COOK ISLANDS

INTRODUCTION

based on information provided by Anna Tiraa

Area: 241 sq.km.
Population: 16,455 (1986 Census).

The Cook Islands comprise 15 small oceanic islands in the central South Pacific, defined by statute as all the islands between latitudes 8° and 23° South and longitudes 156° and 167° West. The islands are situated about 3,200 km northeast of New Zealand, and are a self-governing country in free association with New Zealand. Although the total land area of the islands is only about 241 sq.km, the territorial seas and Exclusive Economic Zone cover an area of nearly two million sq.km.

The islands are divided geographically into a Northern Group of six islands and a Southern Group of nine islands. Five of the islands in the northern Group (Suwarrow, Penrhyn, Manihiki, Rakahanga and Pukapuka) are low-lying coral atolls with central lagoons, while the sixth (Nassau) is a tiny sand cay. Of the nine islands of the Southern Group, Palmerston and Manuae are typical atolls, Aitutaki is an "almost atoll" with a central volcanic cone rising to 119 m, and Takutea is a tiny sand cay on a coral foundation. The other five islands, Rarotonga, Mangaia, Mauke, Mitiaro and Atiu, are volcanic "high" islands with fringing barrier reefs. Rarotonga, the largest island in the group and much the highest island with a peak at 650 m, is now deeply dissected by erosion. The others have much lower volcanic cores surrounded by raised coral limestone platforms (makatea). Almost 90% of the land area is in the Southern Group, with the island of Rarotonga (67.2 sq.km) accounting for over a quarter.

All of the islands are inhabited except Suwarrow in the Northern Group and Manuae and Takutea in the Southern Group. About 59% of the population (9,678 in 1986) reside on Rarotonga, the capital of the group. Oral tradition suggests that the group was settled by several waves of migrating Polynesians between 1000 and 1300 AD, and that the migrants came mainly from Eastern Polynesia. The islands were placed under British protection between 1888 and 1901, becoming a New Zealand dependency in 1901. They became internally self-governing in 1965, although their association with New Zealand continues. The population of the Cook Islands is declining slightly (0.3% per annum) due to emigration to New Zealand.

The economy is based on tourism, fruit and vegetable exports, and remittances from New Zealand. Many of the islanders are subsistence farmers and fishermen. Export crops include copra, citrus fruits, pineapples and bananas, and fruit processing is a major industry. Tourism is rapidly increasing in importance, especially on Rarotonga and Aitutaki.

The climate is tropical oceanic, influenced by winds from the northeast and southeast. The average annual rainfall on Rarotonga is about 2,100 mm, while that for the other islands ranges between 1,500 mm and 2,800 mm. The mean annual temperature on Rarotonga is 23.9°C. There is a pronounced wet season from November to April, when about two-thirds of the annual rainfall occurs, and a relatively cool dry season from May to October. The main hurricane season is from January to March. The mean surface temperature of the sea varies from 27.3°C in January to 25.5°C in June. Tides are semi-diurnal with an amplitude of approximately one metre.

Dahl (1980, 1986) has given a brief account of the natural ecosystems of the islands, and has reviewed their importance for nature conservation. The terrestrial vegetation includes montane forest on Rarotonga, lowland limestone rainforest on several of the high islands, beach forest on atolls and reef islets, and scrub and grassland formations. Natural vegetation in the coastal lowlands has been largely modified by man, and lowland forest has been almost totally destroyed. The coastal vegetation on Rarotonga, in particular, has been

heavily modified, and burning has spread to such a degree that most valleys are now covered by introduced grasses and weeds (IUCN, 1991).

All of the Cook Islands have extensive coral formations, generally as fringing and lagoon reefs. UNEP/IUCN (1988) provide a general account of the coral reef systems and the reef resources, and also give detailed information on four of the atolls (Aitutaki, Manihiki, Pukapuka and Suwarrow) and the reef systems of Ngatangiia Harbour and Muri Lagoon on Rarotonga.

Summary of Wetland Situation

There are four main types of wetlands in the Cook Islands:

- Freshwater marshes and swamps: on Rarotonga, Mangaia, Atiu, Mitiaro and Mauke.
- Permanent freshwater lakes: Lake Tiriara on Mangaia, Lake Tiroto on Atiu, and Lake Rotonui and Lake Rotoiti on Mitiaro.
- Tidal salt marsh: at Ngatangiia Harbour on Rarotonga.
- Mountain streams: on Rarotonga.

There are no mangroves in the islands.

On Rarotonga, freshwater marshes and swamps occur widely in flat-bottomed depressions between the coastal ridge and the base of the alluvial fans of streams rising in the interior. These depressions, which may be several hundred metres wide but are generally less than one metre deep, contain finer sediments than the adjacent ridges, and are widely used for taro cultivation. The island's rugged interior attracts abundant rainfall which gives rise to a number of perennial streams with their headwaters on or immediately below the 400 m contour. The surface drainage is controlled by the escarpments of the collapsed caldera, with most of the drainage system captured by three major streams, the Takuvaine, Avana and Avatiu.

On Atiu, Mangaia and Mauke, extensive freshwater swamps are present in a broad zone around the central volcanic cores of the islands. These wetlands have formed in depressions between the volcanic interiors and the surrounding raised limestone terraces (makatea). On Mitiaro, large portions of the central volcanic core of the island are at a lower elevation than the outer limestone plain, and much of the interior is covered by swamps and peat bogs. Small freshwater lakes are present in the swampy zones on Mangaia (Lake Tiriara), Atiu (Lake Tiroto) and Mitiaro (Lake Rotonui and Rotoiti). On all four islands, the freshwater swamps are extensively used for the cultivation of taro.

Palmerston Atoll, Manuae Atoll and Takutea Island in the Southern Group and most of the islands in the Northern Group are amongst the most important breeding areas for seabirds and marine turtles in the Central Pacific. Suwarrow and Takutea, in particular, support huge breeding colonies of sea-birds. However, it is doubtful if there are any significant wetlands on these islands.

The principal threat to wetlands in the Cook Islands is conversion to agricultural land. Large areas of freshwater swamp on Rarotonga, Mangaia, Atiu, Mitiaro and Mauke have been modified for the cultivation of taro *(Colocasia esculenta).* Increased siltation as a result of soil erosion is a problem at some of the wetlands in the coastal zone of Rarotonga, and landfill for urban development has also resulted in the loss of some wetland habitat on this island. There has been some pollution with pesticides, and there have been reports of wildlife being killed as a result of the dumping of oil in streams on Rarotonga.

Little information seems to be available on the fauna and flora of the wetlands. The lakes on Mitiaro are home to an endemic species of eel *(Anguilla* sp.*).* There are very few species of birds associated with the wetlands. The only resident species are the Pacific Reef Heron *(Egretta sacra),* Pacific Black Duck *(Arras superciliosa)* and Spotless Crake *(Porzana tabuensis).* The Black Duck is now probably extinct on Rarotonga, but apparently still survives in small numbers on Atiu, Mangaia, Mitiaro, Mauke and Aitutaki. Only three species of migratory shorebirds occur with any regularity, the Pacific Golden Plover *(Pluvialis fulva),*

Wandering Tattler *(Heteroscelus incanus)* and Bristle-thighed Curlew *(Numenius tahitiensis),* although at least four others have occurred as vagrants (Pratt *et al.,* 1987). Six species of land birds are endemic to the Cook Islands; the Cook Islands Fruit Dove *(Ptilinopus rarotongensis),* Atiu Swiftlet *(Aerodramus sawtelli),* Mangaia Kingfisher *(Halcyon ruficollaris),* Rarotonga Monarch *(Pomarea dimidiata),* Cook Islands Reed Warbler *(Acrocephalus kerearako)* and Rarotonga Starling *(Aplonis cinerascens).* However, these are mostly forest birds, and only the kingfisher and the reed warbler commonly occur in wetland habitats.

Wetland Research

Little if any serious research has been carried out on the wetlands of the Cook Islands, except in relation to taro cultivation, and the wetland systems on the whole remain poorly known.

Wetland Area Legislation

There is no legislation specifically relating to wetlands. Until 1987, the Conservation Act (1975) was the principal legislative instrument for the conservation of nature and natural resources, protection of historic sites and the environment, and the establishment of national parks and other protected areas (Anon., 1985). The 1975 Act was largely unused, and was repealed and replaced in April 1987 by the 1986/87 Conservation Act. This Act is essentially similar to the 1975 Act, but is equally binding on both government and the public. The principal difference is that the Conservation Service is established as an independent corporation, whereas previously it had been within the Ministry of Internal Affairs and Conservation. The 1986/87 Act, which applies in full only to Rarotonga and Aitutaki, gives the Conservation Service wide-ranging powers to protect, conserve, manage and control parks, wildlife, forests, water catchments and resources. Under Sections 27 and 28 of the Act, any land, lagoon, reef or island, or portion of the seabed with its superadjacent waters, can be declared a national park or reserve (IUCN, 1991).

Specific provisions within the 1986/87 Act provide for the Protection of the Coastal Zone and Cook Island Waters. The Coastal Zone includes coastal waters and the foreshore. The former are defined as the area seaward of the mean low water mark to the outer limit of the territorial seas, including every lagoon and its sea-bed. The foreshore is defined as the area extending 50 m landward of the mean low water mark and including all streams and the area extending five metres outward of the stream edge. The Act states that no alterations are to be carried out in the foreshore or coastal waters without the prior written consent of the Conservation Council. Cook Island Waters are defined *as* the waters of the territorial seas and internal waters of the Cook Islands, and include waters of any rivers, streams and lakes. This section of the Act provides for the protection of Cook Island waters from pollution of any kind (Anon., 1989). The Conservation Act of 1986/87 also has provisions for the control of soil erosion, siltation, extraction of aggregate, pollution and agricultural encroachment.

As the Conservation Act of 1986/87 does not provide adequate protection for islands other than Rarotonga and Aitukaki, the Conservation Service, in liaison with each Island Council, has started to prepare separate conservation plans for these islands. The Service has proposed developing legal mechanisms under which parks and reserves could be established on native freehold land (IUCN, 1991).

Other legislation with some relevance to wetland areas includes: the 1966 Local Government Act, which provides for the creation of Island Councils and empowers them to pass bye-laws controlling land use and to establish local reserves to protect flora and fauna; the Public Health Act and Ordinances, which control contamination of water; the Harbour Control Act (1971), which prohibits pollution of harbours; and the Territorial Sea and Exclusive Economic Zone Act (1979), which controls the management, conservation, exploitation and exploration of marine resources within the territorial seas.

At international level, the Cook Islands has ratified the Convention on the Conservation of Nature in the South Pacific (the Apia Convention) and the Convention for the Protection of the Natural Resources

and Environment of the South Pacific (SPREP Convention), and has signed but not yet ratified the Convention on Biological Diversity. It is not as yet a party to the World Heritage Convention or Ramsar Convention.

Wetland Area Administration

The Conservation Act of 1986/87 is administered by the Conservation Service which is run by a Council appointed by the Minister of Conservation. This Service has responsibility for management of national parks and nature reserves, but to date, the protected areas network of the Cook Islands includes only a single protected area, the Suwarrow Atoll National Park. This small national park of 160 ha was established in 1978 primarily to protect the huge breeding colonies of seabirds on the atoll, and does not include any wetland habitat. Three additional areas are currently being considered for establishment as nature reserves: two in the forested interior of Rarotonga (Kakerori and Te Manga) and one encompassing the tiny sand cay of Takutea in the Southern Group. The only wetland habitats in these proposed reserves are the headwaters of several streams in the two sites on Rarotonga. Suwarrow National Park and the three proposed nature reserves are described in some detail in IUCN (1991).

Organizations involved with Wetlands

The Conservation Service

Responsible for administration of the 1986/87 Conservation Act. The function of the Service is to promote the conservation of the environment for the use and enjoyment of present and future generations.

WETLANDS

Site descriptions compiled from information received from Anna Tiraa of the Cook Islands Conservation Service and the literature.

Wetland Name: Tupapa Valley
Country: Cook Islands
Coordinates: 21°13'S, 159°45'W
Location: in the northeastern interior of Rarotonga, 4 km southeast of Avarua.
Area: Unknown.
Altitude: 10-80 m.
Overview: Traditional terraced taro swamps in the Tupapa Valley, of considerable historical and cultural interest.
Physical features: A series of terraced taro swamps extending for approximately 2.5 km along either side of the Tupapa stream from near its headwaters to the edge of the coastal plain. Water is channelled from the stream by way of a trench to the top of the top terrace, then down through the lowe.- terraces to rejoin the main stream at the bottom. Traditionally, small stones were used to line the trenches to prevent erosion; in recent years, some trenches have been replaced with plastic and concrete piping. The taro plots generally follow the contours of the land and are laid out according to the patterns of customary ownership. The soils (Avana) on the levees adjacent to the streams are formed on fresh, weakly argillised, medium- and coarse-textured, basaltic alluvium (Leslie, 1980). Ecological features: The terraced swamps were constructed for the cultivation of taro *(Colocasia esculenta),* and continue to be used for this purpose. The dominant plants in and around the swamps are the grasses *Echinochloa colonum* and *Paspalum orbiculare,* the sedges *Cyperus brevifolius, C. ferax, Eleocharis geniculata* and *Fimbristylis dichotama,* and the water grass *Commelina diffusa.* However, an introduced species, *Azolla mexicana,* is fast becoming the dominant plant, as it rapidly colonizes water surfaces throughout the taro swamps. Plant communities

on the adjacent slopes include *Fagraea-Fitchia* ridge forest, *Metrosideros* cloud forest, *Dicranopteria* femlands and degraded scrub and grassland.

Land tenure: Customary ownership.
Conservation measures taken: Although there is no legal protection, the taro swamps have been protected by their customary land owners for centuries.

Land use: Cultivation of the traditional food crop taro *(Colocasia esculenta),* a staple food of the Cook Islanders.
Possible changes in land use: The Government has put forward several proposals for the development of the Tupapa valley for water storage and supply. These proposals have so far been rejected by the traditional land owners.
Disturbances and threats: *Azolla mexicana* is rapidly becoming the dominant aquatic plant in the taro swamps. This was introduced into the Cook Islands from the Philippines by the Department of Agriculture to maintain moisture in the soil during the dry season, to inhibit the growth of weed species, and to enrich the soil. The effects of the *Azolla* are still thought to be beneficial, but as this invasive species spreads throughout the swamps, some harmful effects may become apparent. The vegetation of the adjacent slopes has been severely degraded by burning and overgrazing, and soil erosion is becoming a serious problem.

Hydrological and biophysical values: No information.
Social and cultural values: The Tupapa valley has a timelessness and serenity as yet scarcely affected by the modern progress and development which has occurred elsewhere on Rarotonga. The terraces are of particular interest because of the pre-contact skill that went into their construction and the minimal change that has occurred in the overall design of the terraces down through the ages.

Noteworthy fauna: The freshwater eel *Anguilla obscura,* mosquito fish *Bambusia affinis,* tilapia *Oreochromis mossambicus* and gudgeon *Eleotris fuscus* occur in the taro swamps. Invertebrates include freshwater prawns of the genus *Macrobrachium* and the freshwater snail *Melanoides tuberculata* .

Noteworthy flora: No information.
Management authority and jurisdiction: Customary land owners.
References: Dahl (1986); Leslie (1980).
Reasons for inclusion: la.
Source: Anna Tiraa.

Wetland Name: Ngatangiia Harbour
Country: Cook Islands
Coordinates: 21°14'S, 159°44'W
Location: on the east coast of Rarotonga, north of Muri.
Area: Unknown.
Altitude: Sea level.
Overview: An area of tidal salt marsh and intertidal sand and silt flats in a sheltered natural harbour with the estuaries of two streams. The site contains the only saline marshes in the Cook Islands.

Physical features: Ngatangiia Harbour is a natural harbour on the east coast of Rarotonga, with extensive intertidal silt and sand flats and the estuaries of two streams, Avana Stream (the largest stream on Rarotonga) and Turangi Stream. The muddy delta of Avana Stream filled much of the harbour after forest clearance early in the century. The shallow grassy marshes which occur in the intertidal zone around the harbour are the only saline marshes in the Cook Islands. Ngatangiia Harbour and the adjacent Muri Lagoon are sheltered by a chain of islets, mainly rubble and sand except for Taakoka which is volcanic. Motutapu, the largest and northernmost island, is a simple cay with wide intertidal expanse of sand and silt on its leeward side.

Ecological features: Saline grassy marshes. No details are available.

Land tenure: No information.
Conservation measures taken: None.
Land use: Artisanal and subsistence fishing are important activities in the area. Ngatangiia Harbour is the site of unsuccessful growth trials of the green mussel *(Perna viridis) in* 1985. Muri Lagoon is extensively used by tourists and water sports operators. Disturbances and threats: There has been extensive dredging in the harbour north of the Avana Stream mouth, and the lagoon is reported to be considerably degraded.

Hydrological and biophysical values: No information.

Social and cultural values: The salt marshes probably play an important role in maintaining the inshore fishery.

Noteworthy fauna: No information is available on the fauna of the salt marshes, although they are believed to be important breeding and nursery areas for certain marine and freshwater species, *e.g. Macrobrachium* shrimps. The reef flats in the harbour have particularly large numbers of the holothurian *Holothuria atra.*

Noteworthy flora: The only area of saline marsh in the Cook Islands.

Scientific research and facilities: Some studies of estuarine and lagoon hydrology and productivity in relation to prospects for commercial bivalve culture have been carried out.

Management authority and jurisdiction: No information.

References: Dahl (1986); UNEP/IUCN (1988).

Reasons for inclusion: ld, 2c. A unique wetland habitat in the Cook Islands.

Source: See references.

Wetland Name: Mangaia Swamps and Lake Tiriara

Country: Cook Islands

Coordinates: 21°55'S, 157°56'W

Location: on the island on Mangaia in the Southern Group, 200 km east-southeast of Rarotonga.

Area: Approximately 150 ha.

Altitude: c.30 m.

Overview: A series of freshwater marshes and one freshwater lake around the edge of the volcanic hills in the centre of Mangaia Island.

Physical features: Mangaia (51.8 sq.km) is a volcanic island with a broad terrace of raised coral limestone (makatea) surrounding the remains of the original volcanic cone. The low volcanic hills in the centre of the island reach a peak at 169 m; the makatea is mostly at 30-90 m above sea level. Freshwater marshes have formed around the inner edge of the makatea where water collects between the volcanic hills and the limestone plain. There are five main areas of swamp, each of about 20-30 ha in extent, distributed around the perimeter of the volcanic hills, as well as a permanent freshwater lake (Tiriara) of about 20 ha on the southern edge of the hills. Large portions of the swamp have been modified for the cultivation of taro (*Colocasia esculenta*).

Ecological features: No information.

Land tenure: Customary ownership.

Conservation measures taken: None.

Conservation measures proposed: Hay (1985) recommended the establishment of some form of protected area on the island to safeguard the endemic kingfisher and reed warbler. Such a reserve should include at least a part of one of the main swamps and/or Lake Tiriara.

Land use: The swamps are extensively utilised for the cultivation of taro. The population of Mangaia was 1,235 in 1986, having fallen from about 2,000 in the mid-1970s. The volcanic interior of the island is intensively cultivated, principally for pineapples, while the settlements are on the makatea.

Disturbances and threats: Soil erosion is a problem in the volcanic areas, and could result in excessive siltation in the wetlands. The introduced Common Myna *(Acridotheres tristis)* may pose a threat to the endemic kingfisher through competition.

Hydrological and biophysical values: No information.

Social and cultural values: The swamps are important for their taro production, a staple food for the islanders.

Noteworthy fauna: The Pacific Black Duck *(ulnas superciliosa)* is listed for Mangaia, and presumably still occurs in the wetlands. No other information is available on the wetland fauna. Mangaia has one endemic bird species, the Mangaia Kingfisher *(Halcyon ruficollaris),* and an endemic subspecies of the Cook Islands Reed Warbler *Ocrocephalus kerearako kerearako)* discovered as recently as 1973. Both are reported to be fairly common on the island, although the kingfisher is listed as threatened in the IUCN Red Data Book. The kingfisher is primarily a bird of woodland and scrub, although it may occasionally forage around wetlands. The reed warbler frequents a wide variety of habitats including reed-beds.

Noteworthy flora: No information.

Management authority and jurisdiction: Customary land owners.

References: Dahl (1986); Hay (1985); Pratt *et al* (1987).

Reasons for inclusion: I a, 2b, 2d.
Source: See references.

Wetland Name: Atiu Swamps and Lake Tiroto
Country: Cook Islands
Coordinates: 20°00'S, 158°07'W
Location: on the island of Atiu in the Southern Group, 215 km northeast of Rarotonga.
Area: Unknown.
Altitude: c.20 m.
Overview: A series of freshwater marshes and one freshwater lake around the edge of the volcanic plateau in the centre of Atiu Island.
Physical features: Atiu (26.9 sq.km) is a volcanic island with a broad terrace of raised coral limestone (makatea) surrounding the remains of the original volcanic cone. The undulating volcanic plateau in the centre of the island reaches a peak at 91 m. Freshwater marshes have formed around the inner edge of the makatea where water runs off the volcanic plateau. Three large areas of swamp fringe much of the northern half of the plateau, and there is a permanent freshwater lake (Tiroto), a few ha in extent, and a small marsh along the southern edge of the plateau. A subterranean channel runs through the makatea from a cave on the west side of the lake to the sea. Large portions of the swamps have been modified for the cultivation of taro *(Colocasia esculenta).*
Ecological features: No information.
Land tenure: Customary ownership.
Conservation measures taken: None.
Conservation measures proposed: Hay (1985) recommended the establishment of some form of protected area on Atiu to safeguard the endemic fruit dove, swiftlet and kingfisher. Such a reserve should include at least a part of one of the main swamps and/or Lake Tiroto.
Land use: The swamps are extensively utilised for the cultivation of taro, and eels, a popular island delicacy, are fished from Lake Tiroto. The volcanic interior of the island is intensively cultivated. The population of Mangaia has fallen in recent decades, from over 1,400 in the 1960s to only 955 in 1986.
Disturbances and threats: Soil erosion is a problem on the volcanic plateau, and could result in excessive siltation in the wetlands.
Hydrological and biophysical values: No information.
Social and cultural values: The swamps are important for their taro production, a staple food for the islanders, while Lake Tiroto supports a small eel fishery.
Noteworthy fauna: Lake Tiroto supports a large population of eels (*Anguilla* sp.). The Pacific Black Duck *(Antis superciliosa)* is listed for Atiu, and presumably still occurs in the wetlands. No other information is available on the wetland fauna. Atiu has one endemic bird species, the Atiu Swiftlet *(Aerodramus sawtelli),* and endemic subspecies of the Cook Islands Fruit Dove *(Ptilinopus rarotongensis goodwini)* and Chattering Kingfisher *(Halcyon tuta atiu).* To what extent, if any, these species utilise the wetlands is not known.
Noteworthy flora: No information.
Management authority and jurisdiction: Customary land owners.
References: Dahl (1986); Hay (1985); Pratt *et al.* (1987).
Reasons for inclusion: la, 2b.
Source: See references.

Wetland Name: Mitiaro Lakes and Swamps
Country: Cook Islands
Coordinates: 19°49'S, 157°43'W
Location: on the island of Mitiaro in the Southern Group, 45 km east-northeast of Atiu and 260 km northeast of Rarotonga.
Area: Approximately 400 ha.
Altitude: 1 m.
Overview: A large area of freshwater swamps and peatlands with two permanent freshwater lakes in the volcanic interior of Mitiaro Island.

Physical features: Mitiaro (22.3 sq.km) is a volcanic island with a broad terrace of raised coral limestone (makatea) surrounding the remains of the original volcanic cone. The island is unusual in that much of the volcanic plateau in the centre of the island is only about one metre above sea level, and is considerably lower than the surrounding makatea, which rises to about 9 m above sea level. Large areas in the volcanic interior are permanently swampy, and there are extensive peat deposits. In the lower, eastern portion of the interior, there are two lakes, Lake Rotonui (about 50 ha) in the south and Lake Rotoiti (a few ha) in the north. The two lakes are connected by a narrow channel. Large portions of the swamps and peatlands have been modified for the cultivation of taro *(Colocasia esculenta).*

Ecological features: No information.
Land tenure: Customary ownership.
Conservation measures taken: None.
Conservation measures proposed: Dahl (1980) proposed the creation of a reserve to protect the lakes and their endemic eel; Hay (1985) recommended the establishment of some form of protected area to safeguard the endemic reed warbler; and the Tourism Council of the South Pacific proposed that a protected area be established to protect the lakes and freshwater swamps (TCSP, 1990).

Land use: The swamps are extensively utilised for the cultivation of taro, while eels and small fish are harvested from the lakes. The population of Mitiaro has fallen slightly in recent years, from 334 in the 1960s to 272 in 1986.
Disturbances and threats: None known.
Hydrological and biophysical values: No information.
Social and cultural values: The swamps are important for their taro production, a staple food for the islanders, while the lakes support a small fishery.

Noteworthy fauna: The lakes have an endemic species of eel *(Anguilla* sp.*).* The Pacific Black Duck *(Anas superciliosa)* is listed for Mitiaro, and presumably still occurs in the wetlands. No other information is available on the wetland fauna. A subspecies of the Cook Islands Reed Warbler *(Acrocephalus kerearako kaoko)* is endemic to the island. This species, which is known only from Mitiaro and Mangaia, was described as recently as 1973, and was originally considered to be a subspecies of *A. vaughani.* It is reported to be common in reed-beds, gardens and woodland.

Noteworthy flora: A variety of Sandalwood, *Santalum insulare* var. *mitiaro* ,is known only from this island.

Management authority and jurisdiction: Customary land owners.
References: Dahl (1980, 1986); Hay (1985); Pratt *et al* (1987); TCSP (1990).
Reasons for inclusion: la, 2b, 2d.
Source: See references.

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