewensis*, Pohnpei mountain starling *Aplonis pelzelni*.

9. On the island of Agiguan (Marianas) the local endemic subspecies of the nightingale reed warbler *Acrocephalus luscinia nijoi* was close to extinction in 1981 and threatened by goats modifying understorey habitat.

10. Hunting birds as game and food species occurs in Micronesia (e.g. southern Mariana starling *Aplonis opacus guami*, Mariana fruit-dove *Ptilinopus roseicapilla*) and may need to be monitored to ensure the conservation of both the target species and non-target species which may be shot incidentally.

Hay

Hay (1986) summarised bird conservation issues in the Pacific, based on available literature and survey field work he carried out while working for the International Council for Bird Conservation (latterly BirdLife International) and the South Pacific Regional Environment Programme. Many of his conservation status data are superseded by the BirdLife (2000) information, but many of his "generic" observations are still relevant today and are reported here where they relate specifically to Micronesia.

1. In the Marshall Islands two reserves occur on Pokak and Bikar atolls, of which Pokak is one of the most significant seabird breeding sites in the Pacific. Fourteen species breed at each site —some of them abundantly (by comparison about 20 species are known to breed at Kiritimati (Christmas Island) in Kiribati, the most important site in the Pacific—and indeed the world). Hay (1986) reports that reserves were proposed for Wotho, Taka, and Jemo (Dahl 1980).

2. The Micronesian megapode *Megapodius laperouse laperouse*, like other species in Micronesia, will benefit from the establishment of reserves by contrast to the general wisdom elsewhere in the Pacific. Research is needed on what level of egg harvesting may be tolerated.

3. The conservation status and taxonomic status of the Mariana mallard *Anas oustaleti* apparently need to resolved.

4. Hay (1986) listed the Truk [Chuuk] Micronesian pigeon *Ducula oceanica teraokai* (one of five subspecies and closely related to *D. pacifica*), which was once widely distributed throughout the high islands of Chuuk before undergoing serious decline during World War II. The conservation status of this species needs to be clarified from information which should be available from surveys since Hay's paper was written. The subspecies was not evaluated by BirdLife (2000).

5. The Palau white-breasted wood-swallow *Artamus leucorhynchus pelewensis* has not been listed by BirdLife (2000) but may be important, since Hay (1986) noted that it was listed in the then Trust Territory Endangered Species List. He uses the phrase "believed to be at risk". The wood-swallow has been collected on the islands of Babelthuap [Babeldoab] and Angaur and is rarely seen on others in the group. Apparently, it could be restricted to the high country of Babelthuap (397 km^2) and the reasons for its rarity are unclear (Hay 1986). Obviously the true conservation status and any reasons for decline need to be determined.

5. Generic conservation issues

Conservation status

There are many species requiring survey to determine conservation status (number, size, and distribution of populations, whether populations are increasing or declining), threats and management needs. (**Note**: Many of the species threatened by hunting, habitat loss, and predators require similar work.)

Species threatened by hunting, habitat loss, and predators

Many species are threatened by hunting or illegal trade, habitat loss or degradation, and introduced predators. Therefore, these species need to be the sub-

ject of education initiatives, habitat reserves, and legislative protection (or, if it exists, compliance enforcement). This category also includes species for which tolerance of degraded habitat is unknown but is suspected to be little. Thus research is also needed into habitat requirements and the impact of predators on survival.

Endemic Bird Areas

Endemic Bird Areas (EBAs) have been identified, categorised and ranked in Stattersfield *et al.* (1998). There is no need to restate their information except to relate the essential statistics which can be used to gauge the importance of single-species projects and those (obviously related) which involve habitat protection and/or restoration, and other conservation measures.

In Table 2, EBAs occurring in the six Micronesian countries are listed (Stattersfield *et al.* 1998). The first column shows the name used by Stattersfield *et al.* (1998). The priorities assigned to the EBAs included in this column in bold relate to the given priority ranking for conservation action. One of three categories has been assigned: Critical, Urgent or High. The priority is based on each EBA's biological importance and current threat levels. The second column gives an abbreviated version of the threats reported in Stattersfield *et al.* (1998). The third column refers to each EBA's biological importance on a scale of three (three being highest). This ranking is based on the EBA's number of restricted-range bird species (and whether they are shared with other EBAs), the taxonomic uniqueness of those species, and the size of the EBA. The "Current threat level" (score of three highest levels of threat) is based on the percentage of each EBA's restricted-range avifauna which are threatened and the categories of threat of these species. The fifth column describes the number of threatened (Critically Endangered, Endangered, and Vulnerable) bird species that occur only in that EBA and the next column the total number of endemic species including ones that are not threatened. In the last column, two data are presented: the number of bird species found in the EBA referred to and also found in one or more other EBAs, and the second is similar but also applies to species found in one or more Secondary Areas (SAs). A Secondary Area is an area which supports one or more restricted-range bird species, but does not qualify as an EBA because fewer than two species are entirely confined to it (Stattersfield *et al.* 1998).

Generic topics reported from the Polynesia and Melanesia workshops

Various generic issues identified at the Polynesia workshop, Rarotonga, April 1999 (see this volume, pages 7–9) and the Melanesia workshop, Nadi, March 2000 (this volume, pages 25, 26, 28, 19) are considered to have relevance to the Micronesia sub-region.

6. Acknowledgements

Thanks to Alison Stattersfield (BirdLife International) for permission to use drafts of BirdLife (2000) and therefore the latest categories for the conservation status of bird species in Micronesia. Thanks to Anna Tiraa for helping to compile other information.

7. References

Table 2. Endemic Bird Areas in the Micronesian region. Summary data from Stattersfield et al. (1998).

Name/ Priority	Threats	Biol. importance	Current threat level	No. of threatened endemics	No. of endemics	No. present in other EBAs/SAs
Mariana Islands **High**	Brown tree snake, moderate habitat loss	2/3	2/3	5	7	1,5
Palau **High**	Brown tree snake, human impacts	2/3	1/3	0	10	1,6
Yap Islands **High**	Brown tree snake, fire	1/3	1/3	1	3	0,4
E. Caroline Is **Critical**	Forest loss, invasive species – brown tree snake, rats	3/3	2/3	4	11	0,7

Note: Kiritimati (Christmas) Island in Kiribati may be listed as an Important Bird Area because of the 20 species of seabirds breeding there – some such as sooty tern in huge numbers.

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Dahl, A.L. 1980. Regional ecosystems survey of the South Pacific area. *Technical Paper No. 179, South Pacific Commission Noumea*. 99 p.

Engbring, J.H.; Pratt, H.D. 1985. Endangered birds in Micronesia: Their history, status, and future prospects. *Bird Conservation 2:* 71–105.

Hay, J.R. 1986. Bird conservation in the Pacific Islands. *Study Report No. 7, International Council for Bird Preservation.*

Jenkins, J.M.; Aguon, C.F. 1981. Status of candidate endangered bird species on Saipan, Tinian and Rota of the Mariana Islands. *Micronesica 17*:184–186.

Pratt, H.D.; Bruner, P.L.; Berrett, D.G. 1977. Ornithological observations on Yap, Western Caroline Islands. *Micronesica 13(1)*: 45–56.

Stattersfield, A.J.; Crosby, M.J.; Long, A.J.; Wege, D.C. 1998. Endemic bird areas of the world – Priorities for biodiversity conservation. *BirdLife Conservation Series No. 7.*

Draft Pacific Islands Region Avifauna Conservation Strategy

Two groups reviewed the first two pages of the Plan then submitted their improvements to the whole workshop. Changes were agreed and the following version was compiled for future submission to a SPREP Meeting for endorsement. The work programme was not reviewed because, in effect, this was going to be done by the workshop in establishing the project briefs. The original version was developed by the Avifauna Working Group at the SPREP Biodiversity Workshop, Port Vila, Vanuatu (24–28 October 1991).

Preamble

The fossil record and recent observations show oceanic island bird faunas as being greatly reduced by human impact, with only a small fraction of their indigenous birds surviving to the present day. There is an urgent need for bird conservation action on islands because:

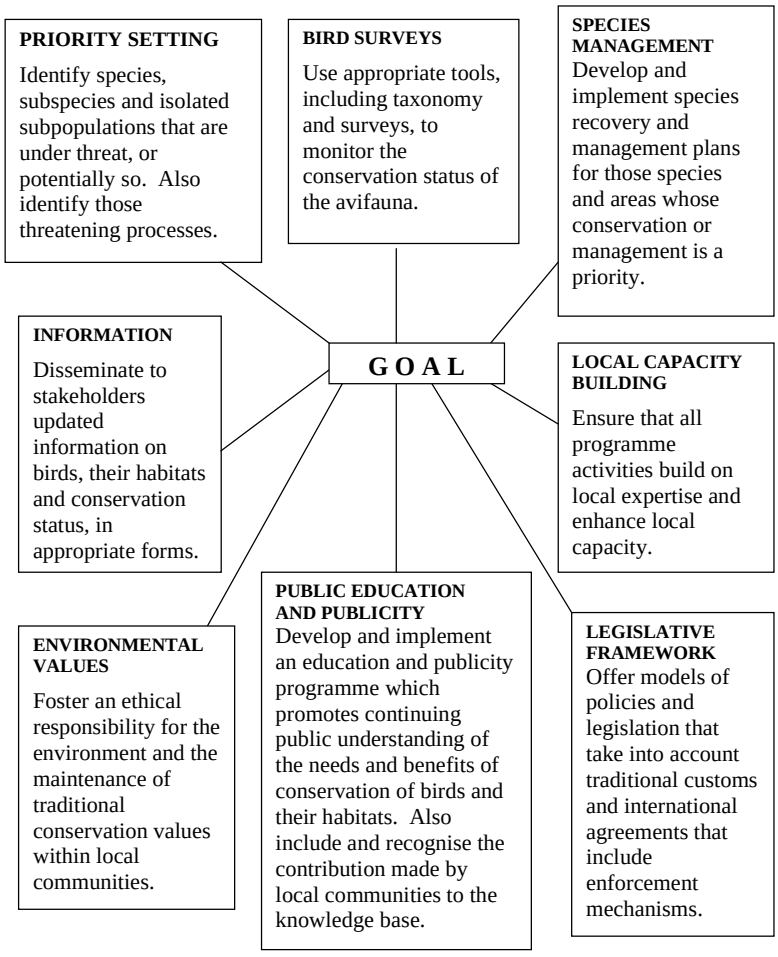
- Over 95% of the world's recent bird extinctions have occurred on islands.
- Around 30% of Pacific birds are currently threatened with extinction (see IUCN status).
- Islands show a greater number of threatened birds per km^2 (and per person) than any other areas.
- Island birds are very susceptible to threats such as invasive species, habitat loss and trade of species.
- The small size of island nations has often led to them being overlooked as repositories of significant bird diversity, and yet grouping Pacific islands together would rank them high in the world for bird biodiversity.
- The weak knowledge base in the region is an impediment to conservation action.
- There is lack of understanding within human island communities of the impacts of their practices upon their local avifauna.
- Birds are a significant component of traditional culture.
- Conservation of healthy ecosystems is vital to species survival.

On the other hand, by virtue of their simple ecosystems and local conservation customs, islands provide excellent opportunities for effective bird recovery and management actions. In addition, it is only on small islands that some solutions, e.g. permanent eradication of cats and rats, have a chance of success.

Goal

To recover threatened bird species and to conserve all other indigenous bird species and their habitats.

The Objectives of the Action Strategy are in eight areas:



Regional institutional arrangements

Bird conservation priorities are spread unevenly across the region, some areas having a greater number of issues than others. Nevertheless, there are issues to be addressed in each country and territory, and this Plan encourages activity throughout. While many agencies and non-government stakeholders may be involved in activities, this Plan assumes that SPREP will be the coordinating agency. SPREP has the advantages of being a regional body capable of providing a framework for activities, coordinating them, and acting as a clearinghouse for information.

Note: This document follows IUCN terminology for species conservation status (see BirdLife International. 2000. *Threatened Birds of the World: The official source for birds on the IUCN Red List.* Lynx Edicions, Barcelona, and BirdLife International, Cambridge, UK).

Discussion of generic issues raised at the workshops

During the course of the three workshops the following recurring issues arose. Hunting large terrestrial birds such as pigeons and doves (but also passerines such as starlings) occurs commonly throughout the region. The same is probably true of seabirds. The particular concern from a conservation perspective is that little or no monitoring is occurring, and hunting includes threatened species, such as tooth-billed pigeon in Samoa. There is such a long tradition of hunting that no thought is spared for the fact that these species maybe declining towards extinction. Aggravating this problem is the extreme technical difficulty of gathering scientific data on the relative abundances of pigeons and doves from different points in time. Even the best ornithologists working on monitoring with advanced electronic equipment would find the task difficult. In addition, the wish of country and NGO representatives at the workshops was that locals should be involved in the monitoring. However, the likelihood of training and equipping local people throughout the Pacific seems remote because of the impracticality of the task, especially in view of the current level of funding for bird conservation projects. Probably the best course of action, at least in the medium term, is to educate village communities towards conservation of their wildlife, especially birds, arguing that they serve a more valuable resource surviving as potential income earners through eco-tourism.

Another recurring problem was the lack of quality up-to-date knowledge on the true conservation status of particular species. Given this lack of knowledge, ranking of projects is very difficult. However, it is obvious that many species are critically endangered and may become extinct in the near future. In ranking projects and assigning funds to them it is necessary to bear in mind the extremely high cost of recovering such a species (probably to be considered in terms of millions of US dollars), the protracted period of time needed to succeed (likely to be decades), and the high demand for expert technical knowledge. In the Pacific islands, the chances of meeting all these requirements may be small. Thus, in deciding whether to invest in recovering a critically endangered species, one needs to consider the opportunity cost of doing this and ask the crucial question: How many other less endangered species could be recovered with the total investment into this one critically endangered species? To be able to answer this question and to identify projects where a number of species may benefit from the one project, an accurate assessment of the conservation status of species is required. Projects such as these are most beneficial if they involve training for local villagers thereby adding an advocacy component and addressing the need for public awareness and education. Thus the potential of a project to answer the greatest possible number of needs at any one time must be one of the criteria for selection for funding.

Habitat destruction or modification still threatens numerous species of birds throughout the Pacific. Little attention is paid to environmental risk assessment studies and subsequently taking steps in any development to mitigate these threats. Human populations are still encroaching on residual old-growth forest, with serious implications for bird life and probably worse impact on other native biodiversity. The significance of this scenario is that, especially in the case of state-financed developments, the correct procedures (consultation, impact assessment, mitigation procedures, etc.) that should be followed are usually known but are simply ignored. Villagers pursuing plantation development may be excused for them not knowing about this scenario. However, the solution is the same – education and public awareness to bring pressure on those developing the habitat to mitigate the risks to bird life.

There was general agreement across all the workshops that invasive species continue to pose a serious threat to bird life. Many islands in the Pacific which harbour significant populations of native bird species have been entirely or relatively free from alien invasive species (at least mammalian predators), but new invasions to these islands are occurring. The threats these invasive species present could be mitigated with adequate quarantine procedure. This threat is not just an issue between national boundaries, it is as much an issue within countries, with trade or traffic between island groups of the same country presenting threats. This issue, including which alien invasive species are threatening specific islands is discussed in Sherley (2000).

Many projects that are already under way in the Pacific can support bird conservation with some relatively small extra input from a regional programme

such as the Regional Avifauna Conservation Programme based in SPREP. The best example has been the development of Conservation Areas under the South Pacific Biodiversity Conservation Programme (SPBCP). Seventeen of these now exist in 14 countries, and these protected areas often include excellent bird habitat, harbouring good numbers of nationally and regionally threatened species. Given the enormity of the task confronting bird conservation in the Pacific, it is extremely important for bird conservation projects to take advantage of the infrastructure of existing projects such as these SPBCP Conservation Areas and collaborate with them. This is particularly important as projects such as these often include income generation that involves eco-tourism, which may focus on wildlife such as birds. In this way, one of the main blocks to bird conservation could be overcome – placing a value on birds apart from them being a food item or sporting opportunity.

Other generic issues arose, but the above were probably the most recurrent and significant in terms of their impact on the conservation of birds and their habitats. A final observation relates to the future. In the past three years, at least two changes have occurred in the Pacific. First, the New Zealand Government has committed to funding, at least in the medium term, a Programme Officer half-time on bird conservation and half-time on the related issue of invasive species. The other change is that new NGOs outside the Pacific have taken an interest in Pacific bird conservation, adding to the presence of the RARE Center for Biodiversity Conservation, The Nature Conservancy, and Conservation International. BirdLife International and Birds Australia are currently developing Pacific programmes in close cooperation with the SPREP Regional Avifauna Conservation Programme. The workshops described in this publication have been well attended by these and other NGOs. Still other NGOs, such as the Endangered Species Recovery Council, are keen to become involved in Pacific bird conservation. These developments bode well for the future. If there is any success to be had in Pacific bird conservation (and other environmental protection) it has to be from collaboration between Pacific Governments (including particularly New Zealand, Australia, and the United States of America), NGOs, and Inter-Governmental Organisations such as SPREP and the Secretariat of the Pacific Community.

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Sherley, G.H. (tech. ed.) 2000. *Invasive species in the Pacific: A technical review and draft regional strategy.* SPREP, Apia, Samoa.

Annex I
Application for funding from the Pacific Regional Avifauna Conservation Programme

Introduction

Below is a set of criteria which must be met before consideration for possible funding. The purpose of this guide for making an application is to ensure equitable treatment of applicants, that all important criteria (to SPREP) are considered in the design and assessment of the project proposal, and for ease of administration (e.g. saving time).

Directions

Please format your application and project proposal answering at a minimum the following questions in the same order:

1. Provide a short (approximately 10 word) title for the project which as completely as possible describes the project's work.

2. Why is the work necessary? What is the justification for the project? Provide a background to the project (e.g. any previous work, circumstances which led to the project being initiated, how you came to be involved, etc.).

Specifically detail any relevance to priorities described in international, regional, sub-regional or national strategies, plans or workshop proceedings; and how the project is expected to mitigate any problems identified in such plans or proceedings.

3. Provide evidence for in-country support – specifically from: the relevant SPREP focal point for the country (an up-to-date list can be sought from SPREP at any time); appropriate local community leaders if relevant; and relevant senior colleagues who have experience in the field of work related to the project. Written evidence of support from at least the focal point is essential for a successful application.

4. Project design. If a scientific or technical project, provide full and thorough account of design such as aims, methods, expected results, methods of analysis, peer review process, plans for publication, etc. Refer to other technical studies and research to justify your methodology.

5. Timetable. Describe as accurately as possible what you hope to achieve in given time frames. This should include full reporting to SPREP which will be required on a six-monthly basis (written reports) and three-monthly (verbal). This does not include the final report whose copyright will remain the property of SPREP. Important results which may relate to urgent management actions should be communicated as and when necessary.

6. Finance. Detail money spent on stipend or "cost of living", i.e. field equipment, transport, food, professional services of others and the breakdown of expenses over time. An account of how money was spent will be expected at the end of the project. Include the costs of providing a final detailed report at the end of the contract or conclusion of the project if a Letter or Memorandum of Understanding has been signed instead of a contract. Note that, generally, SPREP will not finance capital items such as computers, small boats or outboards. SPREP may require that re-usable items that are paid for out of the project be returned to SPREP. Similarly, any unused funds must be returned.

7. Linkages. Describe what in-kind support (monetary or practical), if any, has been pledged by other organisations or community bodies. Does the project support the priorities or objectives of other organisations' or Governments' strategies or plans?

8. Outputs. Apart from the reporting already mentioned, describe clearly how the project's outputs (reports, training, activities, etc.) are intended to redress the problem(s) referred to in the problems and justification sections of the project proposal.

Notes

Successful applications will:

1. Almost certainly include repatriating technical skills in-country and will therefore need firm support from relevant in-country colleagues including the SPREP focal points.
2. Address priorities set out in relevant strategies and workshop findings such as the Regional Avifauna Conservation Plan, Polynesian Avifauna Workshop priority project listing, SPREP action plan, etc.
3. Outputs must clearly show how knowledge, skills and other benefits arising out of the project will benefit the species/habitat concerned and the relevant local community. Wider benefits, if any, must also be described.

Annex II
List of participants at the three Pacific Islands Avifauna Conservation Workshops

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