

PALAU

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Inventory of the status of mangrove wetlands in Palau.

Extent

11,633.0 acres (4,708.0 ha)

General description

Mangrove wetlands in Palau constitute wetlands on high islands, coral islands and rock islands. These include the estuarine mangroves of high islands, embayments and rivers, and the intertidal coastal flat mangroves of low islands.

Palau's mangrove species are mostly confined to the intertidal coastal flats where they are generally subject to tidal overwash twice daily. Here they form a dense, virtually impenetrable continual forest cover ranging in extent from a few meters to one mile from the seaward to landward edge. Their distribution is roughly stratified by horizontal gradients that are aligned parallel to the shoreline. Stand structure ranges from single clumps to dense overstocked stands. Tree forms range from stunted and shrub-like plants to trees up to 70 feet in height and 40 plus inches in diameter (Metz, 2000).

Within Palau's mangrove habitat types, it has been confirmed that eighteen (18) mangrove species and associated species occur (Duke, 1999).

<u>Genus Species</u>	<u>Palauan Name</u>	<u>Habitat Zone</u>
1. <i>Acanthus ebracteatus</i>	Kollil	I
2. <i>Acrostichum speciosum</i>	Okuam	I
3. <i>Avicennia alba</i>	unknown	
4. <i>Bruguiera gymnorhiza</i>	Denges, Kodenges	I, F, R
5. <i>Ceriops tagal</i>	Biut	I, R
6. <i>Dolichandrome spathacea</i>	Rriu	I
7. <i>Excoecaria agallocha</i>	Ias	F
8. <i>Heritiera littoralis</i>	Ebibeche	I, R
9. <i>Lumnitzera littorea</i>	Mekekad	I, R
10. <i>Nypa fruticans</i>	Toechel	I, R
11. <i>Pemphis acidula</i>	Ngis	F
12. <i>Rhizophora apiculata</i>	Bngaol	F, R, I
13. <i>Rhizophora X lamarekii</i>	Tebechel	F, R, I
14. <i>Rhizophora mucronata</i>	Tebechel	F, R
15. <i>Rhizophora stylosa</i>	Bngaol	F
16. <i>Scyphiphora hydrophyllacea</i>	Kuat	R, I
17. <i>Sonneratia alba</i>	Urur	I, F, R
18. <i>Xylocarpus granatum</i>	Meduulokebong	I,R

I = Interior F = Fringe R = Riverine

Mangrove wetland loss

Most of the mangrove wetland loss in Palau has occurred due to development and human activities, for example reclamation for residential development and aquaculture. The extent of wetland loss is unknown.

Institutional arrangements for mangrove wetland management

Institutions/Agencies

Bureau of Natural Resources and Development

(a) Division of Agriculture and Mineral Resources

(b) Office of the Conservation Area Support Officer

Environmental Quality Protection Board (EQPB)

Palau Conservation Society

Several State Governments (e.g. Koror State Government)

Palau International Coral Reef Center

In the National Government, the Division of Agriculture and Mineral Resources under the Bureau of Natural Resources and Development works on the development of the National Mangrove Management Plan. The Office of the Conservation Area Support Officer under the Bureau of Natural Resources and Development specifically works on the management, awareness programs, and monitoring of the Ngaremeduu Conservation Area, which is the largest and most biodiverse mangrove ecosystem in Palau. The Environmental Quality Protection Board deals with the establishment of national regulations and enforcement of these regulations.

Other institutions or agencies involved in the mangrove wetland management include the Palau Conservation Society (a non-government organization), which deals with awareness programs; the Koror State Government, which deals with establishing state regulations and enforcement of these state regulations; and the Palau International Coral Reef Center (a newly established center) that promotes research and public awareness programs.

Mangrove wetland policies and legislation

Legislations/Acts

There are several state legislations that are in place in the states of Aimeliik, Ngatpang and Ngaremlengui that protect and conserve the Ngaremeduu Conservation Area, which encompasses the largest mangrove ecosystem in Palau.

1. Ngaremeduu Conservation Area Act of 1999, Aimeliik State
2. Ngaremeduu Conservation Area Act of 1999, Ngatpang State
3. Ngaremeduu and Compact Road Mitigation and Conservation Area Act of 1999, Ngaremlengui State

Another legislation that is in place to set aside a mangrove area of the west coast of Ngaraard State as a conservation area is the:

- Ngaraard State Public Law No. 4-4

Regulations

Currently, the Environmental Quality Protection Board proposed the Marine and Freshwater Quality Regulations (Chapter 2401-11-09), which would enforce buffer zones

for the protection of coastal waters and mangroves. These regulations are pending approval from the Palau National Congress, the Olbiil Era Kelulau (OEK).

There is an Environmental Impact Statement Regulation that is in place and is enforced by the Environmental Quality Protection Board.

Management plans

A couple of management plans that are in place that deal with mangrove conservation in Palau are:

- a) The Palau Mangrove Management Plan (2000)
- b) Management Plan for the Ngaremeduu Conservation Area (2000)

Tenure ownership of mangrove wetlands in Palau

Most of the mangrove wetlands in Palau are state-owned. Under the Constitution of the Republic of Palau, all mangrove areas fall under the jurisdiction of the state governments. The National Government may provide strategies and policies that the National Congress may adopt into legislations, that can be used as guidelines for the states to adopt for the protection and management of their resources.

Community-based management structure in place

Traditional chiefs of each state impose traditional laws called “bul” in their respective communities, for the purpose of protecting and conserving their natural resources. The traditional chiefs may impose a “bul” on certain species of mangroves, including the ban of collection, or cutting of the resources.

An example of a community-based project that imposes mangrove management is the Ngaremeduu Conservation Area (NCA). The NCA is managed by the Conservation Area Coordinating Committee (CACC), which involves community members and traditional leaders, and patrolled by the Conservation Area Patrol Officers (CAPOs), working together to conserve and protect the resources of the NCA. The NCA involves the buffering of mangrove areas, of up to 50 feet from the mangrove edge inland.

Mangrove wetland monitoring system

There has been no defined mangrove wetland monitoring system in place in Palau. Scientists who come to study the mangroves in Palau have not necessarily used a particular mangrove wetland monitoring system to assess the health and status of the mangroves in Palau. This being the case, it is important to set up a mangrove wetland monitoring system that is carried out on a regular basis to help assess the health and status of the mangroves in Palau.

Current awareness on the importance of mangrove wetlands

Extent of public understanding of mangrove wetlands

In the past, many people thought of mangroves as mosquito-infested and smelly areas, and they did not realize the need to protect them. However, through public awareness

programs conducted by different environmental sectors, e.g. Bureau of Natural Resources and Development, Environmental Quality Protection Board, Palau Conservation Society, etc., awareness has been raised regarding the importance of conserving and protecting mangroves not only for present but also for future generations.

Mangrove wetland education in the school

There is currently an effort to strengthen the science and environmental programs in the education system, including mangrove wetland education programs. The Bureau of Education, in cooperation with the Public Schools, Palau Community College and various environmental sectors, are working together to set up a science curriculum that will involve hands-on science activities to gain knowledge of the environment of Palau.

Community involvement in wetland management

The Ngaremeduu Conservation Area is a community-based biodiversity conservation program that involves three states of Palau, namely Aimeliik, Ngatpang, and Ngaremlengui. The NCA program stresses the importance of community involvement in the projects. The management of the mangrove wetlands in the NCA incorporates buffer zones, protection of habitat, and seasonal collection of mangrove crabs to prevent overharvesting of these important delicacies of Palau. Traditional chiefs in the states also impose traditional law called “bul” to prevent overharvesting of certain species of mangroves for building materials or other purposes.

Campaigns/strategy for promotion of wise use of mangrove wetlands

Several school campaigns have been conducted by several environmental sectors to promote the wise use of mangrove wetlands throughout Palau. There was a huge campaign through the Annual Science Fair in 2000 to promote the protection and wise use of mangrove wetlands in Palau.

Involvement of other sectors in mangrove wetland policy development, management and monitoring

The development of the Palau Mangrove Management Plan which is the basis for wetland policy in Palau, involved various sectors including government agencies, NGOs, academics and other environmental sectors. Management of wetlands falls under the jurisdiction of the state governments, with assistance from the national government. There is currently no ongoing monitoring of the mangrove wetlands.

Current situation regarding use of mangrove wetlands

Mangrove wetlands are seriously being considered for better protection under the Palau Mangrove Management Plan (2000), which recommends the setting up of conservation and reserve areas under the Heritage Act, and the Environmental Quality Protection Board proposal for the Marine and Freshwater Quality Regulations (Chapter 2401-11-09), which enforces buffer zones for the protection of coastal waters and mangroves.

Several states are currently using or proposing to use some mangrove areas for aquaculture development. Palau is currently considering boosting the development of aquaculture in order to improve the economy of Palau. Before aquaculture develops in Palau, wetland policies should be in place for the protection and sustainability of mangrove wetlands.

Furthermore, eco-tourism is slowly being introduced as another means of generating money with minimal impacts to the environment. An ecotourism strategy for the Ngaremeduu Conservation Area has been established, but due to funding constraints, it has not been implemented. This project can become one of the best sustainably-managed mangrove area in Palau, once the communities involved see the benefits of protecting the mangroves as a tourist attraction and for future generations.

Status of adoption of multi-lateral biodiversity conservation conventions

Palau acceded to the Convention on Biological Diversity in 1999, and the National Biodiversity Strategy and Action Plan proposal has been accepted by GEF for funding. The Office of Environmental Response and Coordination was created by the President of Palau in January 2001 to address the Convention on Biological Diversity, the Convention on Climate Change, and the Convention on Desertification.

The accession process to the RAMSAR Convention is still pending, waiting for approval by the President of Palau in the near future.