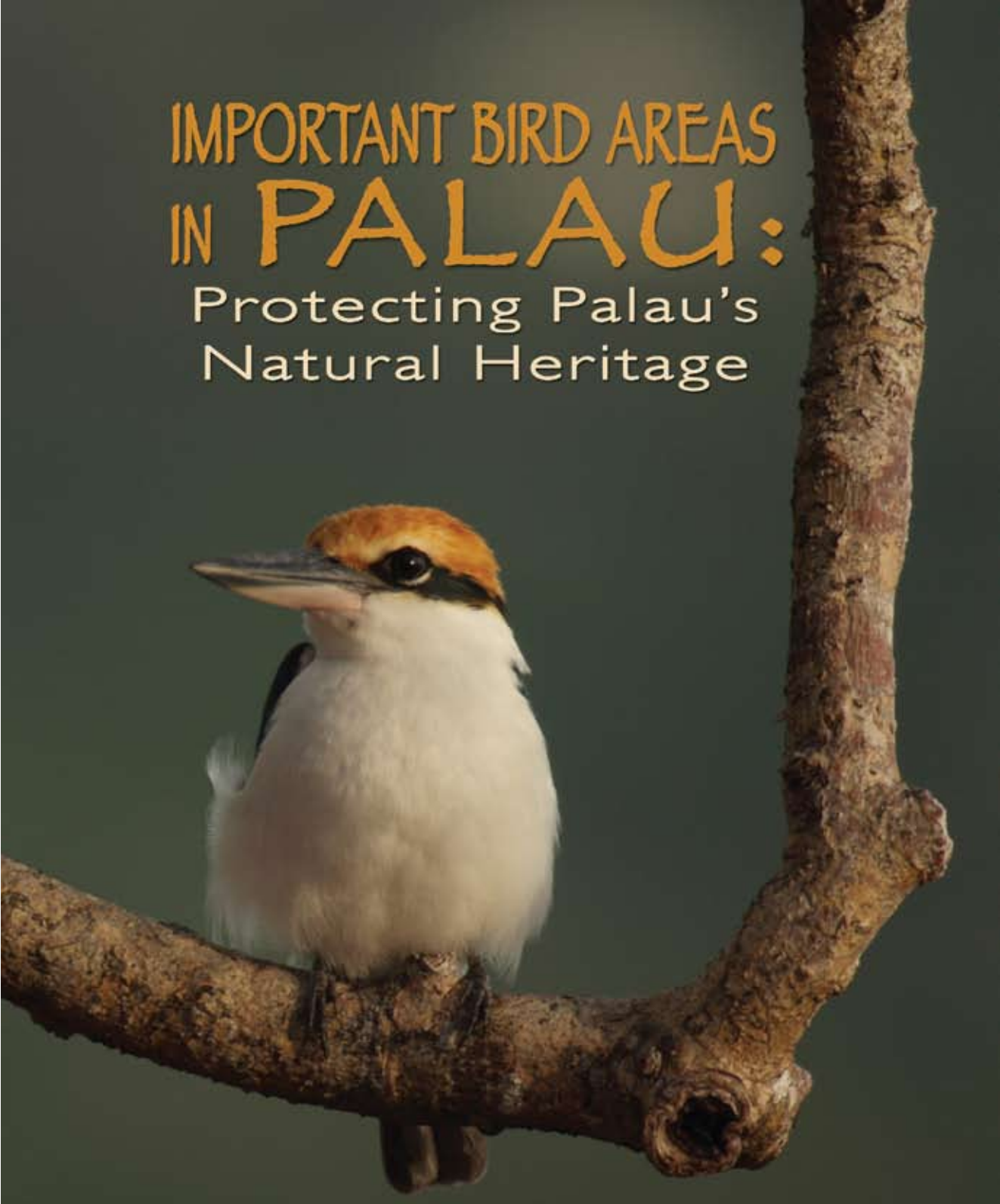
IMPORTANT BIRD AREAS IN PALAU:

Protecting Palau's Natural Heritage



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Palau Conservation Society

Cover photo of two Micronesian Kingfishers by Mandy Etpison.
Inside photo of Rock Islands by Digital Global, Inc.

BirdLife IBA IMPORTANT BIRD AREA

Important Bird Areas in Palau:
Protecting Palau's Natural Heritage

Compiled and edited by:
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Palau Conservation Society

With support from

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BirdLife International is a federation of national non-government organizations committed to conserving birds and biodiversity for the benefit of people. BirdLife International and the Palau Conservation Society have established a program in Palau to assist communities to conserve their birds through the identification and conservation of Important Bird Areas.

Drawing of birds in a Palauan ecosystem was adapted from a sketch of traditional artwork in Krämer, A. (1917). *The Results of the South Sea Expedition of 1908-1910, Palau,* G. Thilenius (ed.). L. Friedrichsen and Co., Hamburg, Germany.

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Foreword

Honorable Fritz Koshiba

Birds have always been important to Palau's culture and economy as well as our natural history. Birds play a critical role in the functioning of Palau's ecosystems as they are important seed dispersers and pollinators of native trees and plants. While the birds of Palau greatly contribute to our unique biological diversity, they have also inspired our traditions and local legends. In addition, they enhance the quality of our tourism and our overall quality of life.

The Palau National Government is committed to keeping Palau's bird populations and their habitats healthy for our current and future generations to enjoy, be inspired by, and benefit from. The identification of Important Bird Areas (IBAs) throughout Palau will assist our communities in planning and implementing their conservation and sustainable development strategies such as protected areas and land-use planning.

Currently my Ministry is responsible for coordinating the implementation of the Palau Protected Areas Network (PAN), which is envisioned to be a comprehensive and linked system of protected areas in Palau. In 2006, our President, Tommy E. Remengesau Jr., made a commitment, on behalf of the people of Palau, to effectively conserve at least 20% of terrestrial resources and 30% of our near-shore marine resources. This commitment, together with similar commitments made by our Micronesian neighbors – FSM, Guam, Saipan and RMI, has become known as the Micronesia Challenge. We believe that commitments like the Micronesia Challenge can serve to inspire and assist our communities and partners in achieving our collective goals for sustainable development. Implementing strategies such as the Palau Protected Areas Network (PAN) while integrating the information gained from the identification of Palau's IBAs will assist our communities and decision-makers in meeting the goals of the Micronesia Challenge.

The Palau National Government, and particularly my Ministry, looks forward to continuing to work through partnerships with traditional leadership, communities, states, the private sector and NGOs to work for the conservation of Palau's birds and their habitats, for the benefit of our communities today, tomorrow and into the future.

Hon. Fritz Koshiba
Minister of Resources and Development

Message from Palau Conservation Society

Moses Uludong

Birds are a very important part of Palau's national identity. They are seen throughout our traditional legends and practices. They enhance our natural environment, our economy, and our lives. When the Palau Conservation Society was founded in 1994, our first project was an educational campaign to raise general awareness of the importance of conservation in Palau. The charismatic flagship species for this campaign, chosen by students and community stakeholders, was one of our endemic birds – the Palau Fruit Dove, known to Palauans as the Biib. The Biib has since become the logo for our organization.

Conservation is an integral part of Palauan culture and tradition. Even today, Palauan communities and traditional leaders continue to utilize traditional conservation tools and practices in managing our natural resources. However, in today's rapidly changing circumstances we also face major challenges, such as climate change, invasive species and unsustainable development. These new challenges can often require new and additional tools and approaches to conservation and resource management. We believe that the Important Bird Areas (IBAs) approach can provide useful tools for achieving our sustainable development and biodiversity conservation goals in Palau. Areas that are important to birds tend to be areas that are key to biodiversity health overall. Identifying areas that are critical to the health and survival of our bird populations will help our communities and decision-makers plan effectively to ensure that their development activities are indeed sustainable.

The Palau Conservation Society's vision is "Healthy Communities and Healthy Ecosystems" and maintaining healthy populations of the birds of Palau is essential to this vision. It is therefore, our great pleasure to be part of the work and the dedicated partnership of individuals and organizations that led to the production of this IBAs Directory. The kind of collaborative spirit and commitment that went into the production of this tool is exactly what we believe the BirdLife International partnership is all about. We look forward to continuing these partnerships and the work that contributes to conserving Palau's birds. It is our hope that this Directory will aid decision-makers, communities and visitors in managing and enjoying Palau's birds, as well as the areas on which they depend.

Moses Uludong
Chairman, Palau Conservation Society

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PHOTO BY MANDY EPTISON

Caroline Islands White-eye

Summary

Eight Important Bird Areas (IBAs) have been identified in Palau that have a total combined area of 216 km^2. These IBAs cover about 47% of Palau's total land area. Two of these sites, Fana and Helen, are in the Southwest Islands and are significant for their congregations of seabirds. The other six sites, Ngeriungs, Western Ridge, Middle Ridge, Ngerutechei, Rock Islands, and Peleliu, are located in the main archipelago and qualify for IBA designation because of the presence of globally threatened species or restricted-range birds, those that are endemic to Palau and Micronesia.

The efforts that led up to identifying these IBA sites began in 2003 when the Palau Conservation Society launched the Palau IBAs Program. The IBAs program in Palau was initiated in collaboration with the BirdLife International Partnership, and through financial assistance from the European Comission for the implementation of a regional project to test the Important Bird Area approach in islands in the Pacific. Other islands that involved in this regional project were Fiji, New Caledonia, and French Polynesia.

Birds have been used as bio-indicators for overall biodiversity throughout the world. Areas that have a high diversity of birds have also been shown to harbor high diversity of other taxonomic groups. The potential conservation application of the information resulting from the identification of IBAs in Palau is indeed great. It has already provided the opportunity to update the national forest bird surveys conducted in Palau in 1991. It has also provided an opportunity to look at specific sites and species that are known to be locally and internationally important. The identification of IBAs is anticipated to contribute to the ongoing identification and management of protected areas in Palau.

IBA designation does not necessarily imply any legal restrictions. It simply identifies an area important for bird diversity and makes information available to landowners, communities and other stakeholders. More effective conservation planning and action are hoped to be the long-term outcome of this approach.

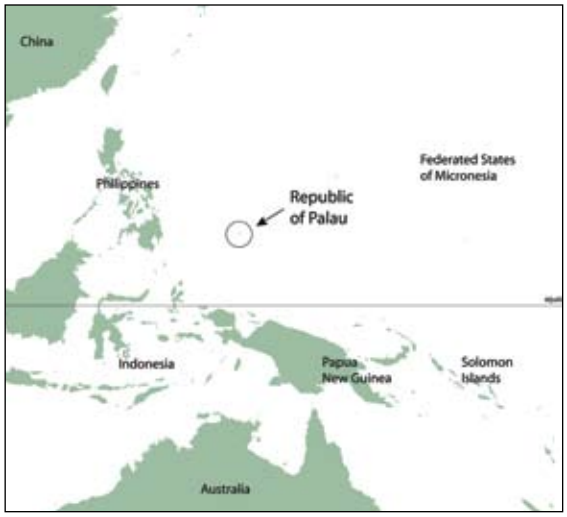
The next steps for the Palau IBAs program include:

- Identifying gaps in network coverage, such as sites important to discreet or rare species (such as the Palau Scops-owl and the Palau Ground-dove) and potential Marine IBAs.
- Assessing the threats and opportunities in each of the IBAs.
- Prioiritizing IBAs for action based upon threat assessments, feasibility, levels of local commitment and importance of the site to protecting biodiversity.
- Seeking higher level protection of IBAs.
- Developing collaborative management planning activities for IBAs that are integrated into land-use and protected area planning initiatives.
- Continuing outreach and education programs about IBAs and Palau's biodiversity.
- Reducing known threats through activities such as protected areas establishment, and the control, eradication and prevention of invasive species.
- Pursuing opportunities for sustainable economic development of IBAs, such as nature trail development, bird-watching tours, and well-investigated and well-managed programs for sustainable harvest of some species.

PHOTO BY MANDY EPTISON

Palau's national bird, the Palau Fruit-dove or Biib, displays its many colors.

General Information about Palau



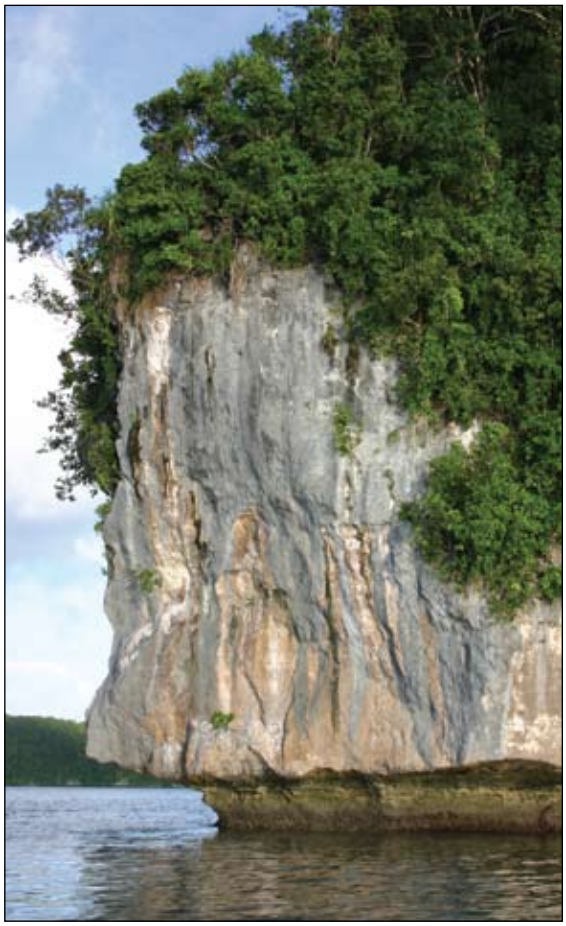


PHOTO BY PALAU CONSERVATION SOCIETY

Rock islands, one of four geeological island types found in Palau.

Geography

The Republic of Palau is an island nation located in the tropical western Pacific. It is the westernmost island group in the sub-region known as Micronesia. The nation consists of two sets of islands. The main Palau archipelago is located at approximately 7 degrees north latitude and 134 degrees east longitude, stretching approximately 200 kilometers from the northernmost atoll of Ngaruangel to the island of Angaur in the south. There are also six outlying islands, known collectively as the Southwest Islands, located between 300 to 500 kilometers southwest of the main archipelago. The main Palau archipelago is located some 800 kilometers southeast of the Philippines and 800 kilometers northeast of Indonesia. Palau consists of 586 islands, of which only 12 are continuously inhabited. The total land area is 540 km^2. The Exclusive Economic Zone extends 200 miles (320 km) seaward and comprises an area of over 600,000 km^2. There are approximately 1,100 km^2 in the main lagoon of the archipelago (ROP 2005, TNC 2002, Matthews 2005).

Geology

Palau consists of four geological types of islands: volcanic, high limestone, atoll and coralline platform, and a combination of these. The largest island of Babeldaob is mostly volcanic in origin and has rolling uplands and a well-developed perennial stream system. High limestone islands include the Rock Islands, the northern parts of Peleliu and Angaur, eastern Koror, and the islands that form the outer parts of Airai Bay on the southeast end of Babeldaob. Reef or atoll islands include the low platform portions of the islands of Peleliu and Angaur and some islands in the Rock Island group, like Ngemelis, that are situated on the reef, the atolls of Kayangel, and the Southwest Islands. There is a transition zone on southwest Babeldaob

PHOTOS BY PAT COLIN

Ngeremeduu Bay, UNESCO Biosphere Reserve.

where volcanic and high limestone islands occur adjacent or combined. The western part of Koror is volcanic while the southeast portion is limestone. The other compound islands, having both volcanic and high limestone areas, include Ngerdeuais, southeast of Babeldaob, and the islands of Peleliu and Angaur (US Army 1956). Palau was formed between 65 and 42 million years ago by submarine volcanic activity at the southern tip of the Palau-Gyushu oceanic ridge (ROP 2005, TNC 2002).

Climate

Palau has a consistent tropical maritime climate with a mean temperature of 27°C, with an average temperature range of 5°C. Average relative humidity is 82%. Rainfall averages 381 cm annually. July is the wettest month while February and March are the driest. Trade winds from the northeast and east occur from November to May, and southwest winds prevail from June to September. Palau is not located within the main tropical cyclone track and is rarely affected directly by typhoons.

Freshwater Resources

Babeldaob Island supports five major watersheds each with a network of perennial streams. The

PHOTOS BY ANN KITALONG, TARITA HOLM AND ROBIN DEMEO

Native plants whose fruits are important sources of food for some of Palau's native and endemic forest birds. Clockwise starting at top left: Kelelacharm (Campnosperma brevipetiolata), Ebouch (Pinanga insignis tree), Mesekerrak (Sygyzium cuminii), and Chelangel (Pouteria obovata).

PHOTO BY PALAU CONSERVATION SOCIETY

Sunrise over Babeldaob's interior forest, the largest and most diverse contiguous forest in Micronesia.

island also contains the archipelago's two freshwater lakes, including Lake Ngardok, which is the largest natural freshwater lake in Micronesia. Volume of water flow on Babeldaob is estimated at 500 million gallons (1.8 billion liters) per day. All other islands have simple radial drainage patterns.

The primary source of fresh drinking water in Palau is from rainfall, which provides over 400 billion gallons of water each year (ROP 2004). The groundwater lens is thought to be fairly thin, contributing about 40 billion gallons annually. Most of the nation's public water systems rely on surface water. Many communities in outlying islands rely solely on rainfall catchments.

Soils

There are approximately 20 soil types in Palau, with a range of texture, drainage, depth, and fertility (USDA 1983). Babeldaob has the most soil diversity. Most of Babeldaob's soils are highly weathered, high in aluminum, acidic, low in nutrients and organic matter, and generally of very limited fertility. However, undisturbed areas under forest cover and areas under traditional taro cultivation maintain the richest soils.

Terrestrial Resources

Palau's terrestrial ecosystems include upland volcanic forest, limestone forest, grasslands and savannas, freshwater streams and lakes, freshwater wetlands, and mangroves. Approximately 75% of Palau is covered with native forest. With more than 1400 species of plants, Palau's forests are the most species-diverse in Micronesia. To date, 150 species of plants have been identified as endemic to Palau. Some areas are agroforest or plantation, especially close to villages. Agroforested areas support a variety of tropical trees and crops, including bananas, papaya, soursop, lemons, tapioca, dryland taro and sweet potato vines. In addition to agroforest

Table 1: Overview of Terrestrial Biodiversity in Palau (ROP 2005, Wiles 2004, Kitalong et al, in press)

Species	Approximate Total	Known Endemic (species level*)	Known Introduced
Plants (Trees, shrubs, tree-shrubs, vines, herbaceous plants, ferns, orchids, other)	1,400	150	428
Fungi	130	Unknown	Unknown
Mangrove plants	18	Unknown	Unknown
Insects	5,000	Unknown	160+
Birds	153	9	6
Freshwater fish	47	4	5
Terrestrial snails	77	32	2
Amphibians and reptiles	46	12	5
Mammals**	14	0	12

* Much of Palau's biodiversity is endemic at the sub-species level.
** Two species of bats are Palau's only native mammals.

are the culturally important wetland taro patches maintained by Palauan women. Medicinal plants are collected from a variety of terrestrial ecosystems in Palau, and weaving materials are collected from the Pandanus growing in Kayangel and in savannas elsewhere in Palau. Timber harvest is currently limited to small-scale local operations that cut trees for housing supports, furniture and carved storyboards (items popular as tourist souvenirs).

Population, Economy, Transportation and Development

Arrival of humans is thought to have occurred between 3000 and 5000 years ago. The Palauan population through history has ranged from estimates of 25,000-50,000 to just 4,000 people. In 2005, the total population of Palau was 19,907. Seventy-three percent of the population is ethnic Palauan and the remaining 27% is comprised primarily of people from the Philippines, Japan, China, United States and other Micronesian Islands. The overwhelming majority of the population resides in and around Koror. Smaller villages are spread throughout the rest of the archipelago. Palau is divided into 16 smaller political units called states. The largest island of Babeldaob is made up of 10 states. The remaining 6 states are composed of one island or groups of islands.

Palau has a significant history of foreign occupation and administration (Otto 1998). Spain sent missionaries in the late 19th century, Germany then developed copra and mining operations, and later Japan used the islands first as a source of tropical marine and terrestrial resources and later as a strategic military base during World War II.

PHOTO BY ERIC VANDERWERF

A portion of the Compact Road while under construction.

PHOTO BY DAVE MENDOZA

Photo, top: National Capitol in Ngerulmud, Melekeok. Photo, right: Delerrok, Palau's money-bird which resembles the Whimbrel, as depicted on the national capitol.

The Japanese administration had a great impact on Palau's terrestrial systems, as new land tenure systems were created, dryland farming was encouraged and supported, commercial mining operations were opened, and roads, buildings and settlements were built. The population during the peak of the Japanese administration consisted of 30,000 Japanese, Okinawans and Koreans and only 5,000 Palauans.

In 1944, American forces bombed Japanese military and commercial sites in Palau. Peleliu was completely deforested as a result of the heavy bombing, and locations in southern Babeldaob, especially in Airai and Aimeliik, received considerable damage as well. After the war, Palau fell under the administration of the United States as part of the United Nations Trust Territory of the Pacific Islands. Then, "at 1 p.m. on October 1, 1994, after more than twenty years of negotiations, the new nation of Palau was born. Although still closely affiliated with the United States, Palauans now control their own destiny. Under the Compact of Free Association, the "independence agreement" which governs relations between Palau and the United States, Palau receives trust funds plus fifteen years of budgetary support to decline at five year intervals over the fifteen years. Having achieved political independence, Palau is now faced with the challenge of achieving economic independence" (Otto 1998, p.16).

Today, much of the national economy in Palau is dependent on foreign aid. The largest and fastest growing industry in the country is marine-based tourism. Agriculture is also a national priority and is a growing local industry. Many Palauans depend upon full-time jobs for needed income. In addition to the cash economy in Palau, there is a strong subsistence economy. Food, money and services are exchanged among families during customary events. Also, fish, invertebrates, crops and other food items are collected or grown for subsistence uses by families throughout Palau.

Until recently, ground transportation was limited, with the majority of paved roads centered in and immediately around Koror and Airai, the southernmost state in Babeldaob. The completion of an 85

km circumferential road around the island of Babeldaob, referred to locally as the "Compact Road," has more than doubled the nation's transportation network and made all 10 Babeldaob states accessible by car. Transportation to outlying islands is still by boat and access to the islands outside the main archipelago is severely limited by sea and weather conditions.

Development is progressing rapidly, driven by increasing tourism, enhanced accessibility, and improving living standards. Current and proposed development projects range from single-family homes to mega-resorts and golf courses. Babeldaob, being the largest landmass, is the obvious target for many of these future developments. To some extent, despite modern change, the protection and sustainable use of natural resources remains a priority, like it was in traditional Palauan culture and history.

Community and Culture

In the pre-contact era, Palauans believed Palau to be a unique and complete world closed within itself and extending to a point just beyond the horizon. To the early Palauans, the culture of Palau was created in Palau. It was not a borrowed set of practices but a distinctly Palauan way of life. Change in Palau has been a story of resistance followed by pragmatic acceptance. Resistance resulted from the tenacity of the indigenous view of Palau as a unique and complete world. However, the opportunities for social power, prestige, and wealth brought by foreigners influenced acceptance by the naturally competitive Palauans (ROP 2004).

Palauans are highly group oriented and Palauan culture and traditions are based largely on family, clan and community organizations, protocols and affiliations. Palauans consider underlying core values and ethics such as respect – *omengull*, sharing and reciprocity – *klaingeseu*, hard work and perseverance – *duch el reng*, and conservation – *omengereomel* to be essential in today's changing national and global circumstances. Traditional practices serve to provide social and economic security for community, clan and family members. These practices include gathering resources to build first family homes – *ocheraol*, gathering resources to provide for family members of the deceased – *cheldecheduch*, celebrating the birth of a first child – *ngasech*, and placing specific regulations or moratoria on behaviors, species or sites – *bul*.

Conservation, as a general principle, and the concept of protected areas and species are not new to Palauan communities. Taking more than is needed has always been regarded as wasteful and selfish. If a particular resource shows signs of decline, chiefs have the authority to implement a *bul* until the resource has recovered. Communities and traditional

TOP PHOTOS BY PALAU CONSERVATION SOCIETY; BOTTOM PHOTO BY BRIA PHILLIPS

Photos, clockwise from the top left: Delerrok, the Palauan moneybird on a bai, a traditional men's meeting house; White-tailed tropicbird; Palauan woman with white-tailed tropicbird headdress during a first birth ceremony.

BOTTOM PHOTO BY SCOTT REHMUS. TOP PHOTO BY ERIC VANDERWERF

Photo, top: Aimeliik bai, a traditional men's meeting house. Photo, left: Woman working in a taro patch in Babeldaob.

leaders continue to utilize traditional conservation practices, and indeed many conservation areas throughout Palau were initially established and are managed through some form of traditional means. Changes in economy and governance structure has led to occasional conflict and confusion over the roles of elected and traditional decision-makers in governance. However, in many instances, the traditional and modern systems work together to improve management of resources and their use.

Birds hold symbolic as well as tangible importance in Palauan culture. The Whimbrel[1] is a symbol of wealth, especially in the state of Melekeok. The Audubon's Shearwater serves as a powerful protector and guide, especially in the state of Ngchesar, and Palauans throughout the country are very conscious of not causing the bird any harm. The feathers of the White-tailed Tropicbird are used for the headdress of a woman during her first birth ceremony if she is from Idid clan of Koror. Four of Palau's 16 states have birds depicted on their state flags. The Micronesian Imperial-pigeons are highly regarded food, traditionally reserved for high status individuals and the soup bones often served to babies as their first introduction to solid food. Seabirds and their eggs are important sources of food for people living in the remote islands of Kayangel, Sonsorol and Tobi.

1 Note the bird names used in this directory follow BirdLife (2007) . See Appendix B for a list of alternative names.

Birds and Biodiversity

Palau's Biodiversity

The diversity of island and soil types, a consistent climate, and proximity to larger tropical landmasses have resulted in a high variability of habitats, making Palau the most biologically diverse area in Micronesia. Biodiversity is important to the Palauan way of life, as most communities rely heavily on the use of a variety of resources. Most legends and many practices and taboos revolve around plants or animals, and thus biodiversity is an integral part of the Palauan identity.

Terrestrial biodiversity in Palau is thought to be extremely high, due in part to location, relative age and isolation of the islands. Proximity to larger landmasses, such as the biodiversity "hotspots" of Indonesia and Papua New Guinea, is thought to have led to the natural introduction of species over time. The isolation of the islands has led to niche specialization and a high rate of endemism. Palau's forests and avi-fauna, for instance, are the most diverse in Micronesia.

Forests are by far the most prevalent type of terrestrial habitat in Palau. Native forest includes: upland (volcanic, both primary and secondary), mangrove, swamp, high limestone (including the Rock Island forests), low limestone and atoll (strand) forests. Agroforest is often found along coasts and near villages, consisting of a mixture of native and introduced species. Approximately 70% of Palau's forest is comprised of upland forest, distributed throughout Babeldaob and Koror. Mangroves comprise 15% of Palau's forests and cover 80% of Babeldaob's coastline, mostly the west coast, parts of Koror and vicinity, and the island of Peleliu. Low limestone forests are restricted to Peleliu and the Southwest Islands. Intact atoll forests are found on Kayangel and Helen (Cole et al. 1987).

Forests, namely the upland and limestone types, are important for much of Palau's vertebrate biodiversity. All of Palau's endemic birds use forests during some or all of their lives (Engbring 1983, Engbring 1992). Forests are also extremely important for regulating water resources. The current rate of forest loss is unknown but accelerating, due to increasing development. Road construction, both paved and unpaved, and fire has led to forest fragmentation, the extent of which is expected to increase.

Savannas and grasslands are also prevalent on Babeldaob and parts of Koror and are covered by a mixture of bare soil, ferns, grasses, and shrubs. Whether these areas occur naturally or are human-induced is a subject of debate. However, it is generally accepted that deforested lands often become savannas, especially if the areas are subject to repeated burning. These areas do not easily revert back to forest because of depleted soil with high aluminum content.

Freshwater habitats include lakes (natural and man-made), streams, and rivers. Streams and rivers support rich riparian habitats that are essential to many

PHOTO BY ELIZABETH MATTHEWS

Protected forest in Ngardok Nature Reserve which supports high diversity of birds.

BOTTOM PHOTO BY MANDY ETPISON, TOP PHOTO BY ELIZABETH MATHEWS

Photo, top: Savanna in Babeldaob overlooking mangroves and Rock Islands in the distance. Photo, left: Banded Rail, Terrid.

of Palau's species. Lake Ngardok, one of Palau's two natural freshwater lakes, is a rare habitat for waterbirds such as the Common Moorhen, Pacific Black Duck, and migrant species. Other wetland habitats including swamp forests, marshes, and cultivated wetland taro patches, although limited in extent and distribution, are critical habitat for several important species.

While much is known traditionally about Palau's biodiversity, much more is yet to be discovered by modern science. Generally, the value of Palau's biodiversity, both intrinsic and as a source of useful goods and services, is still very poorly understood. Despite this limited knowledge, there is overwhelming agreement among scientists, conservation practitioners, and communities that Palau's biodiversity is under threat. Improved land transportation, especially on the big island of Babeldaob, has accelerated the rate of land clearing and conversion. Erosion and sedimentation, in some areas, have inevitably made their way to the coral reefs, which can potentially impact our tourism industry. Intensive agricultural practices, the northward sprawl from Koror of residential communities, fires, invasive alien species, and large-scale commercial development are all threats to Palau's biodiversity. When land is degraded and water is polluted, ecosystems are damaged and their functions impaired.

Other points of general consensus are that conservation resources and efforts are limited and that some development (the nature and level of which is outside the scope of this book) is inevitable and necessary. Therefore, the need for concerted effort and carefully focused action is essential for the protection of Palau's biodiversity. There is a need to identify sites and habitats that harbor the highest concentration of biodiversity or vulnerable or locally important species, determine which of those

sites are most at threat, and finally, decide which areas require the most urgent action.

As of 2008, there were 36 protected areas, all but one (Ngerukuid Islands Wildlife Preserve in the Rock Islands) initiated at the state level. Palau's network of protected areas covers over 40% of near-shore marine areas and 18% of terrestrial habitats. These protected areas were established for a variety of different reasons. Some sites were identified because they supported a population of a significant species. Other sites were selected because they protected water catchments, while others included natural features that would draw visitors. Whether the existing network fully protects the whole range of Palau's biodiversity is unknown.

Validating existing sites and identifying new ones, the sum of which protects the full extent of Palau's biodiversity, demands thorough biodiversity assessments. These assessments require considerable time and resources. Consequently, at times it becomes necessary to use novel ways to shortcut this process by using the best available information. One way is to use birds as bio-indicators of biodiversity. Efforts using such species as insects or fish as indicators have also been initiated.

Bird Conservation Strategy: Using Birds as Bio-indicators

All the efforts that have led up to this book are contributions to identifying areas that are essential to Palau's biodiversity conservation. Important Bird Areas (IBAs) are sites of global significance for bird conservation that are selected using standardized criteria. These sites are intended to be part of a broader, integrated approach to conservation that incorporates sites, species, and habitats.

Birds, second only to trees, are the most recognized terrestrial biodiversity. As some of Palau's largest terrestrial fauna, they play major roles in the function of ecosystems. They disperse seed and pollen and regulate insect and smaller life forms through predation. Phosphate mining on Peleliu and Angaur in the early part of this century was only possible because of the bird deposits on the islands, suggesting large bird populations in the past. The potential for bird-watching as a new dimension to Palau's predominantly marine-based tourism industry cannot be ignored. Birds have significance in Palauan culture. They are found throughout traditional literature, art and customary practices.

PHOTOS BY MANDY ETPISON

Common migratory birds in Palau. Clockwise, starting at the top: Yellow Bittern, Rufous Night Heron, and American Golden Plover.

Birds also have other characteristics that make them good candidate bio-indicators for biodiversity conservation, especially for Palau. Reasons for this include:

- They occupy a wide range of habitats in Palau.
- More is known and documented about them than any other terrestrial taxonomic group.
- They are some of the largest terrestrial predators in Palau and changes at lower, less visible trophic levels are likely to be manifested and then observed in birds.

- They have widespread popular appeal and make good flagship species for environmental education.
- Because of their size and popular appeal, they lend themselves easily to many community-based survey and research programs.

Palau's Birds

Palau is home to 153 confirmed bird species in 40 families (Engbring 1983, Engbring 1992, Wiles 2004, VanderWerf et al. 2006). Of these, 51 are resident birds and the remaining 102 are either regular or irregular migrant or vagrant birds. Out of the 51 residents, 37 are land or wetland species and the other 14 are nesting shorebirds. Palau has nine species currently listed as endemic and three other residents, namely the Micronesian Kingfisher, Slender-billed Cicadabird, and Palau Swiftlet, are candidate endemics (Pratt 2001). Palau's nine endemic species, three candidate endemics, and four other residents, confined only to Micronesia, are considered restricted-range, as will be defined in later sections.

The World Conservation Union (IUCN) Red List of Globally Threatened Species lists species according to six categories: critically endangered, endangered, vulnerable, near threatened, least concern, and data deficient. Species may be listed as threatened due to small population size, restricted or fragmented habitats, or due to past, current, or perceived future population or habitat declines (BirdLife 2004, USFWS 2005). One of Palau's birds, the Micronesian Megapode, is listed as endangered on the IUCN Red List. Five other species, including the Palau Ground-dove, Nicobar Pigeon, Giant White-eye, Black-tailed Godwit and Micronesian Imperial-pigeon, are near threatened. Any further declines of population and/or increase in threat to these species or their habitats could elevate their IUCN status to endangered.

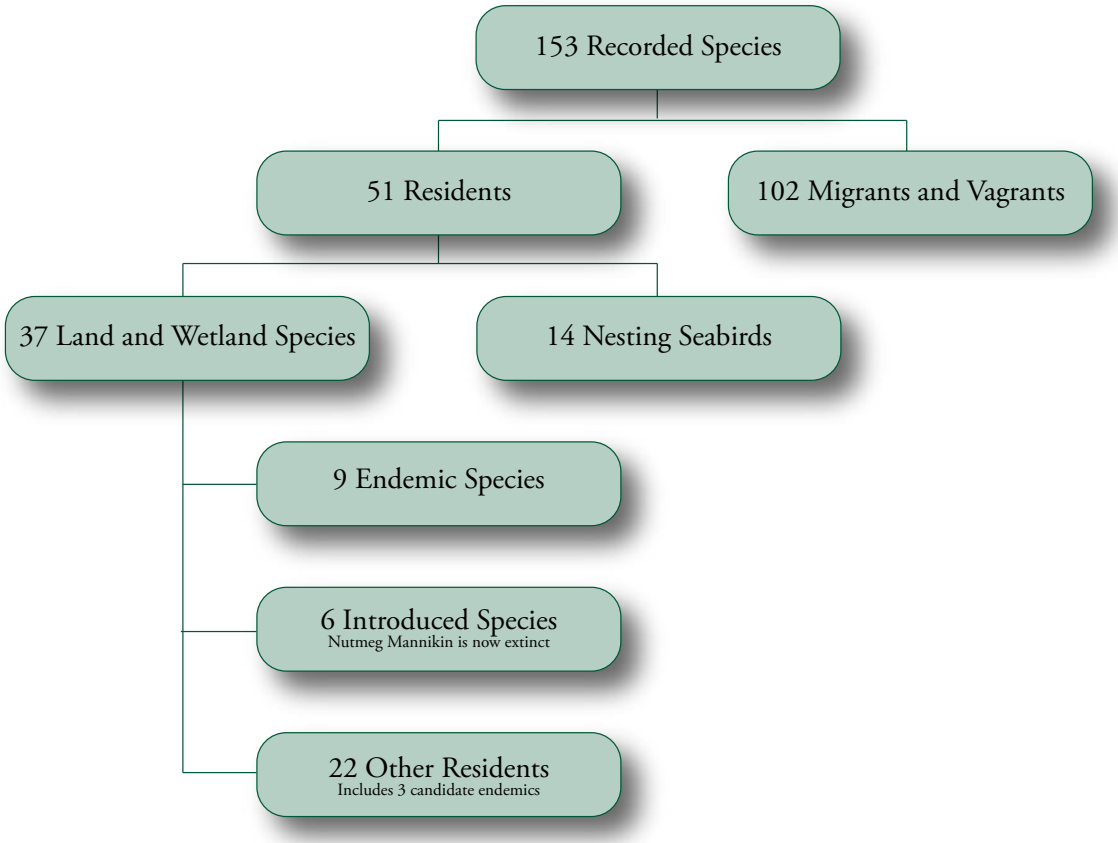


Table 2: Palau's Threatened Birds

SPECIES	PALAUAN NAME	STATUS
Black-tailed Godwit *Limosa limosa*		Near Threatened
Giant White-eye *Megazosterops palauensis*	Charmbedel	Near Threatened
Micronesian Imperial-pigeon *Ducula oceanica*	Belochel	Near Threatened
Micronesian Megapode *Megapodius laperouse*	Bekai	Endangered
Nicobar Pigeon *Caloenas nicobarica*	Laib	Near Threatened
Palau Ground-dove *Gallicolumba canifrons*	Omekrengukl	Near Threatened

Endemic birds are species that are restricted to one geographical area. Palau's nine endemic birds are not found anywhere else in the world.

Table 3: Palau's Endemic Birds

SPECIES	PALAUAN NAME
Dusky White-eye *Zosterops finschii*	Chetitalial
Giant White-eye *Megazosterops palauensis*	Charmbedel
Mangrove Flycatcher *Myiagra erythrops*	Charmelachull
Morningbird *Colluricincla tenebrosa*	Tutau
Palau Bush-warbler *Cettia annae*	Wuul, Chesisebarsech
Palau Fantail *Rhipidura lepida*	Melimdelebdeb, Chesisirech
Palau Fruit-dove *Ptilinopus pelewensis*	Biib
Palau Ground-dove *Gallicolumba canifrons*	Omekrengukl, Doldol
Palau Scops-owl *Otus podarginus*	Chesuch

If a bird is listed as a "candidate endemic," it means that it is suspected to be endemic and is awaiting scientific confirmation of that status. Palau has three candidate endemic species. Often, after years of assuming that a bird found in different localities is the same species, scientists discover that there are actually enough specific distinctions for them to qualify as stand-alone species. Other times, different species are later discovered to be the same and are then "clumped" into one species.

Table 4: Palau's Candidate Endemic Birds (Pratt 2001)

SPECIES	PALAUAN NAME
Micronesian Kingfisher *Todiramphus cinnamominus*	Cherosech, Ongelimadech
Palau Swiftlet *Collocalia pelewensis*	Chesisekiaid
Slender-billed Cicadabird *Coracina tenuirostris*	Kiuidukall

An introduced bird is one that is not native to a particular location and was brought or "introduced" by humans, intentionally or not. If the bird cannot survive outside human captivity, it is simply considered introduced or non-native. If the species is capable of surviving and reproducing in the wild, it is considered naturalized. A species is "invasive" when it poses a threat to native species, either by competition or by displaying aggressive tendencies. Palau has six introduced birds, two of which are considered invasive. The Sulfur-crested Cockatoo and the Eclectus Parrot are considered invasive because of their feeding behavior. It is suspected that these species may be reducing the numbers of an endemic rock island palm by feeding on the heart of the palm.

PHOTOS BY MANDY ETPISON

Photos, left to right: Chestnut Munia and Eurasian Tree-sparrow, two birds that were introduced and have become invasive in Palau.

Table 5: Palau's Introduced Birds

SPECIES	PALAUAN NAME
Chestnut Munia *Lonchura atricapilla*	Kanaria
Eclectus Parrot* *Eclectus roratus*	Iakkotsiang
Eurasian Tree-sparrow *Passer montanus*	
Greater Sulfur-crested Cockatoo* *Cacatua galerita*	Iakkotsiang
Nutmeg Munia** *Lonchura punctulata*	
Red Jungle-fowl *Gallus gallus*	Malkureomel

*invasive species **extinct

Palau's Threatened Birds

PHOTOS ON THIS PAGE BY MANDY ETPISON

Top row, left to right: Giant White-eye (also Endemic), Micronesian Imperial-pigeon. Middle row, left to right: A migratory Black-tailed Godwit that was tagged near Shanghai, China, Micronesian Megapode. Bottom row, left to right: Nicobar Pigeon, Palau Ground-dove (also Endemic).

Palau's Endemic Birds

PHOTOS ON THIS PAGE BY MANDY ETPISON

Top row, left to right: Palau Fruit-dove, Palau Bush-warbler. Middle row, left to right: Morningbird, Palau Scops-owl, Mangrove Flycatcher. Bottom row, left to right: Palau Fantail, Dusky White-eye.

Palau's Candidate Endemic Birds

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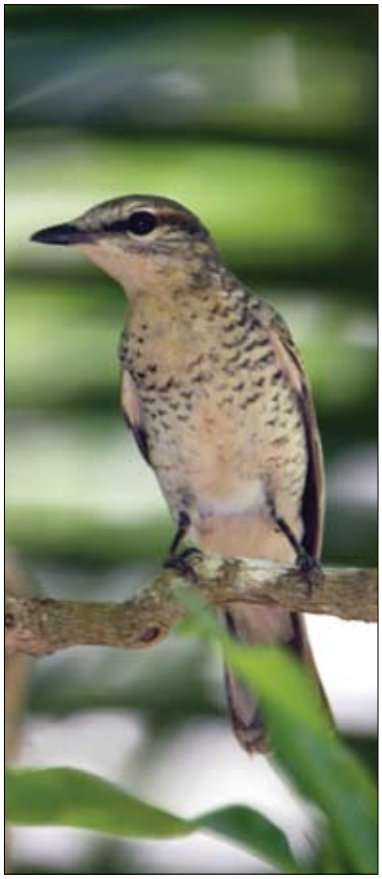


Clockwise starting at upper left: Micronesian Kingfisher, Palau Swiftlet, Slender-billed Cicadabird and Micronesian Kingfisher preparing for flight.

PHOTO BY MANDY ETPISON

A pair of the invasive Eclectus Parrots, a species introduced to Palau which poses threats to Palau's forests.

Seabirds have a played a significant role in Palau's social and economic history. The phosphate mining in the early part of this century in the islands of Peleliu, Angaur, and the Southwest Islands suggests significant seabird colonies at some time. Over time, bird droppings (guano), create phosphate deposits which can be mined. The only sizable colonies of seabirds currently in Palau are on Ngaruangel Atoll in the north and Fana and Helen in the Southwest Islands. Seabirds are found throughout the main archipelago in lesser numbers.

Table 6: Nesting Seabirds

SPECIES	PALAUAN NAME
Audubon's Shearwater *Puffinus lherminieri*	Ochaieu
Black-naped Tern *Sterna sumatrana*	Kerkirs
Black Noddy *Anous minutus*	Bedaoch
Bridled Tern *Sterna anaethetus*	Bedebedechakl
Brown Booby *Sula leucogaster*	Kuel
Brown Noddy *Anous stolidus*	Mechadelbedaoch
Great Crested Tern *Sterna bergii*	Roall
Greater Frigatebird *Fregata minor*	Kedam
Lesser Frigatebird *Fregata ariel*	Kedam
Little Pied Cormorant *Phalacrocorax melanoleucos*	Deroech
Red-footed Booby *Sula sula*	Kuel
Sooty Tern *Sterna fuscata*	
White-tailed Tropicbird *Phaethon lepturus*	Dudek
White Tern *Gygis alba*	Sechosech

All of Palau's endemic birds plus seven others, which are more widely distributed throughout Micronesia, are classified as restricted-range species. Restricted-range species are defined as landbirds with a breeding range of 50,000 km^2 or less (Stattersfield et al. 1998). These species are significant as they trigger IBA criteria which will be addressed in later parts of this book.

Table 7: Restricted-range Species

SPECIES	PALAUAN NAME
Caroline Islands White-eye *Zosterops semperi*	Charmbedel
Dusky White-eye *Zosterops finschii*	Chetitalial
Giant White-eye *Megazosterops palauensis*	Charmbedel
Mangrove Flycatcher *Myiagra erythrops*	Charmelachull
Micronesian Imperial-pigeon *Ducula oceanica*	Belochel
Micronesian Kingfisher *Todiramphus cinnamominus*	Tengadidik
Micronesian Megapode* *Megapodius laperouse*	Bekai
Micronesian Myzomela *Myzomela rubratra*	Chesisbangiau
Micronesian Starling *Aplonis opaca*	Kiuid
Morningbird *Colluricincla tenebrosa*	Tutau
Palau Bush Warbler *Cettia annae*	Wuul, Chesisebarsech
Palau Fantail *Rhipidura lepida*	Melimdelebteb, Chesisirech
Palau Fruit-dove *Ptilinopus pelewensis*	Biib
Palau Ground-dove *Gallicolumba canifrons*	Omekrengukl, Doldol
Palau Scops-owl *Otus podarginus*	Chesuch
Palau Swiftlet *Collocalia pelewensis*	Chesisekiaid

*globally threatened and triggers IBA criteria (A1).

Palau's Nesting Seabirds

UNLESS OTHERWISE INDICATED, PHOTOS ON THIS PAGE BY MANDY ETPISON








PHOTO BY HEATHER KETEBENGANG

Top row, left to right: Brown Booby, Frigatebird, Black Noddy. Middle row, left to right: Sooty Tern, White-tailed Tropicbird. Bottom row, left to right: Common White Tern, Red-footed Booby, Great Crested Tern. Other nesting seabirds not shown: Audubon's Shearwater, Little Pied Cormorant, Black-naped Tern, Bridled Tern and Brown Noddy.

Palau's Restriced-range Birds

PHOTOS ON THIS PAGE BY MANDY ETPISON

Clockwise, starting at top: Micronesian Myzomela, Micronesian Starling, Caroline Islands White-Eye. Not shown: Micronesian Megapode, Palau Ground-dove, Micronesian Imperial-pigeon (all in Threatened Birds section); Palau Fruit-dove, Palau Scops-owl, Palau Bushwarbler, Mangrove Flycatcher, Palau Fantail, Morningbird, Dusky White-eye (all in Palau's Endemic Birds section); Palau Swiftlet, Micronesian Kingfisher (all in Candidate Endemic Birds section).

Other Native Resident Land Birds

PHOTOS ON THIS PAGE BY MANDY ETPISON






Top row, left to right: Grey Nightjar, White-breasted Woodswallow. Middle row, left to right: Common Moorhen, Collared Kingfisher. Bottom row, left to right: Blue-faced Parrotfinch, Purple Swamphen. Not shown: Pacific Black Duck, Slatey-legged Crane, Slender Billed Cicadabird (in Palau's Candidate Endemic section), Nicobar Pigeon (in Palau's Threatened section).

Threats to Palau's Birds

Birds are particularly vulnerable to changes in their environment. In Palau, the primary threats to birds are changes and degradation of their habitats, hunting, invasive species and climate change. Some of these threats are occurring now; others may increase and become more of a threat in the future.

Most of Palau's endemic birds rely upon forests for their food and shelter. Other critical habitats are beaches (for megapodes and nesting seabird colonies), wetlands, and savannas. Palau has seen waves of habitat change brought on by a variety of factors, including massive devastation due to bombing and use of napalm on Peleliu's and Angaur's forests during WWII, development, farming, fires, and road construction. The forests destroyed during WWII have regrown, and today Peleliu is home to all nine of Palau's endemic birds. Unfortunately, there is potential for an increase in habitat decline as Palau develops. Habitat loss and change due to development pressures could affect bird populations in the future. With the completion of the Compact Road, access to land on Babeldaob could result in habitat changes, especially forest fragmentation, that may affect birds.

Uncontrolled hunting of birds could result in overexploitation of some species. The Micronesian Imperial-pigeon is protected under national law. Despite this protection, hunting of this popular bird continues. Pigeons appear to be particularly popular among people with means and the status to purchase them. A recent bird survey showed a significant decline in the relative abundance of Micronesian Imperial-pigeons between 1991 and 2005. Illegal hunting is considered to be the major factor in this decline, although changes in forest extent and habitat may also be contributors.

PHOTO BY PALAU CONSERVATION SOCIETY

A juvenile Palau Fruit-dove injured by a pellet gun.

PHOTOS BY PALAU CONSERVATION SOCIETY

Some of the invasive species that are threats to Palau's birds include: (clockwise, from top) feral cats, rats, and crab-eating macaques.

Invasive species of animals, plants and disease-causing microorganisms are a particular threat to birds on islands, and have already caused numerous extinctions around the world. In Palau invasive species that are a threat to birds are rats, mice, cats, crab-eating macaques (monkeys), and monitor lizards all of which eat eggs and young, and some compete with birds for food. Palau's proximity to Indonesia and other parts of Southeast Asia creates the potential for the spread of Avian Influenza (AI) through introduction of infected domestic birds. A monitoring program has been established, and fortunately, as of early 2008 no cases of AI have been detected in Palau.

Conservation Infrastructure

In Palau, states are the owners of natural resources on land and out to 12 miles from the traditional coastal baselines. Therefore, much of the action to protect sites has occurred at the state and community level. In addition, traditional chiefs have

declared traditional measures known as *bul*, which are restrictions on harvesting of certain resources or areas. As the resource owners, the states are responsible for the management of local resources. Therefore, protected area management is the responsibility of the states and local communities. At times this responsibility has been shared with non-government organizations such as the Palau Conservation Society. Recognizing the importance of states and communities in resource management, the Palau national government passed the Protected Areas Network Act in order to provide support to state and community-based protected area management.

The primary national government agencies that have responsibility for resource management in Palau are within the Ministry of Resources and Development (MRD), Ministry of Justice (MOJ) and the Office of the President. The Bureau of Agriculture and the Bureau of Marine Resources are responsible for terrestrial and marine resource management, respectively within MRD. The Division of Fish and Wildlife Protection (DFWP) within the Ministry of Justice enforces natural resource-use legislation within Palau's territorial waters and on land; the Division of Marine Law monitors fishing activities in Palau's EEZ. In the Office of the President is the Office of Environmental Response and Coordination (OERC) which primarily coordinates Palau's commitments to international conventions related to environment and natural resource management. The Environmental Quality Protection Board (EQPB) is the semi-government office responsible for enforcing Palau's environmental quality standards, legislation, and regulations. The Belau National Museum, a semi-government institution, is home to a Natural History Section which is actively creating inventories and maintaining collections of Palau's plants and insects. The Museum has also been conducting bird surveys as part of a project to identify biological indicators to monitor change in terrestrial ecosystems.

Maintenance of all levels of biodiversity (genetic, species, and ecosystem) is important for Palau. The country is signatory to a number of international conventions aimed at protecting biodiversity, including the Convention on Biological Diversity (CBD), Convention to Combat Desertification and Land Degradation (CCD), Ramsar Convention on Wetlands, the Convention on International Trade of Endangered Species (CITES) and the Convention on Migratory Species (CMS).

At the national level, there are a number of laws in place intended to protect specific species or sites. The Protected Land Life Act protects all bird species (with four exceptions—the Sulfur-crested Cockatoo, Red Junglefowl, Purple Swamphen, and Collared Kingfisher). Biodiversity is also protected through the creation and management of protected areas. The protection of biodiversity remains a national priority as stated in the Vision Statement of the Palau National Biodiversity Strategy and Action Plan: "The people of Palau are living in harmony with their diverse natural and cultural heritage" (ROP 2005).

Multi-agency task forces, boards and councils have been created for a variety of purposes over the past 10 years. Currently, the following are most active: National Environmental Protection Council (NEPC) (director level); Palau Natural Resource Council (PNRC) (practitioner level); and the Protected Areas Network Steering Committee.

Non-government organizations have played a significant role in resource management in Palau. The Palau Conservation Society and The Nature Conservancy have assisted local communities and states to develop their capacity to manage local resources. In particular, BirdLife International Partner the Palau Conservation Society, a national NGO that was created in 1994, has worked with states and local communities to develop and manage protected areas, has built local awareness about conservation and biodiversity through education campaigns designed to teach about local species and needs, and has begun to build local capacity for land- and resource-use planning.

Important Bird Areas in Palau

What are IBAs?

Important Bird Areas (IBAs) are key sites for the conservation of birds and biodiversity, and the building blocks for conservation planning. They are identified nationally, using data gathered locally and applying internationally agreed criteria. The IBA program was developed by BirdLife International and has been tested in many parts of the world. IBAs have been identified in Europe, Africa, parts of Asia, North America, South America, Australia, and some islands in the Pacific.

Important Bird Areas Criteria (Bennun & Njoroge, 1999)

Category	Criterion	Notes
A1. Globally threatened Species	The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.	Globally threatened species are those listed on the IUCN Red List. Sites qualify if they are known or thought to hold a population of Critically Endangered or Endangered species. Occasionally, sites can qualify under this category if population-size thresholds are set for species classified as Vulnerable, Conservation Dependent, Data Deficient, and Near Threatened. In addition, thresholds may be set at 1% of the global population of a species or at a minimum number of pairs (10) or individuals (30). In most cases, since quantitative information is insufficient for many species, the A2 category is used to identify sites important for Vulnerable, Conservation Dependent, Data Deficient or Near Threatened birds. In Palau's case, the A1 category was triggered only if Micronesian Megapodes were present at a site. All other threatened birds triggered the A2 category.
A2. Restricted-range Species	The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA)	Restricted-range species are defined as all landbirds which have had, throughout historical times, a total global breeding range estimated at below 50,000 km^2. EBAs are defined as an area which encompasses the overlapping breeding ranges of restricted-range bird species, such that the complete ranges of two or more restricted-range species are entirely included within the boundary of the EBA. EBAs capture endemic birds and other birds with limited ranges.
A3. Biome-restricted Species	The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined in one biome.	This applies to species that share a distribution of greater than 50,000 km^2 and occur within a biome, defined as a major regional ecological community characterized by distinctive life forms and principal plant species.
A4. Congregations	(i) The site is known or thought to hold, on a regular basis, >1% of a biogeographic population of a congregatory waterbird species.	Follows Rose & Scott (1994). Thresholds may be set regionally or inter-regionally.
	(ii) The site is known or thought to hold, on a regular basis, >1% of the global population of a congregatory seabird or terrestrial species.	Thresholds may be set regionally or inter-regionally.
	(iii) The site is known or thought to hold, on a regular basis, >20,000 waterbirds or >10,000 pairs of seabirds of one or more species.	Follows the Ramsar criterion for waterbirds. Use of this criterion is discouraged when data is good enough to permit use of A4 (i) or (ii).
	(iv) The site is known or thought to exceed thresholds set for migratory species at bottleneck sites.	Thresholds may be set regionally or inter-regionally.

IBAs are identified with a set of four global site selection criteria. These criteria are applied as objectively and as consistently as possible to ensure comparability across countries and sites. Sites may qualify by triggering one or more of the four criteria. Criteria A3 is not applicable to Palau; therefore, all Palau IBAs were identified because they triggered criteria A1, A2, or A4.

IBA designation is not a legal one and does not oblige states, communities, or landowners to conserve the site. It simply identifies an area as significant for its birds and makes available information to governments, private landowners, and NGOs upon which they can, and are encouraged to, take conservation action. Ideally, those conservation actions directly benefit or support community livelihoods.

Biological Rational

Some sites are exceptionally important for maintaining the populations of plants and animals dependent upon the habitats and ecosystems in which they occur. Vigorous protection of these most critical sites is one important approach to conservation. Many bird species may be effectively conserved by this means. Patterns of bird distribution are such that, in most cases, it is possible to select sites that support many species. These sites, carefully identified on the basis of the bird numbers and species complements they hold, are termed Important Bird Areas (IBAs). IBAs are selected such that, taken together, they form a network throughout the species' biogeographic distribution. This network may be considered as the minimum habitat essential to ensure the survival of these species across their ranges should the remaining similar habitats elsewhere be lost through man-induced, or other, modification. These sites may include the best remaining examples of the species' natural habitat, in terms of areas where there are distinctively high numbers or densities of the birds (particularly for habitats that are already much degraded). The sites may also include 'typical examples' of these habitats in places where there are many more undegraded habitats to choose from. However, since all of the sites are, or may increasingly become, refuges for the birds as their preferred habitats shrink due to degradation or destruction, the consequences of the loss of any one of the sites may be disproportionately large.

Moreover, birds have been shown to be effective indicators of biodiversity for other plant and animal groups. Thus, although defined by its bird fauna, the conservation of the IBA network would ensure the survival of a correspondingly large number of non-bird taxa.

While sites are selected using scientifically defensible, quantitative criteria, the IBA concept is a pragmatic one. Thus, the existing protected area network is taken fully into consideration and will, in many cases, form the backbone of the network with additional sites proposed to fill in the gaps. Ideally, each site should be large enough to support self-sustaining populations of as many of the species as possible for which it was identified or, in the case of migrants, provide their requirements for the duration of their presence.

However, many bird species are not amenable to conservation through a sites-based approach because of their local, regional and/or international migratory patterns and require different treatment. For other birds, such as those that breed locally but have wide foraging ranges, a sites-based approach needs to be combined with conservation measures in the wider environment.

Site Delineation

Sites should, as far as possible,

- be different in character or habitat or ornithological importance from the surrounding area.
- exist as an actual or potential protected area, with or without buffer zones, or be an area which can be managed in some way for nature conservation.
- alone or with other sites, be a self-sufficient area which provides all the requirements of the birds which use it during the time they are present.

Where extensive tracts of continuous habitat occur which are important for birds, only the second two characteristics apply. This definition is not applicable to migratory bottleneck sites. Migratory bottleneck sites occur in places such as Central America and around the Mediterranean, where large numbers of soaring birds that rely upon thermal air currents for flight are forced to congregate during their migrations because of geographical features like large water bodies or mountain ranges that limit where they can fly.

PHOTOS BY PALAU CONSERVATION SOCIETY

Photo, top: Community birdwatchers, Ngeremlengui.

Photo, right: Student birdwatchers from Ngaraard Elementary School.

Simple, conspicuous boundaries such as roads, rivers, or railway lines may be used to delimit site margins while features such as watersheds and hilltops may help in places where there are no obvious discontinuities in habitat (transitions of vegetation or substrate). Boundaries of ownership are also relevant.

There are no fixed size maxima or minima for IBAs; the biologically sensible has to be tempered with the practical. Neither is there a definitive answer of how to treat cases where a number of small sites neighbor each other. Whether these are best considered a series of separate IBAs or one large one containing areas lacking ornithological significance will depend upon local conservation realities. Often, practical considerations of how best the site may be conserved should be the foremost consideration.

IBA Program in Palau

The Palau IBA program began in 2003 (Gupta 2006). It was part of a larger project to implement and test the IBA process and criteria in biologically rich, isolated and extremely varied islands in the Pacific. This was a joint effort between the Palau Conservation Society, BirdLife International, and other BirdLife partner organizations in Fiji, New Caledonia, and French Polynesia. Funding was provided largely by the European Union and supplemental project support in Palau came from various private organizations and US federal agencies, in particular the US Fish and Wildlife Service.

The IBA identification process began in Palau in late 2003 with a literature review of available documents on birds and other terrestrial biodiversity. Additional information was gathered through unstructured interviews. The literature review

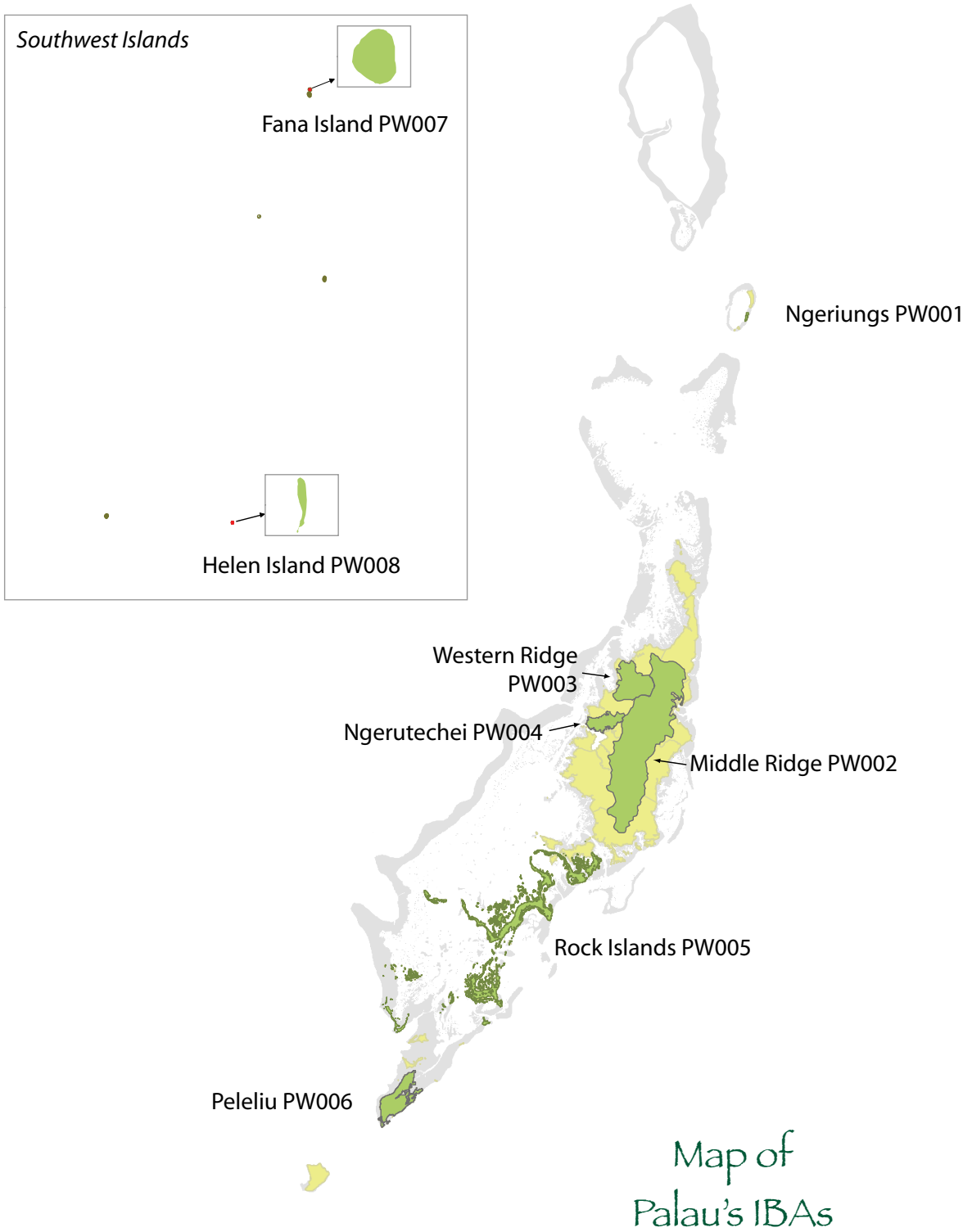
PHOTOS BY PALAU CONSERVATION SOCIETY

BirdLife Pacific Partnership Meeting, Koror. Back row, left to right: James Millett, Dion Pelato Venisisi Ale, Steven Cranwell, Michael Szabo, Georges Sanford, Vivienne Chartendrault. Middle row, left to right: Edward Saul, Vilikesa Masibalavu, Sandra Pierantozzi, Victorio Uherbelau, Juliette Wananije, Anu Gupta, Ian Karika, Philippe Raust, Adelle L. Isechal, Fiu Mataese Elisara, Yalap P. Yalap. Front row, left to right: Stephen Rumsey, Tiare Holm, Moses Uludong, Debbie Remengesau, Asterio Takesy, Mike Rands, John Graeme Hamilton.

indicated that certain areas in Palau, in particular Kayangel, Ngeruktabel, Helen, and Fana, would almost certainly meet IBA criteria. Bird surveys were necessary to further identify sites elsewhere in the country.

Surveys were conducted in two phases. The first phase of the surveys involved local guides and volunteers and targeted areas that were believed to be significant. Presence/absence data was collected over the course of two years during the Phase 1 survey. The Phase 2 survey was conducted by professional ornithologists and trained local researchers in April and May 2005 using the Variable Circular Plot (VCP) method to assess bird densities (Reynolds et al. 1980). The survey was conducted on 39 transects on Babeldaob, around Nikko Bay, Ngeruktabel, Mecherchar, Ngerukuid, Peleliu, and Angaur. As much as possible, transects followed 1991 transects that either followed roads, paths, rivers, or a degree bearing (Engbring 1992). Less formal bird and nest counts were conducted in Kayangel and the Southwest Islands to confirm literature population estimates.

Data from both phases were consolidated and a ranking system was developed to identify priority sites (Gupta 2006). IBA boundaries were drawn according to established guidelines with the aim to include as many of the highest ranking sites as possible. Eight IBAs were identified in Palau: Ngeriungs in Kayangel State, the Middle Ridge of Babeldaob, Western Ridge in Ngardmau and Ngaremlengui, Ngerutechei in Ngaremlengui, the Rock Islands, Peleliu, Fana, and Helen.



Map of Palau's IBAs

Site Accounts

PHOTO BY PALAU CONSERVATION SOCIETY

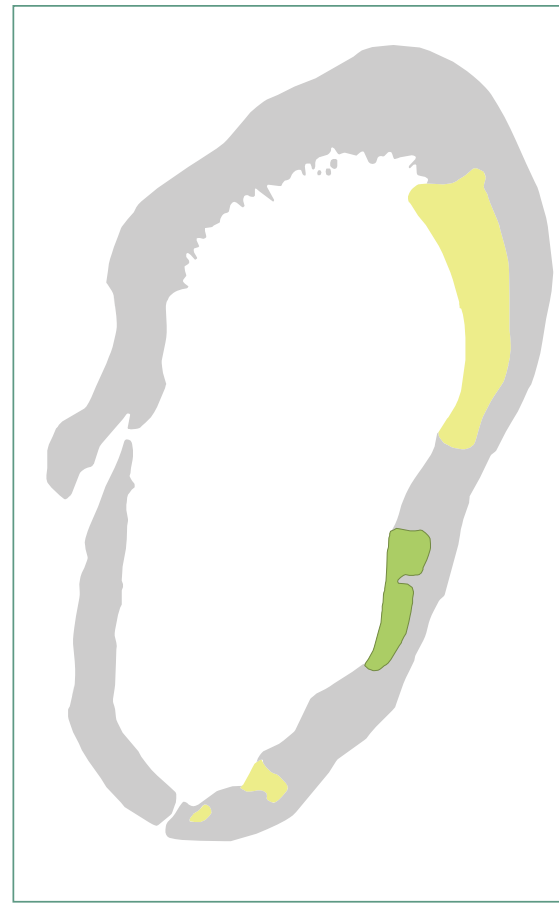
Ngeruach Mountain, Ngerutechei IBA.

Presentation of Information

Eight IBA sites have been identified in Palau that have a combined area of 216 km^2, 47% of Palau's total land area. Two of these sites qualify for their congregation of seabirds that meet criteria thresholds. Both sites are located in the South-west Islands group. The other six sites qualify for the presence of globally threatened or restricted-range bird species.

Ngeriungs

IBA No: PW001
IBA criteria: A1 globally threatened birds
Other names: Iungs
Central coordinates: 8°03'N, 134°42'E
Area: 0.34 km²
State: Kayangel



Site Description

Ngeriungs is the second largest of the four islands within Kayangel Atoll. Kayangel Atoll and Ngaruangel Atoll, further to the north, form the state of Kayangel, the northernmost state of Palau.

The four islands of Kayangel State (Kayangel, Ngeriungs, Ngerbelas, and Orak) comprise a total land area of 3 km². Forest cover on the islands is of the strand type which is not found on Babeldaob and is limited to a few fragmented patches on Palau's southern islands. The islands are currently accessed only by boat, and rarely by helicopter, as the atoll is separated from the main Palau archipelago by 40 kilometers of lagoon and open sea. Seaplanes have been used to access the islands in the past.

Of the four islands, only one (Kayangel) is inhabited, with a population in 2005 of 188 people. The other three islets are uninhabited, although they are used for camping, hunting, and other recreational uses. It is possible to walk from islet to islet during extremely low tides. Most of the islands are privately and clan owned, although some portions of the inhabited island of Kayangel are owned by the state.

Birds

The Micronesian Megapode is listed in both the IUCN Red List and the US Endangered Species List. It is locally common on Kayangel Atoll and the Rock Islands but rarely found on the big island of Babeldaob. The range outside of Palau is restricted to the Mariana Islands. Traditionally, the megapode eggs were a high status food and reserved for chiefs and other clan royalty. Today, although protected by law, the raiding of nests poses a threat to this species. Ngeriungs was selected among the four islands of Kayangel as an IBA mainly because it has the highest recorded number of Micronesian Megapodes and nests. While smaller numbers of megapodes were recorded at two other islands in Kayangel, Ngeriungs clearly stood out as being a uniquely important megapode nesting site.

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Micronesian Megapode	*Megapodius laperouse*	bekai	X		

Other Biodiversity

The beaches of all the islands in Kayangel are known to be nesting sites for endangered sea turtles, both the green and hawksbill. The islands are also home to a large population of coconut crab that is harvested for subsistence and small-scale commercial sale. All of the islands of Kayangel Atoll contain atoll forest, characterized mostly of strand species. Such forests make up only 1% of Palau's forest cover and therefore are unique habitats.

BOTTOM PHOTO BY PALAU CONSERVATION SOCIETY, TOP PHOTO BY MANDY ETPISON

Conservation

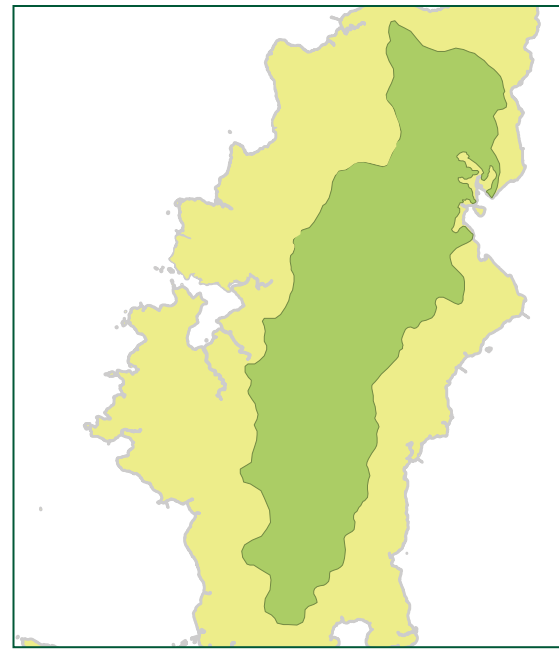
Access to Ngeriungs is limited to boat transport. As of early 2008, there is no development on the island so, currently, there is little or no loss of habit. The most urgent threat to the megapode population is thought to be the presence of invasive alien species. The presence of rats, the Norway rat (*Rattus norvegicus*) and the ship rat (*R. rattus*), has been confirmed on the island. The ground-nesting megapode is especially vulnerable to these species. Cats are also confirmed to be present on Ngeriungs. On the nearby main island of Kayangel, other invasive species include dogs, cane toads, Rhinoceros beetles, and a number of invasive plants.

The island is almost exclusively privately owned. The threat of development and habitat loss cannot be eliminated. Hunting and poaching of nests also remain a threat. Protection of the site may best be achieved through working with land owners to develop agreed-upon guidelines for development and use of the island's resources, the potential establishment of protected area status and the control and eradication of alien invasive species.

Photo, top: Micronesian Megapode. Photo, bottom: Ngeriungs Island, Kayangel.

Middle Ridge

IBA No: PW002
IBA Criteria: A1 globally threatened, A2 restricted-range
Other names: Rael Kedam, Central Ridge
Area: 131.44 km^2
Central coordinates: 7° 30'N, 134° 34'E
States: Ngaraard, Ngardmau, Ngiwal, Ngaremlengui, Ngatpang, Melekeok, Ngchesar, Aimeliik, Airai



Site Description

The Middle Ridge IBA encompasses the whole elevated area that runs north-south through the center of Babeldaob Island. This IBA is bordered on almost all sides by the Compact Road or other secondary roads. The eastern boundary in Ngiwal follows the edge of the mangrove inland of Ngemai Bay and comes back to join the Compact Road. The southern boundary of the Middle Ridge IBA is contiguous with parts of the ridge that defines the Ngerikiil Watershed. The western boundary is defined as the old Japanese road, the southern boundary follows the Ikoranges River, the eastern boundary adjoined the Compact Road, and the north is contiguous with the rest of the IBA. Much of the IBA is composed of public lands.

Birds

All of Palau's restricted-range bird species are captured in this IBA, with the exception of the Giant White-eye. Bird species also found in this IBA are the Blue-faced Parrotfinch, White-breasted Woodswallow, Common Moorhen, Pacific Black Duck, and the Grey Nightjar. Although these species do not trigger IBA criteria, they are locally significant due either to their limited numbers or distribution. Some (the Blue-faced Parrotfinch, White-breasted Woodswallow and Giant White-eye) are listed on the US Endangered Species List.

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Caroline Islands White-eye	*Zosterops semperi*	charmbedel		X	
Dusky White-eye	*Zosterops finschii*	chetitalial		X	
Giant Whtie-eye	*Megazosterops palauensis*	charmbedel			
Mangrove Flycatcher	*Myiagra erythrops*	charmelachull		X	
Micronesian Imperial-pigeon	*Ducula oceanica*	belochel		X	
Micronesian Kingfisher	*Todiramphus cinnamominus*	tengadidik		X	
Micronesian Megapode	*Megapodius laperouse*	bekai	X	X	
Micronesian Myzomela	*Myzomela rubratra*	chesisbangiau		X	
Micronesian Starling	*Aplonis opaca*	kiuid		X	
Morningbird	*Colluricincla tenebrosa*	tutau		X	
Palau Bush Warbler	*Cettia annae*	wuul, chesisebarsech		X	
Palau Fantail	*Rhipidura lepida*	melimdelebteb, chesisirech		X	
Palau Fruit-dove	*Ptilinopus pelewensis*	biib		X	
Palau Ground-dove	*Gallicolumba canifrons*	omekrengukl, doldol		X	
Palau Scops-owl	*Otus podarginus*	chesuch		X	
Palau Swiftlet	*Collocalia pelewensis*	chesisekiaid		X	

Other Biodiversity

This IBA includes the headwaters of all of Babeldaob's major watersheds. The headwaters of the Ngermeskang River, the largest in Palau, is included in this IBA. The upland forests in Babeldaob are considered the most diverse in Micronesia and have a high rate of endemism (Costion and Kitalong, 2005).

Conservation

This IBA includes the Ngardok Nature Reserve in Melekeok, which is on the Ramsar list of Wetlands of International Importance, and the proposed Ngermeskang Nature Reserve in Ngaremlengui. These two sites are now being linked together through their respective state's membership in the Babeldaob Watershed Alliance. This initiative is an effort by a partnership of states to maximize resources, exchange lessons, and streamline efforts in managing their watersheds. Other protected areas in the Middle Ridge IBA include the Medal a Iyechad Waterfall in the state of Ngardmau and Mesekelat Conservation Area in the state of Ngchesar. This IBA captures Palau's two freshwater lakes, Ngardok in Melekeok and Ngerkall in Ngaraard. Other significant areas that are included in this IBA, in part or whole, are proposed protected areas in Ngaraard, and various nationally registered historical sites.

The Middle Ridge IBA contains much of the Rael Kedam (Path of the Frigatebird), the ridgeline of Babeldaob Island. A network of traditional stone and other walking paths can be found on or near the ridgeline. In many areas these paths have become greatly overgrown or have fallen into disrepair. It is hoped that the network of paths may be restored thus the Rael Kedam would become a key area for hiking, bird-watching and other sustainable tourism activities.

As of early 2008, the Middle Ridge IBA is sparsely populated. Much of the land is public land. Public land is often leased to individuals for farming or residential development, or to businesses for development. With the completion of the Compact Road, it is expected that most public lands throughout Babeldaob will be leased for development. Thus, habitat degradation due to accelerated development in the wake of the construction of the Compact Road, uncontrolled burning, poor or intensive agricultural practices and the introduction of alien invasive species most threaten this IBA. The conservation of this middle ridge of Babeldaob is important to protect surface water sources, minimize erosion and sedimentation that impact coral reefs, and preserve Babeldaob's terrestrial biodiversity.

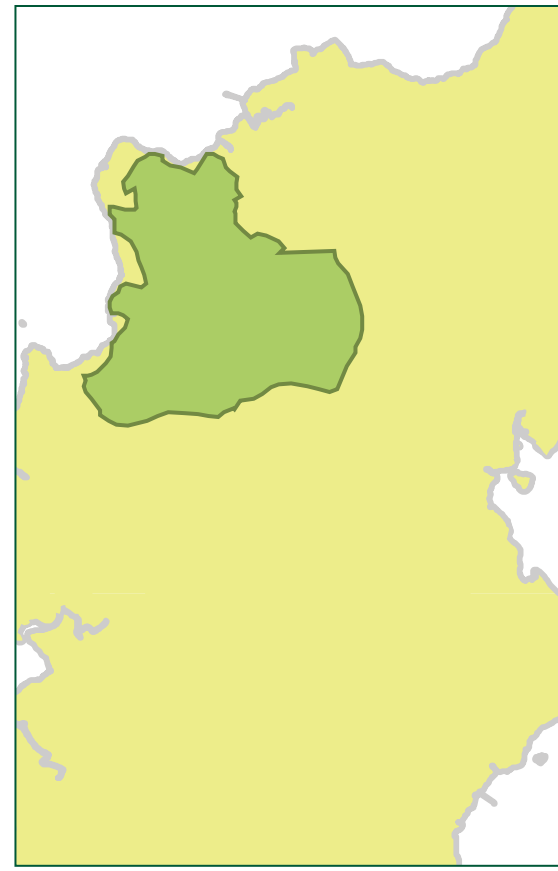
Areas of nine out of ten of the Babeldaob states are included in the Middle Ridge IBA. Management responsibility of resources within this IBA is shared by all the states whose boundaries fall within this IBA, together with private landowners.

PHOTO BY ELIZABETH MATTHEWS

Medal a Iyechad Waterfall and surrounding forest.

Western Ridge

IBA No: PW003
IBA criteria: A1 globally threatened, A2 restricted-range
Other names: NA
Central coordinates: 7° 34'N, 134° 33' E
Area: 22.62 km^2
State: Ngardmau and Ngaremlengui



Site Description

This IBA includes the block of forest spanning a portion of west Babeldaob. It includes a strip of northern Ngaremlengui and southern Ngardmau that parallels the major river of the Diongradid watershed. The boundary of the Western Ridge IBA follows river tributaries to the north and south, the edge of the mangroves to the west, and the Compact Road to the east. A small section in the northeast boundary was redrawn to be consistent with boundaries of the proposed Ngardmau Free Trade Zone.

Birds

All of Palau's restricted-range bird species, with the exception of the Giant White-eye, are found in the Western Ridge IBA.

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Caroline Islands White-eye	*Zosterops semperi*	charmbedel		X	
Dusky White-eye	*Zosterops finschii*	chetitalial		X	
Giant White-eye	*Megazosterops palauensis*	charmbedel			
Mangrove Flycatcher	*Myiagra erythrops*	charmelachull		X	
Micronesian Imperial-pigeon	*Ducula oceanica*	belochel		X	
Micronesian Kingfisher	*Todiramphus cinnamominus*	tengadidik		X	
Micronesian Megapode	*Megapodius laperouse*	bekai	X	X	
Micronesian Myzomela	*Myzomela rubratra*	chesisbangiau		X	
Micronesian Starling	*Aplonis opaca*	kiuid		X	
Morningbird	*Colluricincla tenebrosa*	tutau		X	
Palau Bush Warbler	*Cettia annae*	wuul, chesisebarsech		X	
Palau Fantail	*Rhipidura lepida*	melimdelebteb, chesisirech		X	
Palau Fruit-dove	*Ptilinopus pelewensis*	biib		X	
Palau Ground-dove	*Gallicolumba canifrons*	omekrengukl, doldol		X	
Palau Scops-owl	*Otus podarginus*	chesuch		X	
Palau Swiftlet	*Collocalia pelewensis*	chesisekiaid		X	

Other Biodiversity

The Western Ridge IBA consists of volcanic upland forest, both primary and secondary. It also captures swamp forests, grasslands and savannas as well as freshwater streams and riverine areas. These habitats are home to many of Babeldaob's native flora and fauna.

Conservation

This IBA may include a portion of the Medal a Iyechad Waterfall protected area in the state of Ngardmau. While the waterfall itself is within the Middle Ridge IBA, a portion of the river and its watershed lie within the Western Ridge IBA. The boundaries of the protected area still must be officially demarcated and mapped before the extent of overlap with the two IBAs is clear. The waterfall is one of a few places in Babeldaob that has developed the ecotourism potential of a terrestrial protected area. The waterfall has an average of 900 visitors every month. Portions of the trail to the waterfall are quite steep and subject to erosion, while another section runs along the river and is extremely muddy due to increasing foot traffic. The state government of Ngardmau that manages the trail has expressed their concern regarding the trail being a source of sedimentation and erosion into the river and to their coastline. A program is being developed to improve the trail to minimize erosion and sedimentation.

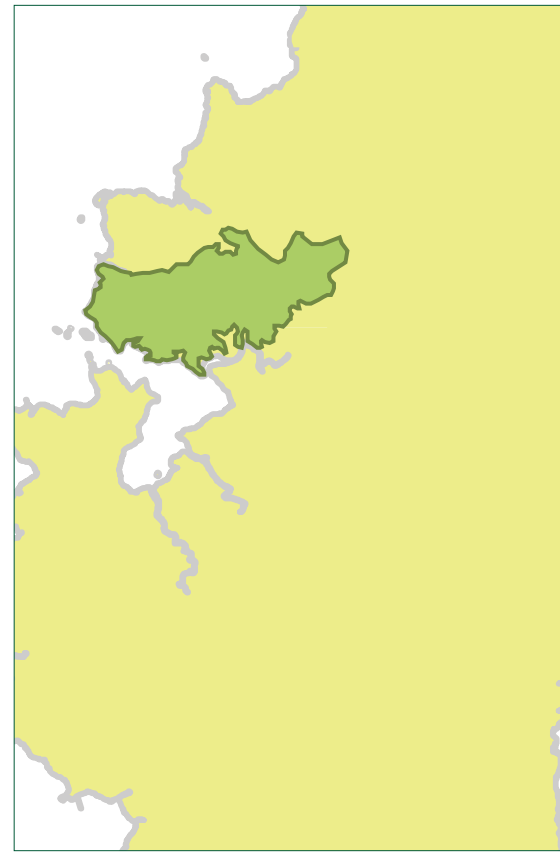
This IBA also includes part of the Ngermeskang Nature Reserve in Ngaremlengui. This newer protected area was established by state legislation in 2007. Ngermeskang River is the largest river in Palau and the primary purpose of this reserve is to protect the headwaters of the Ngermeskang River. Part of the Ngermeskang Nature Reserve not included in this IBA is captured in Middle Ridge IBA where it meets the Ngardok Nature Reserve to the east on Babeldaob's central ridge.

BOTTOM PHOTO BY PALAU CONSERVATION SOCIETY, TOP PHOTO BY MANDY ETPISON

Photo, top: Palau Ground-dove. Photo, bottom: Western Ridge, Northern Ngeremlengui and southern Ngardmau.

Ngerutechei

IBA No: PW004
IBA Criteria: A1 globally threatened, A2 restricted-range
Other names: Ngeremlengui IBA
Central coordinates: 7° 31'N, 134° 31' E
Area: 9.66 km²
State: Ngaremlengui



Site Description

This IBA is a discrete block of forest in the Ngerutechei area of Ngaremlengui. The site is bordered on the north and west by the Ngaremlengui Road and the Compact Road, respectively. To the east and south, the IBA extends to the edge of the land, not including the coastal mangroves. The Ngerutechei site is the only IBA on Babeldaob that includes significant riverine mangrove habitat. Mangroves, in general, are not well represented in Palau's network of IBAs because the surveys that were used to identify IBAs did not include transects in the mangroves. The IBA includes the mountains of Etiruir, Tmerou, Sechedui and Ngeruach, which collectively form the highest areas in the state of Ngaremlengui.

Birds

All of Palau's restricted-range bird species, with the exception of the Giant White-eye, are found in the Ngerutechei IBA.

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Caroline Islands White-eye	*Zosterops semperi*	charmbedel		X	
Dusky White-eye	*Zosterops finschii*	chetitalial		X	
Giant White-eye	*Megazosterops palauensis*	charmbedel			
Mangrove Flycatcher	*Myiagra erythrops*	charmelachull		X	
Micronesian Imperial-pigeon	*Ducula oceanica*	belochel		X	
Micronesian Kingfisher	*Todiramphus cinnamominus*	tengadidik		X	
Micronesian Megapode	*Megapodius laperouse*	bekai	X	X	
Micronesian Myzomela	*Myzomela rubratra*	chesisbangiau		X	
Micronesian Starling	*Aplonis opaca*	kiuid		X	
Morningbird	*Colluricincla tenebrosa*	tutau		X	
Palau Bush Warbler	*Cettia annae*	wuul, chesisebarsech		X	
Palau Fantail	*Rhipidura lepida*	melimdelebteb, chesisirech		X	
Palau Fruit-dove	*Ptilinopus pelewensis*	biib		X	
Palau Ground-dove	*Gallicolumba canifrons*	omekrengukl, doldol		X	
Palau Scops-owl	*Otus podarginus*	chesuch		X	
Palau Swiftlet	*Collocalia pelewensis*	chesisekiaid		X	

Other Biodiversity

This IBA includes a unique swamp forest visible from the Compact Road. It is also home to many of Babeldaob's flora and fauna, including many endemics and endangered species. Over 100 species of plants have been documented. This site also includes the ancient Ngerutechei Village, a proposed UNESCO World Heritage Site. More information about the birds residing in this IBA is being recorded in new surveys being conducted by the Belau National Museum (Olsen 2007).

PHOTOS BY PALAU CONSERVATION SOCIETY

Conservation

The Ngerutechei IBA which extends beyond the Ngerutechei Village is part of the larger Ngaremeduu Biosphere Reserve. The Village itself is listed in the National Register of historical sites.

Photo, top: Ngermeskang River, Ngeremlengui. Photo, bottom: Ngeruach Mountain in Ngeremlengui.

Rock Islands

IBA No: PW005
IBA criteria: A1 globally threatened, A2 restricted-range
Other relevant names: Chelebacheb
Central coordinates: 7° 15'N, 134° 24' E
Area: 35 km^2
State: Koror

Site Description

The Rock Islands are a group of more than 500 high limestone islands scattered over a 621 km^2 area of lagoon that stretches between Koror and Peleliu. The land area of the major islands in the group is approximately 35 km^2. For the sole purpose of IBA delineation, the Rock Islands Complex includes the major island groupings of Ngeruktabel, Ulong, Mecherchar, Ngerukuid, and the larger islands around Nikko Bay — Ulebsechel, Ngermeuangel, and Ngeteklou. The IBA includes only terrestrial areas. The Rock Islands are Palau's main tourism and recreation area and are managed by the Koror State Government (KSG 2005). Day to day operation of both the marine and terrestrial areas is managed by Koror State Conservation and Law Enforcement Division. The division employs 35 rangers and support staff who work around the clock.

The Rock Islands is one of only two IBAs where the Giant White-eye has been recorded. In the Rock Islands, the Giant White-eye was common only on the island of Ngeruktabel. The Palauan name *Charmbedel ra Iouldaob* suggests that the bird's distribution may be limited in Palau - *Iouldaob* meaning the islands south of the main island of Babeldaob. Another occupant of the Rock Islands that does not trigger any IBA criteria is the Blue-

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Caroline Islands White-eye	*Zosterops semperi*	charmbedel		X	
Dusky White-eye	*Zosterops finschii*	chetitalial		X	
Giant White-eye	*Megazosterops palauensis*	charmbedel		X	
Mangrove Flycatcher	*Myiagra erythrops*	charmelachull		X	
Micronesian Imperial-pigeon	*Ducula oceanica*	belochel		X	
Micronesian Kingfisher	*Todiramphus cinnamominus*	tengadidik		X	
Micronesian Megapode	*Megapodius laperouse*	bekai	X	X	
Micronesian Myzomela	*Myzomela rubratra*	chesisbangiau		X	
Micronesian Starling	*Aplonis opaca*	kiuid		X	
Morningbird	*Colluricincla tenebrosa*	tutau		X	
Palau Bush Warbler	*Cettia annae*	wuul, chesisebarsech		X	
Palau Fantail	*Rhipidura lepida*	melimdelebteb, chesisirech		X	
Palau Fruit-dove	*Ptilinopus pelewensis*	biib		X	
Palau Ground-dove	*Gallicolumba canifrons*	omekrengukl, doldol		X	
Palau Scops-owl	*Otus podarginus*	chesuch			
Palau Swiftlet	*Collocalia pelewensis*	chesisekiaid		X	

faced Parrotfinch. This bird, rare in Palau, is found in the forests of the high limestone Rock Islands or often spotted in the Casuarina trees on sandy strands. The Blue-faced Parrotfinch is very rare on Babeldaob and is captured in only three out of the eight IBAs. Its small size and preference for the upper canopy makes it especially difficult to locate. Palau Ground-doves were seen at Ulong Island. Nicobar Pigeons were commonly seen at Ngerukuid Reserve. Micronesian Megapodes are present throughout the Rock Islands. Several seabirds, including the Audubon's Shearwater, Bridled Tern, and Black-naped Tern are also present.

Other Biodiversity

Terrestrial habitats included in this IBA are exposed and protected strand vegetation, coastal scrub and limestone forests. These habitats support many of Palau's endemic species of flora and fauna, including threatened species like the endemic rock island palm, and the Marianas fruit bat. The beaches on the islands provide Palau's largest hawksbill turtle nesting sites and the surrounding waters are habitats for green sea turtles, dugongs, fish, invertebrates and coral reefs. The Rock Islands also includes the famous Jellyfish Lake, and many other marine lakes that support unique habitats and communities of organisms.

Conservation

This IBA includes the oldest conservation area in Palau, the Ngerukuid Islands, which was established by national legislation in 1956. The Rock Islands is arguably the most effectively managed protected area in Palau. An overwhelming majority of visitors to Palau visit these islands and surrounding reefs and the state government enjoys substantial economic benefit from protecting and managing this valuable resource. The number of visitors to the Rock Islands is steadily increasing and this trend is expected to continue. The main threats to the biodiversity of the Rock Islands and the surrounding waters are the potential impacts of the rising number of visitors and the presence and introduction of invasive species, including rodents, cats and macaques. In 2007, the fee to visit the Rock Islands was increased, however, whether this fee increase will affect the visitor numbers is yet to be determined.

PHOTOS BY PALAU CONSERVATION SOCIETY

Photos, left to right: Looking to the Rock Islands from the top of Ngeruktabel, one of only two sites in Palau where populations of all Palau's endemic birds are found; Secondary forest takes over a former Japanese military post in Ngeruktabel.

Peleliu

IBA No: PW006
IBA criteria: A1 globally threatened, A2 restricted-range
Other relevant names: Beliliou
Central coordinates: 7° 02′ N, 134° 14′ E
Area: 16.7 km²
State: Peleliu

Site Description

Priority sites were found throughout Peleliu, and thus the IBA was drawn to include the entire island. This IBA does not include the island of Ngedebus to the north. Peleliu is one of the two southernmost islands in the main Palau archipelago and has extensive flat lands surrounding steep ridges. Most of the flat areas are on the western coast. The island has the greatest concentration of mangrove habitat outside of Babeldaob. It is also famous for its WWII sites including Bloody Nose Ridge and Orange Beach, and the remaining tanks, guns, and other military structures scattered throughout the island. There are 700 people living in five villages in Peleliu. Most of the island is privately or clan owned. The mangroves are managed by the state.

Birds

Peleliu is notable because all but one of the restricted-range species were found during the national bird surveys in 2004 and 2005. In fact, during these surveys Peleliu had the highest number of

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Caroline Islands White-eye	*Zosterops semperi*	charmbedel		X	
Dusky White-eye	*Zosterops finschii*	chetitalial		X	
Giant White-eye	*Megazosterops palauensis*	charmbedel		X	
Mangrove Flycatcher	*Myiagra erythrops*	charmelachull		X	
Micronesian Imperial-pigeon	*Ducula oceanica*	belochel		X	
Micronesian Kingfisher	*Todiramphus cinnamominus*	tengadidik		X	
Micronesian Megapode	*Megapodius laperouse*	bekai	X	X	
Micronesian Myzomela	*Myzomela rubratra*	chesisbangiau		X	
Micronesian Starling	*Aplonis opaca*	kiuid		X	
Morningbird	*Colluricincla tenebrosa*	tutau		X	
Palau Bush Warbler	*Cettia annae*	wuul, chesisebarsech		X	
Palau Fantail	*Rhipidura lepida*	melimdelebteb, chesisirech		X	
Palau Fruit-dove	*Ptilinopus pelewensis*	biib		X	
Palau Ground-dove	*Gallicolumba canifrons*	omekrengukl, doldol		X	
Palau Scops-owl	*Otus podarginus*	chesuch			
Palau Swiftlet	*Collocalia pelewensis*	chesisekiaid		X	

bird species (diversity) and the highest number of individual birds recorded (abundance). Large numbers of migratory birds were seen as well. Forest birds were observed to be particularly abundant at Bloody Nose Ridge. Peleliu is one of two sites in Palau where the Giant White-eye was observed. The Giant White-eye was commonly found in the interior forests, however was not observed in the mangroves.

Other Biodiversity

The forests of Peleliu have shown significant recovery after WWII which left the island almost completely deforested. Today thriving secondary vegetation covers about 50% of the island. The remaining forested areas include limestone forest, swamp forest, Casuarina forest and mangroves (Cole et al. 1987). Fruit bats roost in the forests. Occasionally green and hawksbill turtles nest on Peleliu's beaches, however, the eggs are often poached. Abandoned mining pits from the Japanese era serve as freshwater and saltwater habitats for birds and other important endangered species, such as the saltwater crocodile.

BOTTOM PHOTO BY PALAU CONSERVATION SOCIETY, TOP PHOTO BY MANDY ETPISON

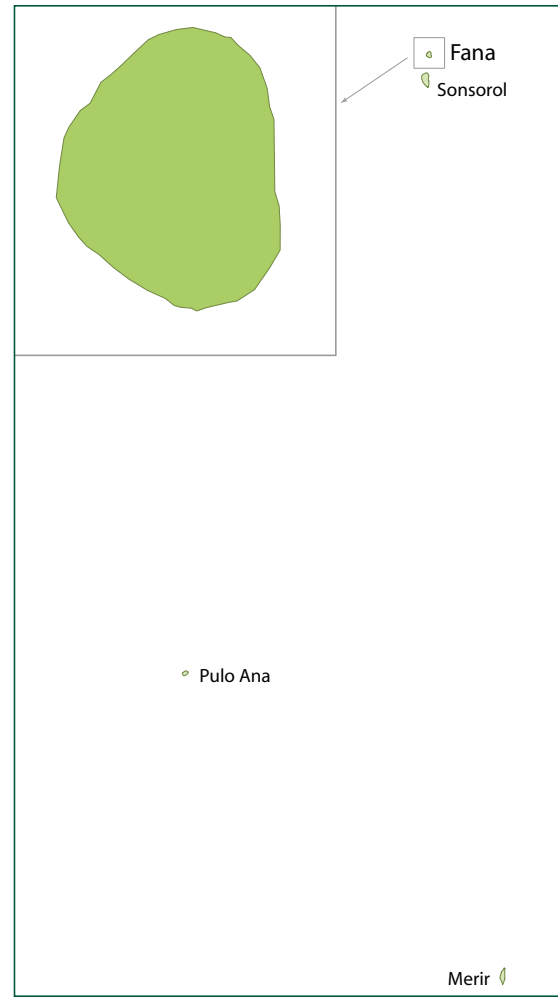
Conservation

The island of Peleliu currently does not have a terrestrial protected area. Teluleu Conservation Area is a nearshore marine protected area, and the primary dive sites south of the island have recently gained protected status. In addition, the numerous WWII sites throughout Peleliu are on the National Registry of Historic Sites. There is extensive mangrove mostly on the eastern coast of the island, which has been considered for protection (PCS 1998). Other sites proposed for protection include upland limestone forest on the north-south ridge that divides the island, swamp forest between Ledemisang and Ngermelt mangroves on the east side of the island, and the Casuarina forest near Mesubedumail Bay on the southern end of the island. Peleliu's interior forests are particularly important habitats for birds, and protection of these areas would help to protect Peleliu's unique and diverse avifauna.

Photo, top: Giant White-eye. Photo, bottom: Peleliu agroforest.

Fana Island

IBA No: PW007
IBA Criteria: A4 (iii) congregations
Other names: Find other local names.
Central coordinates: 5° 21′ N, 132° 13′ E
Area: 0.35 km²
State: Sonsorol



Site Description

Fana is one of the four uplifted reef flat islands that comprise the state of Sonsorol in the Southwest Islands. It is a densely vegetated island of 0.35 km². Fana rises only a few feet above sea level and is susceptible to storms and other natural disasters. Currently the island is uninhabited. There is a small population, generally less than 30 people, who live on nearby Sonsorol island. The population of Sonsorol generally increases slightly during the summer months when people return to their home islands from Koror where they live throughout the remainder of the year. Like all of the Southwest Islands, access to Fana from the main islands of Palau is by the service of the Hatohobei State boat. The boat trip to Fana and Sonsorol takes about 24 hours on the state boat, which travels at about 6 knots. There is no deep water channel for deep boats or anchorage at Sonsorol or Fana, so small punts must meet the state boat as it waits outside the fringing reef in order to ferry passengers and supplies to and from the island. This can only occur during the day when the tide is high enough for passage of the punts.

Birds

Fana qualifies as an IBA because of A4, type iii congregations of nesting Black Noddy (ranging from 8,000-20,000 birds) and common White Terns (3,000-10,000 birds). In addition, the total populations of nesting seabirds on Fana have been estimated at between 23,000 and 31,000. These estimates include Black Noddy, Brown Noddy, Greater Frigatebird, Red-footed Booby, Brown Booby, and common White Tern. The colonies of Red-footed Booby (5,000-8,000 birds) may be the largest in Micronesia, and among the largest in the world (Kepler 1992).

Other Biodiversity

Because of its small size and relative isolation, Fana is a unique ecosystem. The Pisonia forest of Fana

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Black Noddy	*Anous minutus*	bedaoch			X
Common White Tern	*Gygis alba*	sechosech, birih (SW)			X

has been described as one of the "finest representatives of this dwindling habitat in the Pacific" (Kepler 1992). Water resources are extremely limited. The site is not only important for birds but also for its significant coconut crab population and beaches for nesting green turtles. Very few biological assessments have been conducted at Fana, so little has been documented about other terrestrial biodiversity of the island.

Conservation

Fana is under traditional management and harvesting of resources, especially birds, turtles, and coconut crabs, is prohibited. There is overwhelming support from traditional leadership and the state government that the entire island be protected and managed to conserve this small, delicate ecosystem.

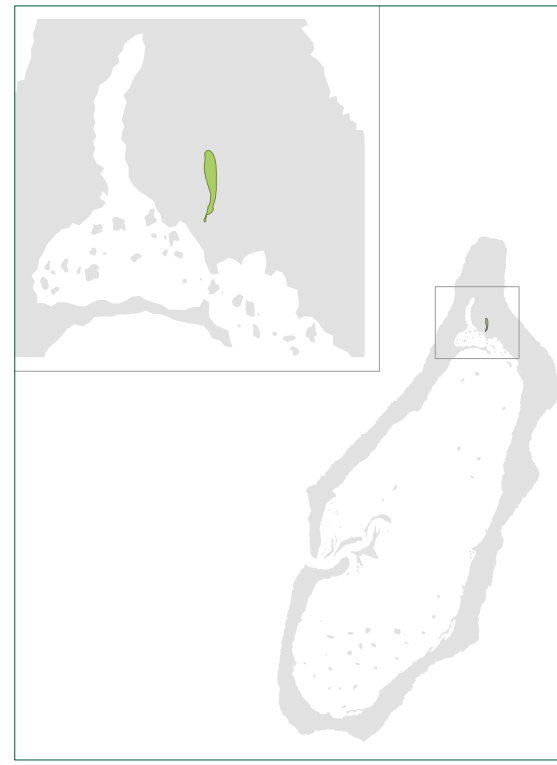
In 2007, the traditional leaders and state government officially recognized Fana as Palau's first IBA. Potential threats to the islands are the presence and introduction of invasive species, over-harvesting, and climate change. Rats have been introduced to Fana only in the past ten years. Distance to and access from the main Palau archipelago is anticipated to be the biggest challenge of conservation planning and management. Human resources are limited in Sonsorol, as most of the residents of the state live most of the time hundreds of miles away in Koror, where there are schools, jobs and health care. In addition, supplies must be shipped to the islands from Koror. Thus, many resource management activities must be coordinated from the main archipelago of Palau where the majority of people from Sonsorol reside.

PHOTOS BY PALAU CONSERVATION SOCIETY

Photos, clockwise starting from the upper left: Red-footed Booby chick; coconut crab; Fana Island.

Helen Island

IBA No: PW008
IBA criteria: A4 (iii) congregations
Other relevant names: Hotsarihie
Central coordinates: 2° 58′ N, 131° 48′ E
Area: 0.037 km^2
State: Hatohobei



Site Description

Helen Reef is an atoll located in the Southwest Islands. It is a largely submerged coral reef and contains a small island in its northern section. Helen is a sandy, atoll island and therefore is flat and rises only a few feet above sea level. It is inhabited by two to four individuals at a time who man a small marine research and ranger outpost. Helen Atoll and Tobi Island (which is about 80 km to the northwest) comprise the state of Hatohobei. Hatohobei is Palau's southernmost state, and is closer to Indonesia than it is to the main islands of Palau. Access to this IBA is extremely limited with a single state boat providing service to the six islands of the Southwest as weather and sea conditions allow. Helen is owned and managed by the state of Hatohobei. This island is one of only two IBAs in Palau that qualifies under the A4 criteria for significant congregations of seabirds.

Birds

Helen Island qualifies as an IBA because of the A4 (iii) congregations of nesting Black Noddies. Recent studies have estimated 20,000-24,000 nesting birds (Helen Reef 2004; Knecht 2005). The island also has nesting populations of Sooty Terns (16,000-80,000 birds) and Great Crested Terns (5,000-7,000). Thousands of Red-footed Boobies and Brown Boobies used to nest on the island, but have moved to an abandoned barge on the nearby reef because of past human disturbance.

Other Biodiversity

Helen Island and the surrounding lagoon is one of Palau's most outstanding atoll complexes. The lagoon and surrounding reef have about 270 species of hard coral. Significant marine species include trochus, large numbers of humphead wrasse, bumphead parrotfish, green and hawksbill turtles, groupers, and many others. Helen is one of Palau's most significant green turtle nesting sites. Vegetation on the island is characteristic of beach strand, and consists mostly of velvet-leaf soldier bush (*riirs*) and grasses. There are a few coconut palms and Casuarina trees.

Conservation

Helen Reef Conservation Area which includes the island, entire lagoon and surrounding reefs, covers an area of 262 km^2 and is protected under Hato-

Birds	Scientific Name	Palauan Name	A1 Globally Threatened	A2 Restricted-range	A4 Congregations
Black Noddy	*Anous minutus*	bedaoch			X

hobei state legislation, which created a board that oversees management of the area. Helen has been the target of illegal fishing by mostly foreign boats, due to its isolation and proximity to Indonesia. The area has also suffered from coral bleaching. The low-lying island is susceptible to storms and other natural disasters. The presence of resident rangers on the island has had significant impact on improving enforcement and monitoring of this protected area. Access to the main archipelago for human resources and supplies remains the greatest management challenge. The Singapore ant was introduced to Helen by confiscated fishing canoes from Indonesia and the Philippines. This ant presents one of the biggest threats to the island's biodiversity, especially to the nesting seabirds. Other introduced species which may threaten the islands' birds and biodiversity are introduced dogs and chickens. Climate change and storms are significant threats to the low-lying sandy island.

PHOTOS BY PALAU CONSERVATION SOCIETY

Photos, clockwise starting from the upper left: Sooty Terns; Track of a nesting green turtle; Sooty Terns; Children conduct a marine debris clean-up on Helen Island.

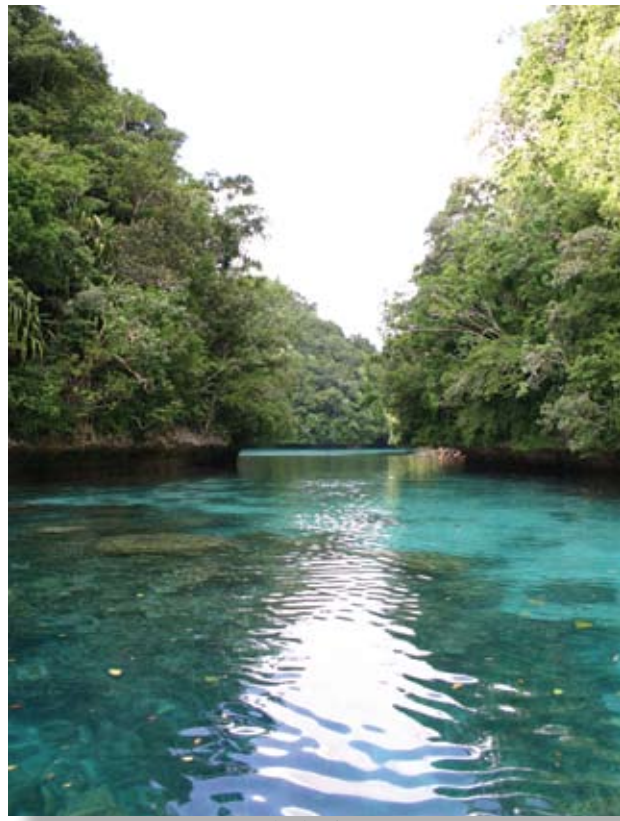


PHOTO BY PALAU CONSERVATION SOCIETY

Rock Islands IBA.

Palau IBA Network

Distribution and Coverage

The Palau IBA network covers areas from the northernmost island to the southernmost island of Palau. The network includes sites important to all of Palau's bird species currently listed as globally threatened and near threatened on the IUCN Red List and the United States Endangered Species List, as well as all species considered to be locally important or locally recommended for consideration for listing. The network also includes nearly all sites important to Palau's seabird congregations.

Kayangel state may also present possible options for testing the model. Although the estimates for number of Great Crested Terns in Ngaruangel (5,000 - 7,000 individuals) does not currently meet the threshold of 10,000 individuals required for IBA status, there is a possibility that previous estimates may change with more accurate surveys in the future.

Sites that may be determined in the future to be additional IBA sites include Ngaruangel (nest site for Great Crested Terns) as well as other islands of Kayangel state, other sites in Babeldaob (particularly important for the Palau Scops-owl and Palau Ground-dove), and Hatohobei and Sonsorol (possible site for Marine IBAs).

PHOTOS BY PALAU CONSERVATION SOCIETY

Photos, clockwise starting from upper left: Great Crested Terns; Sonsorol Island, juvenile Palau Scops-owl.

Gaps in Network Coverage

Possible gaps in the Palau IBAs network may exist particularly with respect to species that require further survey. These include nocturnal and highly discreet species such as the Palau Scops-owl and the Palau Ground-dove, as well as nesting populations of seabirds that may require further study, such as the Great Crested Terns at Ngaruangel Reserve in Kayangel state.

BirdLife International is investigating the applicability of the IBA model to marine environments. There are three potential sites for testing the Marine IBA approach in Palau. Hatohobei and Sonsorol states currently present the most strategic options for testing marine IBAs, with their current IBA status due to large numbers of nesting seabirds.

Threat Assessments

Current major threats to birds and IBAs in Palau include invasive species, habitat degradation, hunting for local market, and climate change especially for atolls. These threats to birds and IBAs in Palau have been identified qualitatively. Further assessment is needed to better inform management and decision-making. Threat assessments based on the IUCN threat framework will be undertaken as part of the next round of IBA management, beginning in 2008.

Prioritizing IBAs for Action

An effective prioritization process is needed to clearly and collaboratively identify next sites, species and strategies on which to take action and is planned as a next step. However, the following recommendations are made for prioritizing sites for action based on an initial assessment.

Ngeriungs Island in Kayangel, Fana Island in Sonsorol and the Peleliu IBA: These sites have been initially prioritized for action. This initial prioritization is mainly due to presence of globally threatened species under imminent threat (such as the Micronesian Megapodes in Ngeriungs), feasibility and levels of local commitment (such as in Fana Island), and importance of the site combined with lack of current conservation action taking place (such as the Peleliu IBA).

Babeldaob: There is considerable momentum for terrestrial conservation in Babeldaob because of existing and planned terrestrial protected areas (of which there are currently eight) as well as the establishment and present growth of the Babeldaob Watershed Alliance, which is a partnership of states working to effectively conserve the upland forests of Babeldaob as well as other sites critical to healthy ecosystem functions of the island's five major watersheds. It is therefore strategic to build on this momentum by ensuring integration of IBAs planning and management activities.

Rock Islands: While the Rock Islands are currently protected through legislation and are managed by state authorities with some assistance from various partnerships, the site can be considered a priority for controlling and preventing invasive species, particularly rodents, cats and macaques. The site is especially important due to the presence of all the endemics, including the Giant White-eye, found in only one other site – Peleliu.

Higher Level Protection of IBAs

It is envisioned that the Palau Protected Areas Network (PAN) will include all IBA sites. Inclusion of Palau's IBAs in the PAN will help ensure long-term management, health and sustainability of IBA sites. Additionally, a review of current national legislation to protect birds and regulate the use of birds in Palau is needed and will be undertaken as part of follow-up to the IBA identification and national bird survey updates.

As monitoring of IBA sites and Palau's bird populations will be essential to the effective management of Palau's birds and IBAs, on-going monitoring and regular updates of the Palau National bird surveys are anticipated and being planned for. National and local partnerships and commitment to these activities are in place and continue to be developed. It is envisioned that in addition to on-going regular monitoring of IBA sites by national and site support groups, the national bird survey will be updated every six years.

Next Steps for Action

Recommendations for next steps to be taken to sustainably manage Palau's birds and IBAs include:

Prioritization: It is necessary to undergo a transparent and effective prioritization process for determining where and when conservation and development investment in IBAs is most strategic. It is recommended that an IBA prioritization process in Palau take into account site viability, degree of imminent threat that could be offset by conservation action, availability of technical and financial resources, and likelihood of community support.

Continued education, outreach and capacity building: Ongoing and effective conservation education and outreach is recommended to increase levels of awareness and support for the sustainable management of birds and IBAs, encourage decision makers to integrate IBA awareness and support into resource management planning including land-use planning activities, and build local and national capacity for the effective management of bird populations and IBAs.

Link science to decision-making: It is critical that further research, monitoring and evaluation be undertaken as needed to best inform communities

PHOTOS BY PALAU CONSERVATION SOCIETY

Footprints in the sand on Kayangel island.

and decision-makers. An important follow-up step to the identification of Palau's IBAs and the Palau national bird surveys of 2005 will be to review the Palau Land Life Act, which fully protects all but four bird species in Palau. Improved information is particularly needed for important species such as the Micronesian Imperial-pigeon, Palau Ground-dove, Micronesian Megapode, Palau Scops-owl, as well as seabirds and migratory species.

Activities towards reduction of known threats: Immediate steps are recommended to mitigate and reduce known threats to IBA sites. Such immediate steps would include control, eradication and prevention of invasive species, and the establishment of protected area status.

Management planning: Management planning activities for all IBA sites are needed to strategically focus partnerships and efforts on best approaches to conserving and sustainably managing IBA sites for the benefit of Palau's communities, ecosystems and birds. Management planning needs to be integrated into land-use planning as well as planning for protected areas and the PAN.

Inclusion in the PAN: Protected area status for all IBA sites is recommended, particularly as all IBA sites currently meet criteria for membership to the Palau Protected Areas Network. Protected area status, either through traditional or legislated means, and membership in the Palau PAN will help ensure the long-term management and sustainability of all IBA sites.

Pursue opportunities for sustainable economic development of IBAs: It is essential that IBAs, as with protected areas in general in Palau, demonstrate some level of economic benefit to primary stakeholders. Assessing options for clear demonstration of the value of birds and IBAs to Palau's subsistence economy, as well as to Palau's primary economic sector – tourism, will strengthen community and national support for effective long-term management of IBAs. Income-generating activities such as trail development, bird-watching tours, and well-investigated and designed programs for sustainable harvest of some species will greatly enhance the long-term viability of IBAs in Palau.

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Appendix A: Birds of Palau

Descriptions in this Appendix are from Engbring (1988). Other sources include Pratt (2001), USFWS (2005), TNC (2002) and BirdLife (2007). Note: "(SW)" indicates the name that is used in the Southwest Islands.

Endemic Birds (restricted to Palau)

Dusky White-eye, ***Chetitalial,*** *Zosterops finschii*

Abundant resident

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Dusky White-eye is the smallest Palauan bird species. It is gregarious, traveling in large conspicuous flocks. They call constantly while foraging together, moving noisily through the upper canopy of the forest. They flit quickly through the vegetation, feeding mostly on seeds and small fruits. This species often forms mixed flocks with the Caroline Islands White-eye, whose behavior and call is similar.

Giant White-eye, ***Charmbedel ra Yaoldaob,*** *Megazosterops palauensis*

Locally common endemic, "Near Threatened" on the IUCN Red List

Represented in IBAs PW005, PW006

The Giant White-eye is found only on Peleliu and the rock island of Ngeruktabel. The abundance of this bird on these two islands but absence on all of the other similar nearby islands remains a mystery. It calls before dawn and intermittently throughout the day and has a loud, distinct song. It feeds on caterpillars, other insects, and small fruits mostly in the upper canopy and occasionally in the understory.

Mangrove Flycatcher, ***Charmelachull,*** *Myiagra erythrops*

Common endemic

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Mangrove Flycatcher is widespread in all forest types of Palau but particularly common in the mangrove forests. It feeds on insects by catching them in the air or picking them from foliage. It commonly scolds observers and its Palauan name refers to its habit of singing in the rain. Charmelachull translates to "animal of the rain."

Morningbird, ***Tutau,*** *Colluricincla tenebrosa*

Common endemic

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Morningbird is common in all forest types except large stands of mangrove forest. Tutau means morning, and refers to the bird's usual habit of calling profusely before dawn and then remaining silent during the day. When mating in the winter and spring months they do call during the day. It forages on both plants and animals moving quietly and slowly through the forest understory.

Palau Bush-warbler, ***Wuul*** **or** ***Chesisebarsech,*** *Cettia annae*

Common endemic

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Palau Bush-warbler lives in dense vegetation of the understory near the ground in all forests except mangroves, on the islands from Babeldaob to Peleliu. It is common but not easily observed. On occasion it will approach an observer closely to scold, jumping from branch to branch. It has a loud and beautiful call, and often sings continuously for long periods. It is omnivorous feeding on insects, snails, and small seeds.

Palau Fantail, ***Melimdelebteb*** **or** ***Chesisirech,*** *Rhipidura lepida*

Common endemic, "Delisted, Monitored" on the US Endangered Species List

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Palau Fantail prefers forests of secondary growth, fertile river bottoms, and broken forest and is not found in solid stands of mangrove. Two or three birds are often found chasing and scolding each other. They move quickly, rarely perching for long on a branch. They feed on insects from foliage or catch them in flight. The bird rarely sings, but often scolds. A warble of chirps and squeaks is given in the early morning only.

Palau Fruit-dove, ***Biib,*** *Ptilinopus pelewensis*

Abundant endemic

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Palau Fruit-dove is one of Palau's most beautiful birds with green feathers, a purple cap and orange and yellow underparts. It is commonly heard "cooing" throughout the day and night in all the major islands from Babeldaob to Angaur. Although it is one of the most abundant birds in Palau, it is often not seen because it is shy, well camouflaged and lives in the upper forest canopy. Palauan legend says that it is related to the giant clam, and when the tide is low and people are collecting clams, it calls loudly to mourn its lost relatives. It feeds on small fruits and fleshy seeds.

Palau Ground-dove, ***Omekrengukl or Doldol,*** *Gallicolumba canifrons*

Rare endemic, "Near Threatened" on the IUCN Red List and "Delisted, Monitored" on the US Endangered Species List

Represented in IBAs PW002, PW003, PW005, PW006

The Palau Ground-dove is the rarest of all Palauan endemic birds. It is very rare in Babeldaob but more common in the limestone Rock Islands. It is a solitary and territorial bird, and can be heard calling from the same location each morning. The inaccessible habitat preference, low population density, and low infrequently uttered call make observing this species difficult. It can be recognized, however, because it is the only small dove to look for food on the ground. It forages for seeds, walking over difficult terrain with rapid agility. Its low population size may be due to a lack of specific habitat or from impacts from invasive species such as rats.

Palau Scops-owl, ***Chesuch, Sorongorong (SW),*** *Otus podarginus*

Common endemic, "Delisted, Monitored" on the US Endangered Species List

Represented in IBAs PW002, PW003, PW004, PW006

The Palau Scops-owl is found widespread from Babeldaob to Angaur, most commonly in broken pockets of forest such as river bottoms and more rarely found on Angaur and on level sandy islands. It is nocturnal, becoming active at dusk as well as territorial. A pair or a pair and their offspring often are found in the same area nightly. They feed on insects, other arthropods, and earthworms. Since the call closely resembles that of the Palau Fruit-dove, the two can sometimes be confused.

Other Restricted Range Birds (restricted to the Micronesia Region)

Caroline Islands White-eye, *Charmbedel ra Babeldaob,* *Zosterops semperi*

Common resident, Endemic subspecies

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Caroline Islands White-eye has a very distinctive white eye-ring, unlike the other two white eyes in Palau. It prefers second-growth forest along the shrubby edges of savannas and in broken forest of open areas. It is uncommonly found in more extensive deep forests. It is gregarious, often in flocks from 3-15 birds that move noisily through the upper canopy or open areas flitting constantly from branch to branch. Flocks of the Caroline Islands White-eye often mix with the Dusky White-eyes and forage together feeding on small insects and seeds.

Micronesian Imperial-pigeon, *Belochel, Hiop (SW),* *Ducula oceanica*

Common resident

Represented in IBAs PW002, PW003, PW005, PW006

The Micronesian Imperial-pigeon is found widespread across Micronesia. Historically, in Palau it was only hunted using blow-guns and was reserved for high clan members. Today, however, increasing hunting pressure may be leading to overharvesting, despite existing legislation that bans hunting. The bird has a distinctive call, moaning a loud "coo." It dwells in the upper canopy of the forest where it feeds on fleshy seeds, fruit, and vegetation.

Micronesian Kingfisher, *Cherosech* or *Ongelimadech,* *Todiramphs cinnamomina*

Common resident, Candidate endemic

Represented in IBAs PW002, PW003, PW005, PW006

The Micronesian Kingfisher can be distinguished from the Collared Kingfisher by its cinnamon-colored head and varying use of habitats. It is found deep in the forest and in broken forest near human settlements. It is rarely seen along the coast or in the mangrove. It is a territorial bird remaining in the same area with its mate throughout the year. It feeds mostly on insects and lizards.

Micronesian Megapode, *Bekai,* *Megapodius laperouse*

Uncommon resident, Endemic subspecies, "Endangered" on the IUCN Red List and "Endangered" on the US Endangered Species List

Represented in IBAs PW001, PW002, PW003, PW004, PW005, PW006

The Micronesian Megapode is listed as endangered on the IUCN Red List and the US Endangered Species List. In Palau it is locally common in Kayangel, Rock Island beaches, and is rarely found in Babeldaob. The range outside of Palau is restricted to the Mariana Islands. It often travels in pairs, walking on the ground like a chicken rarely taking flight unless it is startled. The megapode has a remarkable nesting behavior, constructing a mound up to 2 m high and 8 m in diameter from soil and organic matter. One nest may be shared by several birds. When the chick hatches, already strong and developed, it digs its way out of the nest ready to fend for itself. The eggs are sought after for food by humans, and traditionally in Palau, the eggs were reserved for the chief and high clan members. Today, although protected by law, nest raiding poses a threat to this species.

Micronesian Myzomela, *Chesisebangiou,* *Myzomela rubratra*

Common resident, Endemic subspecies

Represented in IBAs PW001, PW002, PW003, PW004, PW005, PW006

The Micronesian Myzomela is one of the few birds that inhabits coconut groves and mangrove forest. It also prefers second-growth and broken forests but is also found in deep, mature forests. It is territorial and often found individually or in pairs, chasing and scolding. It feeds mostly on nectar but also takes snails and insects. Its favorite food sources are coconut, mangrove, and hibiscus flowers. Its nest is a finely woven, airy bowl found hanging from a small horizontal branch.

Micronesian Starling, *Kiuid,* *Aplonis opaca*

Abundant resident, Endemic subspecies

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Micronesian Starling is found throughout Palau, in a wide variety of habitats, from villages to second-growth forests to deep mature forest, mangroves, and coconut groves. It is social and will form noisy flocks. It feeds mostly on fruits and occasionally seeds and insects. It may become a pest near villages, feeding on cultivated fruits. It makes its nest in the cavity of a tree and lays 2-3 bluish eggs.

Palau Swiftlet, *Chesisekiaid,* *Collocalia pelewensis*

Abundant resident, Candidate endemic

Represented in IBAs PW002, PW003, PW005, PW006

The Palau Swiftlet has an interesting habit of nesting and roosting in caves. It is not known to land or perch outside of caves, spending most of the day airborne alone or in flocks. It feeds most actively during the morning and late evening when small insects are most commonly in flight. It can sometimes be seen flying together with the nocturnal sheath-tailed bat (chesisualik), which is also most active during the same times.

Southwest Island Nesting Shorebirds and Seabirds

Black Noddy, *Bedaoch,* *Anous minutus*

Abundant resident

Represented in IBAs PW007, PW008

The Black Noddy has a population of over 20,000 birds on both Hatohobei State's Helen Reef and Sonsorol State's Fana Island, making the islands both globally significant bird areas. The Black Noddy closely resembles the Brown Noddy, making it hard to distinguish the two. The Black Noddy differs only by the following subtle characteristics: its smaller size, more blackish color, relatively shorter tail, more distinct white patch on the head, faster wing beats, and different habits. The noddies are grouped with the terns, and the Black Noddy is the most abundant tern in Palau. They can often be seen hovering over the water in flocks feeding on small fish that are being pursued by predatory fish. They nest in the mangroves or in other trees near the coast unlike the Brown Noddy, which nests further inland.

Brown Booby, ***Kuel, Habang (SW),*** *Sula leucogaster*

Locally abundant resident

Represented in IBAs PW007, PW008

The Brown Booby is resident only in the Southwest Islands of Fana and Helen. Occasionally, wandering birds are sighted elsewhere, especially in Kayangel where they sometimes roost. Outside of Palau the bird is widely distributed in the tropical Pacific, Atlantic, and Indian Oceans. It feeds on fish, primarily flying fish, and squid by diving into the water from the air. They will leave land early in the morning to forage far from land and return to roost late in the evening. Residents of Fana Island say that 25-30 years ago there were no Brown Boobies nesting there.

Common White Tern, ***Sechosech, Birih (SW),*** *Gygis alba*

Common resident

Represented in IBA PW007

The White Tern is found throughout Palau, nesting in all forest types. A large colony of White Terns nests in the forests of Sonsorol's Fana Island. It is often seen flying in pairs as part of a courtship ritual. It rarely feeds in the lagoon but flies directly out to the ocean to feed.

Great Crested Tern, ***Roall, Manarihoch (SW),*** *Sterna bergii*

Common resident

Represented in IBA PW008

The Great Crested Tern nests in Ngaruangel and Helen Atoll. It is a large tern with a distinctive crest displayed during breeding. It is generally solitary except when nesting. It feeds by diving from the air.

Greater Frigatebird, ***Kedam, Hataf (SW),*** *Fregata minor*

Locally abundant resident

Represented in IBA PW007

Lesser Frigatebird, ***Kedam, Hataf (SW),*** *Fregata ariel*

Locally abundant resident

Represented in IBA PW007

The Great and Lesser Frigatebirds roost on all the Southwest Islands and Kayangel. They are rarely seen elsewhere in Palau. The Greater Frigatebird greatly outnumbers the Lesser Frigatebird in Palau. The two species are similar but can be distinguished by the white patches on the adult male Lesser Frigatebird (the male Greater Frigatebird is all black) and the black throat of the adult female Lesser Frigatebird (the female Greater Frigatebird has a whitish throat). The feathers of these birds are not waterproof hence the bird rarely sits on the water or dives in. Instead they feed either by catching fish and squid from the surface or by harassing other birds to drop their catch. They will often retrieve the stolen catch in midair. They nest in colonies in the trees. The males have a large red throat pouch that inflates during courtship displays.

Sooty Tern, ***Saiuasaua (SW),*** *Sterna fuscata*

Locally abundant resident

Represented in IBA PW008

The Sooty Tern nests and roosts abundantly at Helen Reef Atoll. It is rarely sighted elsewhere, although may occasionally nest on Ngaruangel Island in Kayangel. Outside of Palau, its range is widespread in tropical and sub-tropical oceans. It is a pelagic bird, traveling far out to sea for long periods when not nesting. When nesting, only one egg is laid. It feeds on small fish by diving from the air.

Other Native Resident Land Birds

Blue-faced Parrotfinch, *Erythrura trichroa*

Rare resident, Endemic subspecies

Represented in IBAs PW002, PW005, PW006

The Blue-faced Parrotfinch is a rare bird found in the forests of the high limestone Rock Islands. It is very rare on Babeldaob. It can often be spotted in Casuarina (pine) trees on sandy beaches. Its favorite food source is the mature cone of these trees. Its call is barely audible and resembles the call of two different insects in Palau. This factor, its small size, and preference for the upper canopy make the Parrotfinch difficult to locate.

Collared Kingfisher, ***Tengadidik, Tangasih (SW),*** *Halcyon chloris*

Common resident, Endemic Subspecies

Represented in IBAs PW001, PW002, PW003, PW004, PW005, PW006

The Collared Kingfisher is distinguished from the Micronesian Kingfisher by its dark green-blue head and by where it is most commonly sighted. It is most commonly found along coastlines and in the mangrove forest, but is also found in residential areas, along edges of broken forest, and in the savannas of Babeldaob. Unlike the Micronesian Kingfisher, it is not found in the deep forest. It is territorial, and will harass and sometimes even kill small shorebirds or baby domestic chickens by diving down and hitting them with its bill. It feeds on insects, lizards, small fish, shrimp, crabs, and other crustacean. It nests in a tree cavity or in a termite nest after hollowing it out with its bill.

Common Moorhen, ***Debar,*** *Gallinula chloropus*

Rare resident

Represented in IBA PW002

The Common Moorhen is commonly distributed worldwide except in Australia. In Palau it is rare because of the limited specific habitat it needs. It is found almost exclusively near freshwater ponds. Any type of environmental threat to these few habitats in Palau would certainly affect the population of this species. It is often confused with the Purple Swamphen, and has the same Palauan name as the Pacific Black Duck. It is secretive and solitary in habit and can be aggressive, chasing other birds that approach too close. It is omnivorous, feeding in shallow water.

Grey Nightjar, ***Chebacheb,*** *Caprimulgus indicus*

Uncommon resident, Endemic Subspecies

Represented in IBAs PW002, PW003, PW004, PW006

The Grey Nightjar remains quiet and hidden during the day by perching lengthwise on a branch. At dusk, it becomes active. It has a distinctive call that sounds like a short ticking or knocking sound, "tck-tck-tck-tck" as well as a loud, harsh "kreek, kree-kreek." It can often be seen foraging for insects in the air at dusk in a small meadow or along the forests edge. Palauan legend says that when a nightjar sings near a house, someone within the residence is pregnant. Scientists have recorded two subspecies of this nightjar in Palau.

Nicobar Pigeon, ***Laib,*** *Caloenas nicobarica*

Uncommon resident, Endemic subspecies, "Near Threatened" on the IUCN Red List

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Nicobar Pigeon is uncommon to rare, found scattered throughout Palau from Babeldaob to Peleliu, more commonly in the Rock Islands then Babeldaob. Interestingly there are no known calls for this bird in Palau, however the same species outside Palau is said to voice a harsh croaking call. It is a secretive forest bird, most often spotted when flying high between islands. It is terrestrial and walks on the ground like a chicken feeding on seeds or fruit, mostly on the forest floor, but also in the trees.

Pacific Black Duck, ***Debar, Hango (SW),*** *Anas supercilliosa*

Rare resident

Represented in IBA PW002

The Pacific Black Duck is the only resident duck in Palau. There are other migratory ducks more likely to be seen that can be confused with it. It is one of the rarest of Palau's birds. It was once common and has declined in the last 20-30 years. The causes may be attributed to habitat loss from a decrease in wetland taro cultivation, a range extension of its natural predator, the crocodile, and possible hunting. It is found only in freshwater swamps, ponds, and taro patches. It is secretive, retiring most of the day in thick vegetation along edges of freshwater areas, coming out only to feed in the early morning and late in the evening.

Purple Swamphen, ***Uek,*** *Porphyrio porphyrio*

Uncommon resident, Endemic subspecies

Represented in IBAs PW002, PW006

The Purple Swamphen is widespread across the world but uncommon in Palau, where it is only found in marshes or wetland taro patches and other wetland areas. It is secretive and difficult to flush out in the open, preferring to hide in dense cover. They are found individually, in pairs, or in small gamily groups. Although it is fond of feeding on crops, local tradition has protected it from human persecution. Palauan legend says that if a gardener kills a bird, the remainder of the swamphen clan will gather in the taro patch and destroy the whole crop.

Slatey-legged Crake, ***Och,*** *Rallina eurizonoides*

Uncommon resident

Represented in IBA PW002

The Slatey-legged Crake is found throughout Palau, generally in low damp areas, although it has been observed high in limestone forests. It is very secretive and partly nocturnal, thus its habits in Palau are poorly understood.

Slender-billed Cicadabird, ***Kiuidukall,*** *Coracina tenuirostris*

Uncommon resident, Candidate Endemic

Represented in IBAs PW002, PW003, PW004, PW005, PW006

The Slender-billed Cicadabird is uncommon everywhere but widespread in range and habitat type. It can be found in deep and broken forest, along the coast and far inland. It is quiet and inconspicuous, remaining mostly in the upper forest canopy where a pair or small family group forages moving from tree to tree. It feeds mostly on caterpillars and small insects from the foliage. Individual bird's or family's territories are believed to be relatively large.

White-breasted Woodswallow, ***Mengaluliu,*** *Artamus leucorhynchus*

Rare resident, Endemic subspecies

Represented in IBA PW002

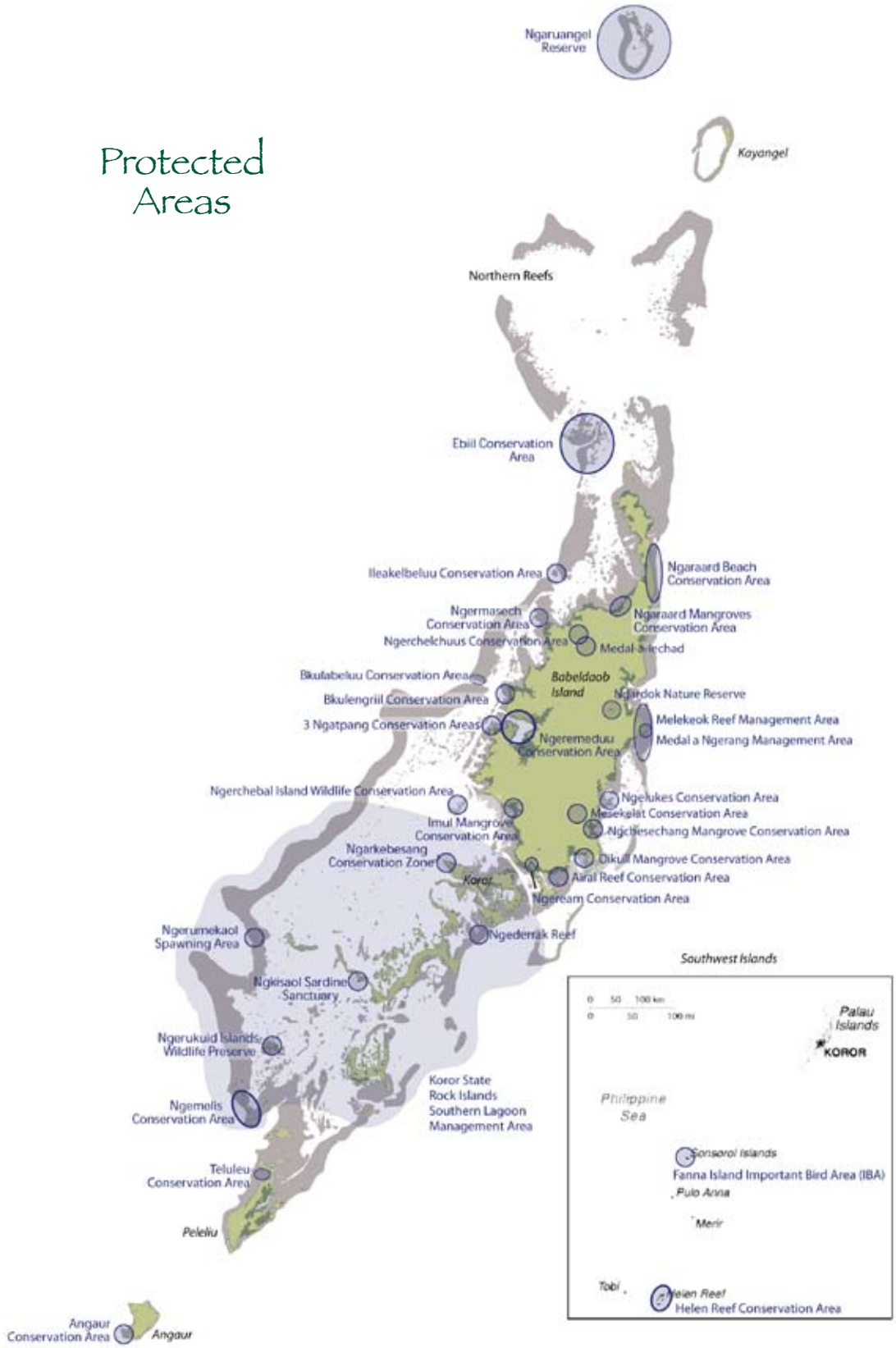
The White-breasted Woodswallow is found almost exclusively in the upper remote savannas in Babeldaob. Although it is capable of long flights it is rarely found in other habitats. It is a communal bird, generally found roosting in groups of 2-5. Perched in an exposed tree, often on the savanna edge, it will wait patiently for its prey before gracefully swooping out to snatch a flying insect with an audible clap of its beak. The bird is friendly, rarely being scared away by the presence of humans.

Appendix B. Alternate Bird Names

The names used throughout the text of this directory follow the *BirdLife Checklist of the Birds of the World* which is updated often (BirdLife 2007). Some authors writing about birds in Palau use alternate names, as shown in the table below. The alternate names listed here are those adopted by the Committee of the International Ornithological Congress (Gill and Wright 2006).

English name	Scientific name	Alternate English name	Alternate scientific name
Audubon's Shearwater	*Puffinus Iherminieri*	Audubon Shearwater	*Puffinus bailloni*
Caroline Islands White-eye	*Zosterops semperi*	Citrine White-eye	*Zosterops semperi semperi*
Chestnut Munia	*Lonchura atricapilla*	Black-headed Munia	*Lonchura malacca*
Great Crested Tern		Swift Tern	*Sterna bergii*
Grey Nightjar	*Caprimulgus indicus*		*Caprimulgus indicus phalaena*
Mangrove Flycatcher		Palau Flycatcher	*Myiagra erythrops*
Micronesian Kingfisher	*Todiramphus cinnamominus*	Rusty-capped Kingfisher	*Halcyon cinnamomina pelewensis*
Micronesian Megapode	*Megapodius laperouse*	Palau Megapode	*Megapodius laperouse senex*
Nicobar Pigeon	*Caloenas nicobarica*		*Caloenas nicobarica pelewensis*
Pacific Black Duck	*Anas supercilliosa*		*Anas supercilliosa pelewensis*
Palau Swiftlet	*Collocalia pelewensis*		*Aerodramus pelewensis*
White-breasted Woodswallow	*Artamus leucorhynchus*	Palau Woodswallow	*Artamus leucorhynchus pelewensis*

Protected Areas



Our special thanks to everyone who participated in Palau's IBA surveys.

This book describes the eight sites in Palau which are of global importance for bird conservation. These Important Bird Areas (IBAs) are part of a broader, integrated approach to conservation that incorporates sites, species, and habitats. They are key sites for the conservation of birds and biodiversity, and the building blocks for conservation planning. Palau's rich natural heritage includes 153 bird species in 40 families. Six species of these birds are threatened. Nine of the birds are endemic and found nowhere else in the world.

Important Bird Areas in Palau: Protecting Palau's Natural Heritage is aimed at decision-makers, traditional leaders, communities, land-owners and visitors. It was published by the Palau Conservation Society, with support from BirdLife International, European Commission, the Darwin Initiative and GEF Small Grants Program.

BirdLife
IBA
IMPORTANT BIRD AREA

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