

# S O L O M O N I S L A N D S

## INTRODUCTION

by Tanya Leary

**Area: 28,450 sq.km**

**Population:** 285,176 (1986 census); 328,695 (1991 estimate).

Solomon Islands is an independent island nation. The archipelago extends over approximately 860 km of the Southwest Pacific, in a northwest, southeast direction roughly between latitudes 5°S and 12°S and longitudes 152°E and 170°E. Continuing the island chain to the northwest is the island of Bougainville which is politically a part of Papua New Guinea, and offset to the southeast is the nation of Vanuatu. The Australian mainland lies some 1,600 km to the southwest.

The Solomon Islands consist of a double chain of six major islands with approximately 992 smaller islands, atolls, and reefs peripheral to and intermingled with them. The islands range from large, rugged and mountainous islands clothed with luxuriant primary rainforest (the largest being Guadalcanal with an area of 5,310 sq.km), to small, bare sand and coralline atolls. The Solomon Islands form part of the Pacific "Ring of Fire", and there is hence constant seismic activity including earthquakes and volcanoes. The larger islands are almost entirely of volcanic origin and consist of a range of lavas. Because of their recent emergence, most islands are surrounded by uplifted coral terraces. The larger islands are characterized by extreme ruggedness as ridge-valley landscapes predominate with moderately high to very high relief. Undulating rolling landscapes have a limited distribution and extensive fluvial plains are exceptional.

The proximity of the Solomon Islands to the equator give them a typically tropical climate with relatively high and uniform temperature, high humidity and abundant rainfall. The mean annual rainfall ranges from 3,000 to 5,000 mm, the wide variation depending on topography, latitude and orientation of the islands to prevailing winds. From May to October, the southeast trade winds blow, and during this time the southeast coasts of the larger islands experience peak rainfall, while the northwest coasts experience a dry season. From November to April, the wind is predominantly from the northwest, bringing heavy rains and cyclones. Very strong winds are associated with some cyclones, and entire swathes of forests can be defoliated and villages destroyed (Hansel & Wall, 1976).

The Solomon Islands has a population growth of 3.5%, and much of the population is concentrated in the coastal zone. The subsistence nature of the economy is reflected in the small proportion of salary earners - around 8.3% (Stats. Bull, 1990). Fish and fish products, logs and timber are the principal export earners for the Solomon Islands.

### Summary of Wetland Situation

There has been very little scientific work carried out on the wetlands of the Solomon Islands. The last national map coverage of vegetation types was by Hansell and Wall (1976), and this is now very much out of date due to land clearing for subsistence agriculture and for commercial logging operations. A National Forest Resources Inventory is currently underway, and information on vegetation types (including wetlands) will be updated.

**Table 1 lists the major wetland vegetation communities mapped by Hansell and Wall (1976).**

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Table 1: Wetland Vegetation Communities

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#### SALINE SWAMP FOREST

Low mangrove forest	80 km <sup>2</sup>
Tall mangrove forest	562 km <sup>2</sup>

#### FRESHWATER SWAMP FOREST

<i>Casuarina</i> swamp forest	16 km <sup>2</sup>
Reed swamp ( <i>Phragmites</i> )	47 km <sup>2</sup>
Herbaceous swamp	4 km <sup>2</sup>
<i>Camptosperma</i> swamp forest	51 km <sup>2</sup>
Mixed species swamp	631 km <sup>2</sup>
forest <i>Pandanus</i> swamp	83 km <sup>2</sup>
Sago palm swamp	19 km <sup>2</sup>
<i>Terminalia</i> swamp forest	288 km <sup>2</sup>

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Mangroves are the most extensive wetland type in the Solomon Islands. Hansell and Wall (1976) found mangroves on most islands and covering large coastal areas on Isabel, New Georgia and Malaita. On Makira and Guadalcanal, mangroves are more or less confined to the eastern extremities at Star Harbour and Marau Sound respectively. The mangrove communities are characteristically species-poor by South East Asian standards, but rich by Australian standards. Woodroffe (1987) lists 19 species for the Solomon Islands. The most widespread genera are *Rhizophora* (four species) and *Bruguiera* (three species), while *Avicennia* (three species) occurs locally but not in large stands. Other mangrove species include two species of *Sonneratia* and single species of *Ceriops*, *Aegiceras*, *Xylocarpus*, *Lumnitzera*, *Osbornia*, *Scyphiphora* and *Nypa*.

Ten types of wetland vegetation are mapped by Hansell and Wall (1976), as follows:

**Low Mangrove forest:** Low (2-5 m) and sometimes stunted mangrove forests occur along the seaward margins of coastal swamps or locally in backswamp areas.

**Tall Mangrove forest:** This type is tall (up to 25 m) and occurs inland of low mangrove forest along river estuaries and around lagoons. It covers extensive areas on Isabel, on New Georgia and in the Maramasike Passage on Malaita. It is of mixed species composition.

***Casuarina* swamp forest:** This type of swamp forest is found adjacent to ultramafic areas, and occurs only on San Jorge and Isabel on both sides of the Ortega Channel. The forest is medium to tall (up to 25 m), and is dominated by *Casuarina papuana*.

**Reed Swamp:** Small areas commonly dominated by *Phragmites karka* occur on most islands, often close to large rivers where they fill abandoned meanders. The ground cover largely consists of scattered small trees with a low cover of grasses, sedges or reeds.

**Herbaceous swamp:** This type is of limited occurrence. It has been identified at lakes on Makira, at lakes on San Jorge and at Lauvi Lagoon on Guadalcanal. It is generally found as a floating mat over deep water and grading into open water or sago swamp.

***Campnosperma* swamp forest:** This forms widespread almost pure stands on Isabel and New Georgia, and is dominated by *C. brevipetiolatum*. It occurs in most swamps except on Guadalcanal and Makira where it has not been recorded.

**Mixed species swamp forest:** This is the most widespread of the swamp forest types and is found on all islands. The canopy contains a range of tree species with composition varying in different areas. Some of the common species are *Inocarpus fagiferus*, *Eugenia tierneyana*, *Intsia b/ua*, *Barringtonia* spp., *Calophyllum vexans* and *Pterocarpus indicus*.

**Pandanus swamp:** Extensive areas of swamp forest with *Pandanus* species dominating a shrub layer up to seven metres in height occur on all the larger islands. On Guadalcanal, only small areas were noted at Lauvi Lagoon. The canopy is low and often broken, and may in places take a rather open appearance revealing a low herbaceous covering.

**Sago Palm swamp:** This forest type is dominated by the Sago palm *Metroxylon* sp. On Guadalcanal, some of the larger swamps contain almost pure stands of *Metroxylon sago*. In other areas, scattered individual emergents of *Eugenia tierneyana*, *Inocarpus fagiferus*, *Erythrina orientalis* and *Pandanus* sp. are commonly associated with sago. Because of its importance in the economic life of village communities, sago has been distributed and planted around the islands so that many stands can be considered to be cultivated.

**Terminalia swamp forest:** This often occurs as almost pure stands of *Terminalia brassii* in freshwater swamps or scattered along water courses.

There are a number of small lakes or brackish lagoons throughout the Solomon Islands, but the two most notable are Lake Te-Nggano on Rennell and Lauvi Lagoon on

Guadalcanal. Due to its isolation, the island of Rennell has a high proportion of endemic species. Lake Te-Nggano is most notable for an endemic species of sea krait (*Laticauda crockeri*) which is found nowhere else (McCoy, 1980). Lauvi Lagoon supports the largest single population of Estuarine Crocodiles (*Crocodylus porosus*) in the Solomon Islands. A national survey in 1989 (Messell & King, 1989) found that crocodile population was severely depleted. Messell and King estimated that the total population was only about 1,000 individuals, and concluded that the species was now threatened with extinction throughout the islands. Only a few scattered localities appeared to support viable populations.

The fauna of the Solomon Islands is of considerable international importance. With the exception of Papua New Guinea, the Solomon Islands have a greater diversity of animal species and higher level of endemism than any other Pacific island nation (Leary, 1991). Little is known of the ecology and habitat preferences of most animal species. However, at least some appear to be wetland dependent. For example, there is an endemic subspecies of the Mangrove Monitor *Varanus indicus spinulosus* which appears to occur only in the San Jorge and Thousand Ship Bay area, on both sides of the Ortega Channel. This area supports a distinctive vegetation community (*Casuarina* swamp forest), found nowhere else in the islands. Further taxonomic examination may reveal that *spinulosus* is in fact a distinct species. The preferred habitat of an endemic giant rat (*Uromys ponceleti*) is believed, by local residents, to be *Terminalia brassii* swamp forest. This giant rat is found only on Choiseul.

There are approximately 50 species of waterfowl and seabirds in the Solomon Islands (Mayr, 1945). Of these only Becks' Petrel (*Pterodroma becki*) and Solomon's Sea Eagle (*Haliaeetus sanfordi*) are listed as globally

threatened species (Collar and Andrews, 1989). However, Diamond (1987) also states that the Grey Teal (*Arras gibberifrons*) has not been recorded in the Solomon Islands since 1928, and this may now be extinct in the archipelago.

Freshwater wetlands and mangroves are of economic importance to the largely subsistence economy of Solomon Islanders. The leaf of the Sago Palm, in particular, is an important building material, and is also extensively used in traditional weaving. Mangroves and other types of swamp forest also supply important building materials and food resources ranging from the fruits of mangroves to a large variety of shells, crustaceans and fish. There is little information on the fish of the mangroves of Solomon Islands, but Blaber and Milton (1990) sampled 13 estuaries and found 136 species, although no estuary contained more than 50 species.

The relatively sparsely populated nature of the Solomon Islands has resulted in few threats to freshwater wetlands and mangrove areas. To date, mangroves have not been exploited on an industrial scale, and are protected under the Forest Resources and Timber Utilization Act. However, there is some exploitation of mangroves by customary landowners for fuel wood for fish smoking, especially in the vicinity of the Noro fish cannery. Some degradation of mangrove resources is occurring through clearing for new settlements and expansion of old settlements, cutting for firewood (especially for drying copra and bech-de-mer), siltation from on-shore soil erosion from agriculture and forestry activities, and landfill for coastal "reclamation", especially by using mangroves for dump sites. The latter is restricted to the vicinity of provincial capitals and is not widespread.

The industrial base of the Solomon Islands is still very small and is restricted to Honiara, Tulagi and Noro. Industrial pollution of mangroves and freshwater wetlands has not been documented, and it is unlikely that it is of significance. The only area where industrial pollution may be impacting on mangroves is in the vicinity of the Noro fish cannery.

Use of DDT, Malathion and Fenitrothion for anti-malarial spraying campaigns has been widespread in the past, and there has been little or no assessment of the impact on the environment. It is likely that there are residual high levels of DDT in the environment. High levels of DDT have been detected in some freshwater animals sampled from rivers on Guadalcanal (Anon, 1990). Agriculture pesticides, herbicides and chemical fertilisers are not actively encouraged by the Ministry of Agriculture and Lands. However, they have been used in large-scale coconut and oil palm plantations on Guadalcanal and Russells.

In general, the existing direct threats to wetlands appear to be minor. The magnitude of indirect threats to wetlands from logging in adjacent areas is unknown, and is in need of investigation as large-scale logging is occurring on the majority of the larger islands.

### **Wetland Research**

There has been very little research on either freshwater or saline wetlands in the Solomon Islands, and there is no recent information on the extent or status of the nation's wetland resources. However, a National Forest Resources Inventory commissioned by the Forestry Division commenced in 1991, and is due to be completed in 1993. Although wetlands are not the main emphasis of the inventory, more up-to-date information on wetlands should be provided through it. The only recent wetland related research is that of Blaber and Milton (1990), who sampled fish in 13 estuaries in the Solomon Islands.

### **Wetland Area Legislation**

There is no specific wetland legislation or policy. With the exception of the Queen Elizabeth II National Park Act (which is no longer operating), there is no national Protected Area legislation. Both Guadalcanal Province and Temotu Province have ordinances which have provisions that would enable wetlands to be protected under them, but to date no areas have been established. An antiquated Wild Birds Protection Act (1914, amended 1930) protects a number of wetland birds **including herons, egrets,**

cranes, plovers and the Purple Swamphen (*Porphyrio porphyrio*). It also provides for a closed season on hunting of wild duck from 1 May to 31 July. It also has provisions for the declaration of bird sanctuaries. No sanctuaries have been declared in wetland areas, and the legislation itself has never been enforced. Mangroves are protected from commercial logging and export under the Forest Resources and Timber Utilisation Act. A National Environment Management Strategy has recently been completed and endorsed by Cabinet (SPREP, 1992). This, to some extent, addresses wetlands and associated environmental issues. The South Pacific Regional Environment Programme (SPREP) and World Conservation Union (IUCN) have recently assisted the Solomon Islands in preparing a new Environment Act (or Bill). This has been endorsed by the Solomon Islands Cabinet but not yet passed.

Solomon Islands has ratified the Convention for the Protection of the Natural Resources and Environment of the South Pacific (the SPREP Convention) and has signed but not yet ratified the Convention on Biological Diversity. It is not, however, as yet a party to the Unesco Man and the Biosphere Programme, Ramsar Convention or World Heritage Convention, nor has it signed or ratified the Convention on the Conservation of Nature in the South Pacific.

### **Wetland Area Administration**

The Environment and Conservation Division within the Ministry of Natural Resources is responsible for conservation, but as there are no protected areas or protected area legislation, the Division is not involved in any wetland area administration. Discussions are currently being held concerning accession to the World Heritage Convention and nomination of the island of Rennell (which includes Lake Te-Nggano and extensive wetlands) as a World Heritage site. This however, is only at a very preliminary stage.

### **Organizations involved with Wetlands**

There are no government or non-governmental organizations which specifically deal with wetlands. The Forestry Division administers the Forest Resources and Timber Utilisation Act, and the Environment and Conservation Division administers the Wild Birds Protection Act.

## **WETLANDS**

Insufficient information is available on the wetlands of the Solomon Islands to present a comprehensive list of wetlands of international importance. Very few sites have been studied in any detail, and in general very little attention has been given to wetland ecosystems by wildlife biologists, ecologists or conservationists. The distribution of mangrove vegetation and the other main wetland vegetation types was well documented by Hansell and Wall (1976), but this information is now very much out of date, and the conservation value of most of the wetland areas remains unknown. In view of the high degree of endemism amongst several faunal groups in the archipelago, it seems probable that there are many even quite small wetlands, especially in the outlying islands, which are of unique importance for their endemic amphibians, freshwater fishes or aquatic invertebrates.

The following preliminary list of important wetlands in the Solomon Islands is based on a provisional list compiled by Tanya Leary of the Environment and Conservation Division and the literature. A recent report on a proposed protected forests system for the Solomon Islands, prepared by Annette Lees, Martin Garnett and Shane Wright on behalf of the Australian National Parks and Wildlife Service, has been particularly valuable (Lees *et al.*, 1991). Only nine wetlands, all clearly of international significance, are sufficiently well documented to merit full site accounts. A further 24 wetland areas which are known or thought to be of special conservation value are described in brief after the main site accounts. All of these may, on further study, prove to be of international significance, along with many other wetlands the conservation values of which have not yet been recognized.

**Wetland Name:** Wetlands of Eastern Choiseul and Rob Roy Island

**Country:** Solomon Islands

**Coordinates:** 7°17'-7°26'S, 157°06'-157°39'E

**Location:** at the eastern tip of Choiseul Island and around neighbouring Rob Roy Island, Choiseul Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** The drowned coastline of southeastern Choiseul and Rob Roy Island with many rivers and sheltered lagoons, large areas of swamp forest and extensive mangrove forests, especially on either side of Rob Roy passage between Choiseul and Rob Roy Island.

**Physical features:** The drowned coastline of southeastern Choiseul is characterized by extensive swamps, low hills and many small islands. Rob Roy Island, a low-lying island almost covered with coconut plantations, lies very close to the southeastern end of Choiseul, and is separated from it by a narrow sea passage which is broadly fringed with mangrove forest. The island is almost completely encircled with mangrove forest. There is a particularly extensive mangrove forest near the entrance of Rob Roy passage into Pisuka Bay.

**Ecological features:** Tall mangrove forest dominated by *Rhizophora* spp., but with *Bruguiera* sp. locally common. The seaward side of the mangrove forest is dominated by *Rhizophora apiculata*, and then in sequence to the landward side are found *R. syloa*, *Lumnitzera littorea* and *Xylocarpus granatum*. At river mouths, *Bruguiera* sp. appears with the *R. apiculata*, and on the landward side of the mangrove swamps, the forest grades into *Pterocarpus indicus*, *Ficus hombroniana*, *Barringtonia asiatica* and *Pandanus*. Beach forest is present in patches on some of the southern islets (Lees *et al.*, 1991). There are some stands of *Terminalia brassii* with a closed, even canopy on Rob Roy Island. Dryland forests are described by Lees *et al.* (1991).

**Land tenure:** Customary ownership.

**Conservation measures taken:** None.

**Conservation measures proposed:** Lees *et al.* (1991) have proposed the establishment of a large protected area encompassing the whole of southeastern Choiseul east of Oaka Harbour as well as Rob Roy Island and associated islets. This would include all of the important wetland areas.

**Land use:** The region is sparsely populated, with people living in small scattered villages along the coast. The principal activities are fishing, hunting, subsistence gardening and cultivation of coconut palms.

**Disturbances and threats:** Crocodile habitat is disappearing quickly as more and more gardens are planted along waterways (Messel & King, 1989).

**Hydrological and biophysical values:** No information.

**Social and cultural values:** No information.

**Noteworthy fauna:** Dugong (*Dugong dugon*) are reported to be plentiful in the area. Two Estuarine Crocodiles (*Crocodylus porosus*) were observed in Oaka Harbour by Messel and King in 1989, but these authors concluded that the species was on the verge of disappearing from Choiseul. Birds recorded by Lees *et al.* (1991) during a survey in early 1990 included Pacific Reef Heron (*Egretta sacra*), Pacific Black Duck (*ulnas superciliosa*) and Solomons Sea Eagle (*Haliaeetus Sanfordi*). There are significant nesting beaches for sea turtles at Komboro Point at the eastern end of Choiseul (Lees *et al.*, 1991).

**Noteworthy flora:** No information.

**Management authority and jurisdiction:** No information.

**References:** Hansell and Wall (1976); Lees *et al.* (1991); Messel & King (1989).

**Reasons for inclusion:** 1a, 2a, 2b, 2c. Extensive stands of mangrove forest; threatened species.

**Source:** Tanya Leary and references.

**Wetland Name:** Marovo Lagoon

**Country:** Solomon Islands

**Coordinates:** 8°02'-8°45'S, 157°35'-158°13'E

**Location:** New Georgia, Vangunu and Nggatokae Islands, Western Province.

**Area:** 70,000 ha.

**Altitude:** Sea level.

**Overview:** Marovo Lagoon is one of the largest lagoons in the world and has the best-defined double barrier reef. It contains over 300 islands including sand cays, mangrove islets, raised reefs and small volcanic cones, and is bordered along its southern edge by extensive mangrove forests and freshwater swamp forests. The region is one of great ecological diversity, supporting a wide variety of forest and reef communities.

**Physical features:** Marovo Lagoon is a complex reef and lagoon system extending for 100 km from the northern end of New Georgia southeast along the northeastern coast of that island and around the north end of Vangunu Island to Nggatokae Island in the extreme east. New Georgia, Vangunu and Nggatokae are volcanic in origin, their peaks rising to 820, 1,040 and 840 m respectively in a complex of extinct volcanic cones. Numerous rivers and streams have carried sediments off the volcanic slopes of all three islands and created a swampy coastal plain with many mangrove-lined estuaries and deltas which comprises the southwestern shore of the lagoon. The lagoon is bounded to the north and east by a string of narrow barrier islands which follow the entire coastline from the north end of New Georgia island southeast to Nggatokae. These barrier islands are formed from elevated reefs which have risen up to 15 metres above sea level in the north and up to 25 metres in the south. In the south, the islands form a double barrier with the two chains of islands separated by water up to 80 metres deep.

Marovo Lagoon encloses an area of 700 sq.km within which there are over 300 small islands of varied geomorphology: sand cays, mangrove islets, raised reef islands and small islands of volcanic origin. The lagoon is deepest and widest around the island of Vangunu, where distances from the main islands to the barrier islands can exceed eight km. Its narrowest points are in the north (about 2.5 km) where it is also at its shallowest. Baines (1985) describes three major habitats in the lagoon: sand cay complexes such as Mindeminde and Tinge, comprising groups of numerous small vegetated sand islets on patch reefs with a thin mangrove fringe; estuarine complexes such as Ghoe River/Nono Lagoon, Kolo River and Kele Bay, which have shallow water, muddy bottoms rich in organic detritus, varying salinity and freshwater inputs rich in organic material from freshwater swamps and mangroves; and barrier islands such as Uipi, which are long narrow islets with marked environmental contrast between ocean-facing fringing reefs and lagoon-side fringing reefs.

The climate is humid tropical, with an average annual rainfall of 3,000-4,000 mm.

Ecological features: Mangrove forest occurs in the lower reaches of the rivers and larger streams such as the lower Kolo River on New Georgia. There are also important stands near Patutiva on Vangunu and along the northern coast of Nggatokae. Mangroves also form fringe vegetation around many of the islets and the barrier islands in North Marovo. The mangrove forest is typically dominated by species of *Rhizophora* with local concentrations of *Lumnitzera littorea*, *Heritiera littoralis*, *Dolichandrone spathacea*, *Xylocarpus granatum* and *Bruguiera* sp. *Pandanus* may be common in the understorey at the landward margin of the mangroves (Lees *et al.*, 1991).

The swampy and fertile soils along the larger rivers and low-lying margins of the lagoon support a distinctive type of swamp forest dominated by *Tenninalia brassii*, *Campospermum brevipetiolatum*, *Eugenia tierneyana* and *Ficus* sp. This forest type is particularly common along the northwestern and southeastern coasts of Vangunu and along the coast of New Georgia in northern Marovo (Lees *et al.*, 1991).

Many of the small islands inside the lagoon and most of the barrier islands are still covered in their original forest. Tall forest on the exposed windward side of the barrier islands is dominated by large figs. On the more sheltered leeward side of the barrier islands, *Eugenia tierneyana* occurs on the lowest and wettest surfaces. *Pometia pinnata* and *Vitex cofassus* grow on the higher portions of the barrier islands and on some of the higher islands in the lagoon, while the highest islands, such as Bubo (with a peak at 233 metres), support some hill forest. Beach forest fringes the lagoon and barrier islands, and includes *Instia bijuga*, *Barringtonia asiatica*, *Calophyllum inophyllum*, *Diospyros* sp. and *Cordia subcordata* as conspicuous species. The lowest islands, consisting of detrital wash and sand cays, support a woodland of tall *Casuarina equisetifolia*, *Cocos nucifera* and *Pandanus* (Lees *et al.*, 1991).

**Land tenure:** Land areas are almost entirely under customary ownership.

**Conservation measures taken:** Most of the coastal lands and all of the submerged lands of the lagoon are subject to traditional law (Baines, 1985). Throughout the area, there is a uniform system of reef-lagoon tenure which is largely traditional, although there have been some adaptations. A Marovo Lagoon Resource Management Project was set up by two local men in 1982 to promote the wise use of the lagoon's natural resources. In 1984, the Marovo Area Council called for assistance from the Western Provincial Government in

assessing the marine and terrestrial resources and environment of the area and determining effective forms of management for these. Shortly after, a proposal for an investigation of the lagoon's resources and preparation of appropriate management plans was prepared by the Commonwealth Science Council as part of its South Pacific Coastal Zone Management Programme (SOPACOAST), and Marovo was accepted as a pilot project for high islands of the South Pacific region. The principal objective of this project is to involve local communities in the documentation and study of their resources in order to promote their management and conservation (Commonwealth Science Council, 1986).

**Conservation measures proposed:** Various authors have recommended that all or parts of Marovo Lagoon be afforded some protection (Dahl, 1980; SPREP, 1985; TCSP, 1990), and the lagoon has been under consideration for World Heritage status since 1987. The Marovo Lagoon Resource Management Project has been instrumental in the promotion of the lagoon for World Heritage status, a concept which has won the approval of the Western Provincial Government and Solomon Islands Cabinet. The New Zealand Government, through its development cooperation programme, is providing funding to investigate the possibility of World Heritage designation. Lees *et al.* (1991) have recommended that the whole of Marovo Lagoon from its northernmost point at Kolombanghea south to Bulo Island be afforded protection status to prevent large-scale, destructive land-use operations from taking place in the future. For the lagoon to be adequately protected, it is essential that adjoining lands on New Georgia are not developed in any way that would give rise to appreciable erosion or other forms of major pollution. Ideally, therefore, all bordering watersheds should be included in the protected area, as recommended by Lees *et al.* (1991). The forests would, however, have to be categorized to allow for areas of continued sustainable use by their owners.

**Land use:** About 20 of the islands in the lagoon are inhabited. A census in 1986 indicated that 6,600 people were living around the lagoon and on its weather coasts in over 50 villages. The annual population growth rate is between 3.5 and 4.7% (Lees *et al.*, 1991). These people are principally subsistence gardeners and fishermen, clearing forest for shifting agriculture and harvesting fish, shells and other marine products from the lagoon. In addition, there are groves of ngali nuts (*Canarium* sp. ), coconuts and sago palms (used mainly for thatching), and there is some exploitation of mangroves for firewood and timber for construction. Commercial fishing in the lagoon is a part-time activity, and is based on small units using gill nets and lines, taking mainly reef fish. The catch is iced and shipped to Honiara. The lagoon is also an important source of baitfish for the skipjack tuna industry (Commonwealth Science Council, 1986).

**Disturbances and threats:** Mangroves around the lagoon have been felled, partly as a result of a mistaken belief that they inhibit the growth of coconut plantations. There is some dynamite fishing in the lagoon by a small number of local individuals, and there are increasing pressures for commercial fishing, due to an increasing population and growing prospects of inadequate agricultural land. Pollution from trading and passenger ships passing through the lagoon could become a problem in the near future, as could the uncontrolled growth of tourism and increased number of yachts. There is also considerable mineral prospecting activity, mainly for epithermal gold deposits (UNEP/IUCN, 1988). In general, however, the lagoon's forested catchments have been little disturbed. Hurricanes are infrequent and of low intensity, and human impact has been limited to some forest clearance for gardening and a little timber removal on Vangunu and Nggatokae (Lees *et al.*, 1991).

**Hydrological and biophysical values:** No information.

**Social and cultural values:** The lagoon is of great importance to the islanders of New Georgia, Vangunu and Nggatokae as a basis for their way of life. The rich local cultures are intimately linked with the region's ecological diversity, and are dependent on the continuing health of the natural resources of the lagoon and adjacent forests.

**Noteworthy fauna:** A crocodile survey in 1989 found only small numbers of Estuarine Crocodiles (*Crocodylus porosus*) in Western Province in general, and the species may no longer occur in Marovo Lagoon (Messel and King, 1989). Local people report low numbers of Dugongs (*Dugong dugon*) in the northern part of the lagoon (Lees *et al.*, 1991). Waterbirds recorded during a survey in early 1990 included Green Heron (*Butorides striatus*), Pacific Reef Heron (*Egretta sacra*), Pacific Black Duck (*Arius superciliosa*), Solomons' Sea Eagle (*Haliaeetus sanfordi*), Osprey (*Pandion haliaetus*), Pacific Golden Plover (*Pluvialis fulva*), Whimbrel (*Numenius phaeopus*), Common Sandpiper (*Actitis hypoleucos*), Beach Stone Curlew (*Esacus magnirostris*), Common Tern (*Sterna hirundo*) and Black-naped Tern (*S. sumatrana*) (Lees *et al.*, 1991). A survey of Mt Javi in 1990 by the Environment and Conservation Division and the Australian Museum discovered a new endemic species of large monkey-faced flying fox (*Pteralopex* sp.). Subsequent work by the Australian Museum has found this as yet undescribed species to be common in the New Georgia and Vangunu areas. Other mammal surveys of New Georgia and Vangunu by the

Environment and Conservation Division and Australian Museum have revealed that these islands support a diverse fauna of megachiropteran and microchiropteran bats.

**Noteworthy flora:** No information.

**Scientific research and facilities:** Various studies have been carried out as part of a coastal zone management project under the auspices of the Commonwealth Science Council and more recently as part of a WWF project at Marovo Lagoon. Conservation education: Education and training are important elements of the Marovo Lagoon Resource Management Project. A community awareness workshop is held annually to inform the local communities of the results of project investigations and to facilitate community review and direction of the project.

Recreation and tourism: The lagoon has considerable potential for tourism. The area has significant archaeological and anthropological interest, the scenery is spectacular and the reefs and sand cays in sheltered waters have great recreational value. Numerous yachts visit the lagoon, stopping at villages to buy handicrafts, and SCUBA diving is a popular tourist activity. There is a small Australian-owned tourist resort on the island of Uipi (UNEP/IUCN, 1988). In recent years there have been a number of landowner initiatives to develop small-scale, low-impact tourism ventures in Marovo Lagoon. One such project, now well-advanced, is the development of tourist accommodation at Matakuri Island.

**Management authority and jurisdiction:** Customary jurisdiction. The Western Provincial Government has some jurisdictional right over parts of the lagoon.

**References:** Baines (1985); Commonwealth Science Council (1986); Dahl (1980, 1986); Hansell and Wall (1976); Lees *et al.* (1991); Messel & King (1989); Pearsall (1991); SPREP (1985); TCSP (1990).

**Reasons for inclusion:** 1a, 1c, 2a, 2b, 2c. Marovo Lagoon is regarded as the best-defined double barrier reef in the world, and is one of the world's largest island-enclosed lagoons. It is an area of exceptional ecological diversity, with most of its natural ecosystems still almost intact.

**Source:** Tanya Leary and references.

**Wetland Name:** Western Isabel and the Arnarvon Islands

**Country:** Solomon Islands

**Coordinates:** 7°20'-7°42'S, 157°57'-158°44'E

**Location:** from the western end of Isabel Island west to the Arnarvon Islands, Isabel Province.

**Area:** Area of wetlands unknown. Total area 43,200 ha; Arnarvon Islands Wildlife Sanctuary 1,000 ha.

**Altitude:** Sea level.

**Overview:** An archipelago of forested high islands, smaller low-lying islands and islets that flank and extend the northwestern peninsula of Isabel Island. The extensive mangrove swamps, reefs, shoals and sand bars are important for turtles, crocodiles and migratory waterfowl.

Physical features: An archipelago of more than 100 islands of varying sizes at the northwest end of Isabel, extending from Austria Sound in the east to the tiny Arnarvon Islands in the Manning Strait (which separates Isabel from Choiseul). The two large islands of Barora Ite (south of Kia) and Barora Fa (west of Kia) are surrounded by many smaller islands, islets, reefs, shoals and sand bars. Most of the islands are low-lying and some are swampy. Mangrove forest occurs widely in the sheltered arms of the archipelago and fringes many of the islands, in places extending up to one kilometre from the shore. Much of the mangrove forest has developed on mud and peat that has settled over old coral platforms (Lees *et al.*, 1991). The Arnarvon Islands comprise three slightly-raised coral reefs: Sikopo, Kerehikapa and Amarvon. There is evidence that these islands have sunk slightly in recent years, and are occasionally completely flooded (IUCN, 1991).

The climate is humid tropical with an average annual rainfall of 3,000 mm and mean temperatures varying between 24°C and 29°C. The wettest period is January to April, with 1,270-1,500 mm of rainfall. The prevailing winds are the southeast trades.

**Ecological features:** The mangrove communities include tall mangrove forest dominated by *Rhizophora* spp. with *Bruguiera* sp. and *Dolichandrone* sp. locally common, and low stunted forest dominated by *Rhizophora*. There are some areas of swampy grassland, mainly *Phragmites karka* with scattered low shrubs (Hansell and Wall, 1976). The islands support lowland rainforest dominated by species such as *Camposperma brevipetiolata*, *Pometia pinnata*, *Vitex cofassus*, *Canarium salomonense* and *Celtis latifolia*. The smaller trees include *Aglaiia* sp., *Neoscortechinia forbesii*, *Celtis philippinensis*, *Myristica* sp., palms and

*Pandanus*. Patches of beach forest contain *Terminalia catappa*, *Heritiera littoralis*, *Barringtonia asiatica* and *Calophyllum inophyllum* (Lees *et al.*, 1991). The vegetation of the Arnarvon Islands comprises mainly trees and bushes of the genera *Pisonia*, *Casuarina*, *Pandanus*, *Calophyllum* and *Cordia*, as well as coconut palms (*Cocos nucifera*) and at least three species of grasses and sedges (IUCN, 1991).

**Land tenure:** Customary ownership.

**Conservation measures taken:** In 1975, the Ministry of Natural Resources designated the Arnarvon Islands as "off-limits" under a trespass law, and in 1979, these islands were included within a provincial Protected Lands Bye-law. In April 1980, a wildlife sanctuary of 1,000 ha was established in the Arnarvon Islands under a Local Government Ordinance, principally to protect the nesting grounds of Hawksbill and Green Turtles. However, the reserve was subsequently abandoned because of disputes over the ownership of the islands. There has recently been renewed interest by both Government and landowners in reviving a protected area for the Arnarvon Islands and surrounding marine areas. Negotiations concerning a Marine Reserve are now at a preliminary stage.

**Conservation measures proposed:** Hansell and Wall (1976) recommended that all of the islands be declared a protected nature reserve, while Dahl (1980) suggested the establishment of a reef reserve in the Manning Strait and mangrove forest reserves in the general area. The Solomon Islands National Environment Management Strategy supports the re-establishment of the Arnarvon Islands Turtle Sanctuary (SPREP, 1992). Lees *et al.* (1991) have proposed the establishment of a protected area encompassing the entire western peninsula of Isabel (west of the Rakata River) and archipelago west to the Arnarvon Islands.

**Land use:** The inhabitants of Kia (population 1,000) and other smaller settlements on the northwestern tip of Isabel are dependent principally on subsistence gardening and fishing. None of the islands is permanently inhabited, but the archipelago is used for fishing and the harvesting of turtles, clams and megapode eggs.

**Disturbances and threats:** Natural threats include cyclones, earthquakes and rising sea levels (IUCN, 1991). Estuarine Crocodiles were exterminated in the Arnarvon Islands as a result of intensive hunting for skins in the 1960s and early 1970s (Vaughan, 1981). Disputes over land ownership have led to the abandonment of the Arnarvon Island Wildlife Sanctuary, and this area is now subject to heavy exploitation (Leary, 1990).

**Hydrological and biophysical values:** No information.

**Social and cultural values:** No information.

**Noteworthy fauna:** An important area for Estuarine Crocodiles (*Crocodylus porosus*), sea turtles, migratory shorebirds and other waterbirds. Fifteen crocodiles were observed at Ghahirahobo Island Lagoon in the southwestern sector of the archipelago during a crocodile survey in 1989 (Messel and King, 1989). The area is also reported to contain about 65% of the feeding and nesting sites for Hawksbill Turtles (*Eretmochelys imbricata*) and Green Turtles (*Chelonia mydas*) in the Solomon Islands. The Arnarvon Islands are especially important for Hawksbill Turtles, and may be the most heavily used nesting site for this species in the Pacific, after Campbell and Long Islands in Australia. Some 656 Hawksbill Turtle nests and 53 Green Turtle nests were recorded in the wildlife sanctuary between May 1979 and December 1980 (Vaughan, 1981). However, survey work conducted by the Environment and Conservation Division and the Fisheries Division in 1991 and 1992 indicated that the nesting population of turtles had declined considerably. The Solomons Sea Eagle (*Haliaeetus sanfordi*), Osprey (*Pandion haliaetus*) and Common Megapode (*Ilegapodius freycinet*) occur in the islands, and many migratory shorebirds use the islands and tidal flats as feeding and resting areas during the austral summer. Whimbrel (*Numenius phaeopus*) and Common Sandpiper (*Actitis hypoleucos*) have been recorded. A report of Long-billed Curlew (*Numenius americanus*) in Vaughan (1981), repeated in IUCN (1991) and Lees *et al.* (1991), is clearly erroneous, and presumably relates to Far Eastern Curlew (*N. madagascariensis*). A few islets in the extreme northwest support high numbers of breeding pigeons.

**Noteworthy flora:** No information.

**Scientific research and facilities:** The Solomon Islands Turtle Project was initiated in 1975, with much of the work being carried out in the Arnarvon Islands. Some research facilities were constructed on Arnarvon Island, but these were destroyed in 1981 by a section of a Choiseul island group which claimed a customary right of ownership of the islands. No attempt has been made to re-establish these facilities (IUCN, 1991). The Environment and Conservation Division and the Fisheries Division carried out tagging and monitoring of nesting turtles during the peak nesting season from June to August in 1991 and 1992, as part of the

Regional Marine Turtle Conservation Programme coordinated by SPREP.

**Management authority and jurisdiction:** Customary jurisdiction. Administrative responsibility for the Arnarvon Islands Wildlife Sanctuary is held by the Ministry of Natural Resources and Isabel Province.

**References:** Dahl (1980); Hansell & Wall (1976); IUCN (1991); Leary (1990); Lees *et al.* (1991); SPREP (1992); Vaughan (1981).

**Reasons for inclusion:** 1a, 2a, 2b, 2c. An outstanding archipelago, still in a more or less undisturbed condition; important for crocodiles, turtles and migratory waterfowl.

**Source:** Tanya Leary and references.

**Wetland Name:** Ortega Passage

**Country:** Solomon Islands

**Coordinates:** 8°23'S, 159°37'E

**Location:** between the islands of Isabel and San Jorge, Isabel Province.

**Area:** Total area of wetlands unknown; *Casuarina* swamp forest 1,600 ha.

**Altitude:** Sea level.

**Overview:** A large area of freshwater swamps, principally *Casuarina* swamp forest, on either side of the Ortega Passage, and mangrove forests on the shores of Thousand Ships Bay to the east.

**Physical features:** Ortega Passage is a narrow sea channel between San Jorge island and Isabel. The channel has a broad fringe of *Casuarina* swamp forest which, with the adjacent herbaceous swamps on San Jorge island, comprises the largest area of freshwater swamp in Isabel Province. The swamps are composed largely of alluvium from the ultrabasic rock exposed on San Jorge island. There is at least one small freshwater lake in the swamps on San Jorge. Thousand Ships Bay, at the east end of Ortega Passage, has a broad fringe of mangrove forest.

**Ecological features:** Swamp forest dominated by *Casuarina papuana* up to 25 m tall, with some *Dacrydium xanthandrum*, *Calophyllum vexans*, *C. vitiense* and *Fagraea gracilipes*. Also herbaceous swamps and sago swamps on San Jorge, and mangrove forests in Thousand Ships Bay.

**Land tenure:** Customary ownership.

**Conservation measures taken:** None.

**Conservation measures proposed:** Dahl (1980), SPREP (1985), the Tourism Council of the South Pacific (1990) and Lees *et al.* (1991) have recommended that a protected area be established to conserve the unique *Casuarina* swamp forests.

**Land use:** Drop-net towers have been built out over the water in Ortega Passage for fishing. Thousand Ships Bay provides good anchorage for local fishing boats and trading vessels.

**Disturbances and threats:** None known in the *Casuarina* swamp forest, which apparently remains intact. However, the ultrabasic vegetation on San Jorge island has largely been destroyed by fire, and large areas of fern and scrub savanna have become established (Lees *et al.*, 1991). Nickel deposits have been located on San Jorge, Jejevo and Takata (southern Isabel), although at the moment only the Jejevo and Takata areas are subject to prospecting licences. Any future mining is likely to result in some disturbance to the area.

**Hydrological and biophysical values:** No information.

**Social and cultural values:** No information.

**Noteworthy fauna:** An endemic subspecies of the Mangrove Monitor *Varanus indicus spinulosus* appears to be confined to the mangrove and swamp forests on either side of the Ortega Passage. Estuarine Crocodiles (*Crocodylus porosus*) are said to occur. An endemic species of giant rat, *Solomys sapientis*, is known to occur in the hinterlands on the Isabel side of the Ortega Passage.

**Noteworthy flora:** The *Casuarina* swamp forest of the Ortega Passage is a unique swamp forest community, unknown elsewhere in the Solomon Islands.

**Management authority and jurisdiction:** No information.

**References:** Dahl (1980); Hansel and Wall (1976); Lees *et al.* (1991); SPREP (1985); TCSP (1990).

**Reasons for inclusion:** 1d, 2b, 2d. The site includes the only swamp forest of its type in the Solomon Islands.

**Source:** Tanya Leary and references.

**Wetland Name:** Lake Te-Nggano

**Country:** Solomon Islands

**Coordinates:** 11°44'S, 160°27'E

**Location:** at the east end of Rennell Island, Central Province.

**Area:** 15,500 ha.

**Altitude:** Sea level.

**Overview:** A large brackish lagoon on a raised atoll; one of the two largest lakes in the Solomon Islands and reportedly the largest brackish-water lake in the insular Pacific. The fauna and flora include an endemic sea snake and an endemic orchid. The lake supports large numbers of waterbirds including four subspecies endemic to Rennell and a further subspecies endemic to Rennell and nearby Bellona.

**Physical features:** Rennell Island (840 sq.km) is a raised coral atoll with coastal limestone cliffs up to 150 m high, a central depression representing the old lagoon floor and karstic topography. It is probably the finest example of a raised coral atoll in the world, and reportedly also the largest and highest. The southeastern end of the former lagoon remains flooded in the form of Lake Te-Nggano. This lake comprises about one quarter of the island; it is approximately 27 km long by nine km wide, and is surrounded by limestone cliffs. There are about 200 small islands in the lake, including the Atualanganga and Gakahuta groups near the western end. These provide breeding habitat for a number of species of seabirds and waterbirds. The water is slightly saline and faintly sulphurous. There is believed to be an underground channel approximately one kilometre in length at the east end of the lake which connects the lake with the sea. This channel is thought to allow the migration of elvers into the lake and adult eels to the sea. Wave action along the north coast of the island can be detected over one kilometre inland on the lake, and coral fish have been collected in the lake, both further proving the connection (Lees *et al.*, 1991). The bottom of the lake, which rarely exceeds 40 m in depth, is a nearly unbroken plain. The age of the lake as a body of almost fresh water is unknown, although it seems probable that the lagoon was cut off from the sea not long after the uplifting of Rennell began in the Pleistocene (Lees *et al.*, 1991).

The climate is humid tropical, with an average annual rainfall of 4,250 mm. January to March are the driest months.

**Ecological features:** There are some small swamps around the margins of the lake, many of which are under cultivation for taro. Most of the islands and a narrow strip of land around the lake are covered in largely undisturbed forest, although some of the islands have been cleared for coconuts. Lowland rainforest covers about 90% of the rest of the island. This is dominated by species of *Ficus*, *Terminalia sepicana*, *Elaeocarpus sphaericus*, *Endospermum molaccanum*, *Sterculia parkinsonii*, *Burckella obovata* and *Palaquium amboinense*. Palms are not conspicuous, except for the climbing rattan (*Calamus* spp.) which is abundant. Some 90% of the forest cover is undisturbed (Lees *et al.*, 1991).

**Land tenure:** Customary ownership.

**Conservation measures taken:** None.

**Conservation measures proposed:** Dahl (1980) identified Rennell Island as an island of exceptionally high conservation importance, and various authors have recommended that parts or all of the island be protected (Diamond, 1976; Hansell & Wall, 1976; SPREP, 1985; TCSP, 1990). In 1989, the Solomon Islands' Cabinet gave approval for investigations relating to the proposed designation of Rennell Island as a World Heritage Site, and the New Zealand Government subsequently agreed to fund a detailed study of the island for this purpose. The Solomon Islands National Environment Management Strategy adds its support to this proposal (SPREP, 1992). Lees *et al.* (1991) similarly recommended that the forests of Rennell and Lake Te-Nggano be afforded protection, but stressed that any protection measures would have to include planning for future gardening, hunting and timber removal in "exclusion zones".

**Land use:** About 1,200 people of Polynesian origin live on the island. The principal activities are subsistence gardening, hunting and fishing. There are four small villages on the shores of the lake. The introduced *Tilapia* constitute a major source of food for the inhabitants of these villages. Parts of the swamp are used for taro cultivation, and elsewhere, small tracts of forest have been cleared for the cultivation of fruit and vegetables.

**Disturbances and threats:** *Tilapia* have been introduced into the lake. There have been proposals to mine bauxite on the island and to develop a major logging operation, but neither of these proposals has been taken any further. Perhaps the greatest potential threat to the endemic fauna is the deliberate or accidental introduction of mammalian predators. Polynesian Rats (*Rattus exulans*) have already been introduced onto the island, and Black Rats (*Rattus rattus*) may also be present.

**Hydrological and biophysical values:** No information.

**Social and cultural values:** No information.

**Noteworthy fauna:** Due to its isolation, Rennell Island has a high proportion of endemic species and subspecies amongst its fauna. Of the 37 breeding land-birds and waterbirds, five are endemic species, nine are endemic subspecies, and six are subspecies endemic to Rennell and the neighbouring island of Bellona. Of the ten species of bats known from the island, three are endemic subspecies. The aquatic fauna of Lake Te-Nggano has been well studied and is summarized in Wolff (1970). Seventy-seven species have been recorded from the lake, including two sea snakes, two indigenous fishes, six gastropods, 22 crustaceans, 40 insects, one water mite, two annelid worms and two nematodes. One of the sea snakes, the sea krait *Laticauda crockeri*, is known only from this lake. Tilapia (*Tilapia* sp.) has recently been introduced, and is now abundant.

The lake supports large numbers of waterbirds including endemic subspecies of the Australian Little Grebe (*Tachybaptus novaehollandiae rennellianus*), Little Pied Cormorant (*Phalacrocorax melanoleucos brevicauda*), Black Bittern (*Dupetor flavicollis pallidior*) and Grey Teal (*Anas gibberifrons remissa*). The first three of these remain common, but the Grey Teal has not been reported since 1928, and may now be extinct (Diamond, 1987). Other resident waterfowl include a small subspecies of the Australian White Ibis (*Threskiornis molucca pygmaeus*) endemic to Rennell and Bellona, Pacific Reef Heron (*Egretta sacra*), Pacific Black Duck (*Anas superciliosa*), Sooty Rail (*Porzana tabuensis*) and Purple Swampphen (*Porphyrio porphyrio*) (Mayr, 1945). The Royal Spoonbill (*Platalea regia*) has been recorded as a non-breeding visitor. Diamond (1976) reported small numbers of Great Cormorants (*Phalacrocorax carbo*), and Lees *et al.* (1991) observed at least 100 individuals in early 1990. This species may have been a recent colonist to the island (from Australia), as it is not listed for the Solomon Islands by Mayr (1945). Other birds associated with the wetland include Osprey (*Pandion haliaetus*), Black-naped Tern (*Sterna sumatrana*) and an endemic subspecies of the Collared Kingfisher (*Halcyon chloris amoena*). Pacific Golden Plover (*Pluvialis fulva*) and one of the tattlers (*Heteroscelus incanus* or *H. brevipes*) have been observed on migration.

**Noteworthy flora:** A rare endemic orchid, *Dendrobium rennellii*, occurs on the small islands in Lake Te-Nggano. The forest community of Rennell Island is very unusual in that most of the common canopy species found in the rest of the Solomon Islands are absent, presumably because of the extreme isolation of the island (Lees *et al.*, 1991).

**Scientific research and facilities:** The fauna and flora of Rennell Island have been very well studied, culminating in a seven volume work, "The Natural History of Rennell Island", edited by Torben Wolff (1970).

**Recreation and tourism:** In recent years, an interest has been expressed by some Rennellese in developing a tourist industry based on the outstanding natural features of the island. A small rest house has already been established on the edge of the lake near Te-Nggano village, and this has been designed to attract "eco-tourists" to the island. An airstrip in East Rennell and a road connecting the existing airstrip in West Rennell to the lake are currently under construction. This improved access will greatly enhance the accessibility of the lake to tourists.

**Management authority and jurisdiction:** Customary jurisdiction.

**References:** Dahl (1980, 1986); Diamond (1976, 1987); Hansel & Wall (1976); Lees *et al.* (1991); Mayr (1945); Pearsall (1991); SPREP (1985, 1992); TCSP (1990); Wolff (1970).

Reasons for inclusion: 1a, 2a, 2b, 2d, 3b. Te-Nggano Lake is of outstanding importance for its unique fauna and flora, including an endemic species of sea-snake, four endemic subspecies of waterfowl and an endemic orchid. Rennell Island is considered by some to be the world's finest raised coral atoll, and for its size, is probably the least environmentally disturbed island in the South Pacific.

**Source:** Tanya Leary and references.

**Wetland Name:** Lauvi Lagoon

**Country:** Solomon Islands

**Coordinates:** 9°53 'S, 160°26'E

**Location:** on the southeast coast of Guadalcanal, Guadalcanal Province.

**Area:** 200 ha.

**Altitude:** Sea level.

**Overview:** A freshwater lagoon with extensive swamp vegetation on the southeast coast of Guadalcanal; the second largest lake in the Solomon Islands and the most important site for the Estuarine Crocodile.

**Physical features:** Lauvi Lagoon is a freshwater lake on a coastal strip of flat land on the weather (southern) coast of Guadalcanal. The lagoon is roughly triangular in shape, and is separated from the sea on two of its sides by bush-covered gravel dunes. Its third side backs on to steep ridges covered in tropical rainforest. The triangular shape suggests that the lagoon has been formed by the meeting of two opposing currents depositing gravel at their meeting point (Lees *et al.*, 1991). The lagoon is between 2.5 and 4.0 metres deep; pH values of 5.6-6.9 have been reported (Gray, 1972). The lagoon is fed by a number of streams and several springs which run off the base of the basalt rocks of Guadalcanal's eastern highlands. The level of the lagoon rises during the peak of the rainy season (July and August) until the pressure of water causes a break in the beach, creating an outfall.

**Ecological features:** The surface of the lagoon supports extensive floating mats of sedges (Cyperaceae) and the ferns *Acrostichum aureum* and *Marsilea* sp. Common aquatic plants include species of *Vallisneria*, *Nitelkt*, *Fontinalis*, *Ceratopteris* and *Ceratophyllum* (Gray, 1974). A rare type of freshwater swamp dominated almost completely by pandans (*Pandanus* sp.) occurs on submerged islands in the lagoon and around its shallow margins. The vegetation along the beach side of the lagoon is dominated by *Barringtonia asiatica*, with *Hibiscus tiliaceus*, *Morinda citrifolia*, *Calophyllum inophyllum*, *Ochrusia oppositifolia*, *Macaranga* spp., *Terminalia catappa* and strangling figs also present. The exposed beach side of the forest features a zone of the shrub *Scaevola taccada*, while *Ipomoea pes-caprae* grows on the gravel dunes. *Casuarina equisetifolia* also occurs in the strand vegetation. The northwestern corner of the lagoon supports tall swamp forest dominated by *Terminalia brassii*, while the drier northern shore supports more typical lowland forest where *Pometia pinnata* and figs become common (Lees *et al.*, 1991).

Land tenure: Customary ownership.

Conservation measures taken: None.

**Conservation measures proposed:** Various authors have proposed that Lauvi Lagoon should be given some form of protection (Dahl, 1980; SPREP, 1985; TCSP, 1990), and the Solomon Islands National Environment Management Strategy identifies the lagoon as a priority site for the development of a "nature site" (SPREP, 1992). Lees *et al* (1991) have proposed the establishment of a large protected area in southeastern Guadalcanal to protect Lauvi Lagoon and its forest catchments and thereby safeguard the crocodile population and other wildlife. The proposed reserve would also protect and enhance the tourism values of the region by reserving the catchments of a forested walking track through the mountains. The proposed protected area also includes Lee's Lake, a small freshwater lake in the highlands of the interior (see Site 26).

**Land use:** Fishing, principally for *Chanos chanos*, *Caranx ignobilis* and *Megalops cyprinoides*. The fish were formerly caught with hand lines, but gill/tangle nets are now widely used (Gray, 1972). There are coconut plantations and an agricultural experimental field station near the lagoon.

Disturbances and threats: None known.

**Hydrological and biophysical values:** No information.

**Social and cultural values:** Fishing in Lauvi Lagoon provides an important source of food for the inhabitants of nearby villages.

**Noteworthy fauna:** Lauvi Lagoon is important habitat for the Estuarine Crocodile (*Crocodylus porosus*), and now supports the largest single population of this species in the Solomon Islands. A survey in 1989 located 92 crocodiles in the lagoon (Messel & King, 1989), and the population has recently been estimated at about 200 individuals, representing 20% of the total population in the Solomons. Leatherback Turtles (*Dermochelys coriacea*) nest on a black sand beach near the lagoon. Fish species reported by Gray (1972) include *Amphitherapon caudavittatus*, *Apogon hyalosoma*, *Chanos chanos*, *Caranx Megalops cyprinoides*, *Luo'anus argenteamaculatus* and *Anguilla marmorata*.

The lagoon supports a variety of waterbirds including Little Pied Cormorant (*Phalacrocorax melanoleucos*), Little Heron (*Butorides striatus*), Pacific Reef Heron (*Egretta sacra*), Black Bittern (*Dupetor flavicollis*), Pacific Black Duck (*Anas superciliosa*), Osprey (*Pandion haliaetus*) and Purple Swamphen (*Porphyrio porphyrio*). A pair of Australian Little Grebes (*Tachybaptus novaehollandiae*) was observed during a survey in early 1990, the first record of this species on Guadalcanal (Lees *et al.*, 1991).

**Noteworthy flora:** The lagoon supports a rare type of swamp forest dominated almost completely by *Pandanus* sp.

**Scientific research and facilities:** Preliminary studies have been carried out on the aquatic vegetation (Gray, 1974), fishes (Gray, 1972) and crocodiles (Messel & King, 1989).

**Recreation and tourism:** The Tourism Council of the South Pacific (1990) and the Solomon Islands National Environment Management Strategy have identified Lauvi Lagoon and its environs as being of prime potential for the development of nature tourism.

**Management authority and jurisdiction:** Customary jurisdiction.

References: Dahl (1980); Gray (1972, 1974); Lees *et al.* (1991); Messel & King (1989); Pearsall (1991); SPREP (1985, 1992); TCSP (1990).

**Reasons for inclusion:** la, 2a, 2b. One of the largest freshwater lakes in the Solomon Islands, supporting the largest single population of Estuarine Crocodiles and a diverse wetland plant community rare elsewhere in the Solomon Islands.

**Source:** Tanya Leary and references.

**Wetland Name:** Are'Are Lagoon and Maramasike Passage

**Country:** Solomon Islands

**Coordinates:** 9°20'-9°38'S, 161°03'-161°24'E

**Location:** along the southwestern coast of Malaita, and between Malaita and Maramasike, Malaita Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** A long narrow coastal lagoon with many barrier islands and fringing mangroves (Are'Are Lagoon), and extensive mangrove forests along a narrow channel (Maramasike Passage) between Malaita and Maramasike islands.

**Physical features:** Are'Are Lagoon stretches for 26 km along the southwest coast of Malaita Island. The lagoon is about one km wide, and is sheltered from the open sea by a chain of barrier islands. Much of the lagoon is fringed with mangroves, and there are numerous saline and freshwater swamps along its very indented coastline. Maramasike Passage, to the east, is a 20 km long passage between Malaita and Maramasike islands. In places, the passage is less than 400 m wide and only about 4 m deep. Raroi Su'u Lagoon at the north end of the passage is a sheltered bay with a broad fringe of mangroves.

**Ecological features:** Tall mangrove forest dominated by species of *Rhizophora* and *Bruguiera*; tall alluvial forests, particularly at the northern end of Maramasike Passage, with *Calophyllum kajewskii*, *C. vitiense*, *Pometia pinnata*, *Vitex cofassus*, *Dillenia* spp., *Terminalia brassii*, *T. copelandii*, *Archidendron oblongum*, *Alstonia scholaris*, *Endospermum medullosum* and *Pterocarpus indicus* (Lees *et al.*, 1991).

**Land tenure:** Customary ownership.

**Conservation measures taken:** None.

**Conservation measures proposed:** Lees *et al.* (1991) have proposed the establishment of a protected area encompassing the southern end of Malaita island and the western part of Maramasike island "to protect a representative example of forest communities on a large expanse of lowland rolling hills and alluvial surface, and an outstanding landscape feature, the narrow Maramasike Passage and its environs". The proposed protected area would include the whole of Are'Are Lagoon and Maramasike Passage as well as their catchments.

**Land use:** There are numerous fishing villages around Are'Are Lagoon and several villages along Maramasike Passage, mostly in the north.

**Disturbances and threats:** The forests of the Are'Are area were badly damaged by Cyclone Namu in 1986, and in addition, large areas have been cleared for subsistence agriculture (Lees *et al.*, 1991).

**Hydrological and biophysical values:** No information.

**Social and cultural values:** No information.

**Noteworthy fauna:** The Estuarine Crocodile (*Crocodylus porosus*) may still occur in the area. Messel and King (1989) considered that Taha River and Taramata Creek near the northern end of the passage provided excellent habitat for crocodiles although none was encountered during their survey. Birds recorded by Paul Scofield (in Lees *et al.*, 1991) in the vicinity in January 1990 included Pacific Reef Egret (*Egretta sacra*), Rufous Night-Heron (*Nycticorax caledonicus*), Black Bittern (*Dupetor flavicollis*), Pacific Black Duck (*Anas superciliosa*), Solomons Sea Eagle (*Haliaeetus sanfordi*), Osprey (*Pandion haliaetus*), Banded Rail (*Rallus philippensis*) and Bush-hen (*Amaurornis olivaceus*).

**Noteworthy flora:** No information.

**Management authority and jurisdiction:** No information.

**References:** Hansen and Wall (1976); Lees *et al.* (1991); Messel & King (1989).

**Reasons for inclusion:** 1a, 2b, 2c. Are'Are Lagoon is the least disturbed of Malaita's three principal lagoon communities.

**Source:** Tanya Leary and references.

**Wetland Name:** Makira Swamps

**Country:** Solomon Islands

**Coordinates:** 10°25'S, 161°33'E

**Location:** in the interior of west-central Makira, Makira Province.

**Area:** Unknown.

**Altitude:** Near sea level to 80 m.

**Overview:** A number of extensive freshwater swamps in broad river valleys in the lowlands and foothills of western Makira, the most extensive swamps of this type in the Solomon Islands.

**Physical features:** Makira Island has a greater area of inland swamps than any other island in the Solomons. These swamps are mainly present in the western lowlands where broad valleys containing swamps have developed on the basement basalt rocks. Some of the swamps are as high as 80 metres above sea level. They occur both in the headwaters and along the middle courses of rivers, and generally have a sinuous shape. Most are 5001,000 metres wide, up to five kilometres in length, and fill the whole width of the valley floor. In some cases, the swamps contain small freshwater lakes. They are believed to have been created when the northern coast of Makira was uplifted, with an associated drowning of the southern coastline. These events affected a decrease in river gradients and an infilling of the valleys by braided streams. The swamps extend in interrupted segments across most of western Makira, and are separated by incised valley sections (Hansel & Wall, 1976; Lees *et al.*, 1991). The upper reaches of the Wainaraha and Waitaa Rivers in western Makira are believed to contain the greatest diversity of swamp communities (Lees *et al.*, 1991).

**Ecological features:** In the wetter parts of the swamps, *Pandanus*, bamboos and ferns form a complete cover one to three metres high. Occasional emergent *Pandanus* can reach 15 metres in height, and are often covered by scrambling fens. A tall mixed swamp forest with *Terminalia brassii* and *Eugenia tierneyana* occurs at the edges of the wetlands (Hansel & Wall, 1976; Lees *et al.*, 1991). Other wetland vegetation includes sago swamp dominated by the sago palm *Metroxylon salomonense* and swampy grassland with *Phragmites karka* and low shrubs.

**Land tenure:** Customary ownership.

**Conservation measures taken:** None.

**Conservation measures proposed:** Lees *et al.* (1991) have recommended that a representative and intact example of these unique swamps be protected along with hill and ridge forest to complete the vegetated community transition. The protected area would need to be large, and would have to include all upper catchment sectors of the swamps within the reserve. It was suggested that the upper reaches of the Wainaraha and Waitaa Rivers would be particularly suitable for reserve status.

**Land use:** No information.

**Disturbances and threats:** No information.

**Hydrological and biophysical values:** No information.

**Social and cultural values:** No information.

**Noteworthy fauna:** No information.

**Noteworthy flora:** No information.

**Management authority and jurisdiction:** Customary jurisdiction.

**References:** Hansen & Wall (1976); Lees *et al.* (1991).

**Reasons for inclusion:** Id, 2b. Large inland swamps of the type found on Makira are almost unknown elsewhere in the Solomon Islands.

**Source:** Tanya Leary and references.

**Wetland Name:** Te Roto Crater Lake

**Country:** Solomon Islands

**Coordinates:** 12°16'S, 168°49'E

**Location:** on the island of Tikopia in the Santa Cruz Islands, Temotu Province.

**Area:** 100 ha.

**Altitude:** Sea level.

**Overview:** A slightly brackish volcanic crater lake on the small island of Tikopia.

**Physical features:** Tikopia island (5 sq.km) is the visible remains of an extinct single-cone volcano with a large crater lake at its centre. The lake is brackish, and has a maximum depth of about 60-80 m. It lies at sea level, and has been cut off from the sea in recent times. In 1606, it was an open sea bay, and in 1828 there remained a broad connection with the sea. The narrow sandspit which now separates the lake from the sea is partly artificial and reinforced with stone blocks. In most years, a channel is opened after the heavy monsoonal rains to allow excess lake water to flow out. The crater rim reaches a maximum elevation of 374 m at the summit of Mount Reani to the northeast. The climate is humid tropical, with an average annual rainfall of 4,000 mm and mean temperatures of 25-29°C. The heaviest rainfall occurs from October to March.

**Ecological features:** There are some swampy areas around the lake margins, parts of which are under cultivation for taro.

**Land tenure:** Customary ownership.

**Conservation measures taken:** None.

**Land use:** Fishing for native species and introduced *Tilapia*. Marshy areas around the lake shore are cultivated for taro. The island's 1,100 inhabitants are of Polynesian origin.

**Disturbances and threats:** *Tilapia* has recently been introduced into the lake.

**Hydrological and biophysical values:** No information.

**Social and cultural values:** No information.

**Noteworthy fauna:** Mayr (1945) lists Little Pied Cormorant (*Phalacrocorax melanoleucos*), Pacific Reef Heron (*Egretta sacra*), Pacific Black Duck (*Anas superciliosa*) and Purple Swamphen (*Porphyrio porphyrio*) for the island.

**Noteworthy flora:** No information.

**Management authority and jurisdiction:** No information.

**References:** Dahl (1986); Pearsall (1991).

**Reasons for inclusion:** Ia.

**Source:** Tanya Leary and references.

## OTHER IMPORTANT WETLANDS

**Wetland Name:** Wetlands of Shortland Island

**Country:** Solomon Islands

**Coordinates:** 7°04'S, 155°52'E

**Location:** around Shortland Island in the Shortland Group, Western Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** Mangrove swamps on the southeast coast of Shortland Island and around neighbouring Pirumeri

Island.

**Conservation measures taken:** None.

**Noteworthy fauna:** No information.

**Noteworthy flora:** No information.

**Source:** Hansell and Wall (1976).

**Wetland Name:** Mangroves of Western Choiseul

**Country:** Solomon Islands

**Coordinates:** 6°42'S, 156°24'E

**Location:** at the western end of Choiseul Island, Choiseul Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** Mangrove swamps at the western end of Choiseul Island, especially around Choiseul Bay. Choiseul Bay is the proposed site for the provincial capital of the newly created Choiseul Province, and some disturbance to the wetlands is likely.

**Conservation measures taken:** None.

**Noteworthy fauna:** No information.

**Noteworthy flora:** No information.

**Source:** Hansell and Wall (1976).

**Wetland Name:** Choiseul *Terminalia* Forest

**Country:** Solomon Islands

**Coordinates:** 6°45'S, 156°35'E

**Location:** Choiseul Island, Choiseul Province.

**Area:** Unknown.

**Altitude:** Near sea level.

**Overview:** *Terminalia brassii* swamp forest in the interior of Choiseul Island.

**Conservation measures taken:** None.

**Noteworthy fauna:** Apparently the preferred habitat of the endemic Giant Rat *Uromys ponceleti*.

**Noteworthy flora:** Swamp forest dominated by *T. brassii*.

**Source:** Dahl (1980).

**Wetland Name:** Wetlands of Wagina Island

**Country:** Solomon Islands

**Coordinates:** 7°25'S, 157°46'E

**Location:** on Wagina Island, off the eastern tip of Choiseul, Choiseul Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** Freshwater swamps and mangrove forest on Wagina Island, principally on the north and east coastal plains.

**Conservation measures taken:** None.

**Noteworthy fauna:** No information.

**Noteworthy flora:** No information.

**Source:** Hansel and Wall (1976).

**Wetland Name:** Wetlands of Vella Lavella

**Country:** Solomon Islands

**Coordinates:** 7°40'S, 156°35'E

**Location:** around the northern half of Vella Lavella Island, Western Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** Freshwater swamps, mangrove forest and thermal wetlands on the island of Vella Lavella.

**Conservation measures taken:** None.

**Noteworthy fauna:** No information.

**Noteworthy flora:** No information.

**Source:** Hansel and Wall (1976).

**Wetland Name:** Lake Ove

**Country:** Solomon Islands

**Coordinates:** 8°17'S, 156°31'E

**Location:** near the southern end of Simbo Island, south of Ranongga, Western Province.

**Area:** Unknown.

**Altitude:** Unknown.

**Overview:** A hot crater lake on Mount Matindingi (335 m). The yellow-green sulphurous water is close to boiling point.

**Conservation measures taken:** None.

**Noteworthy fauna:** The megapode *Megapodius freycinet* lays its eggs in the warm volcanic soils around the lake.

**Noteworthy flora:** No information.

**Source:** Dahl (1986).

**Wetland Name:** Wetlands of Southern Kolombangara

**Country:** Solomon Islands

**Coordinates:** 8°07'S, 157°07'E

**Location:** round the southern end of Kolombangara Island, Western Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** Freshwater swamps, swamp forest and mangrove forest along the south coast of Kolombangara Island.

**Conservation measures taken:** None.

**Conservation measures proposed:** Several authors have proposed that a protected area be established on Kolombangara to conserve the remaining unlogged lowland forest as well as all the remaining montane forest on the island.

**Noteworthy fauna:** No information.

**Noteworthy flora:** No information.

**Source:** Dahl (1980); Diamond (1976); Hansell and Wall (1976); Lees *et al.* (1991); SPREP (1985).

**Wetland Name:** Mbaeroko Bay

**Country:** Solomon Islands

**Coordinates:** 8°12'S, 157°16'E

**Location:** at the west end of New Georgia Island, Western Province.

**Area:** Unknown.

**Altitude:** Sea level.

**Overview:** Freshwater swamps, swamp forest and mangrove forest around Mbaeroko Bay at the west end of New Georgia.

**Conservation measures taken:** None.

**Noteworthy fauna:** No information.

**Noteworthy flora:** No information.

**Source:** Hansell and Wall (1976).

**Wetland Name:** Roviana Lagoon

**Country:** Solomon Islands  
**Coordinates:** 8°20'S, 157°30'E  
**Location:** on the southwest coast of New Georgia Island, Western Province.  
**Area:** Unknown.  
**Altitude:** Sea level.  
**Overview:** Freshwater swamps, swamp forest and mangrove forest around Roviana Lagoon on the southwest coast of New Georgia.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansell and Wall (1976).

**Wetland Name:** Lake Rano and Renard Cove  
**Country:** Solomon Islands  
**Coordinates:** 8°41'S, 157°19'E  
**Location:** on Rendova Island, Western Province.  
**Area:** Unknown.  
**Altitude:** Near sea level.  
**Overview:** A sheltered sea bay with fringing mangroves on the east coast of Rendova Island (Renard Cove), and a small lake near the south end of the island (Lake Rano).  
**Conservation measures taken:** None.  
**Noteworthy fauna:** Important habitat for the Estuarine Crocodile (*Crocodylus porosus*). A crocodile survey in 1989 located a total of 11 crocodiles in Renard Cove.  
**Noteworthy flora:** No information.  
**Source:** Lees *et al.* (1991); Messel & King (1989).

**Wetland Name:** Wetlands of Tetepare  
**Country:** Solomon Islands  
**Coordinates:** 8°45'S, 157°32'E  
**Location:** on the island of Tetepare, southeast of Rendova, Western Province.  
**Area:** Unknown.  
**Altitude:** Sea level.  
**Overview:** An area of undisturbed beach forest and mangrove forest along the southern and eastern shores of Tetepare Island, and a small lake at Tavara on Waugh Bay at the west end of the island. Tetepare is a raised coral island with fringing reef (area 120 sq.km; maximum elevation 357 m). The island is very sparsely populated, with fewer than fifty people living in a single settlement at the western tip.  
**Conservation measures taken:** None.  
**Conservation measures proposed:** The entire island, excepting the present copra plantation, has been proposed as a protected area to protect habitat of the endemic white-eye *Zosterops tetiparia*.  
**Noteworthy fauna:** Messel and King (1989) suggested that the small lake at Tavara would be an excellent place for restocking Estuarine Crocodiles (*Crocodylus porosus*).  
**Noteworthy flora:** No information.  
**Source:** Dahl (1980); Diamond (1976); Hansel and Wall (1976); Lees *et al.* (1991); Messel & King (1989); SPREP (1985).

**Wetland Name:** Mangroves of Northern Isabel  
**Country:** Solomon Islands  
**Coordinates:** 7°55'S, 159°15'E  
**Location:** on the north coast of Isabel Island, Isabel Province.  
**Area:** Unknown.  
**Altitude:** Sea level.

**Overview:** Extensive tracts of mangrove forest along the north-central coast of Isabel Island.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Dahl (1986); Hansel and Wall (1976).

**Wetland Name:** Huali Bay  
**Country:** Solomon Islands  
**Coordinates:** 8°25'S, 159°50'E  
**Location:** at the east end of Isabel Island, Isabel Province.  
**Area:** Unknown.  
**Altitude:** Sea level.  
**Overview:** Mangrove forest around Huali Bay at the east end of Isabel Island.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansel and Wall (1976).

**Wetland Name:** Wetlands of the Russell Islands  
**Country:** Solomon Islands  
**Coordinates:** 9°00'S, 159°10'E  
**Location:** in the Russell Islands, Central Province.  
**Area:** Unknown.  
**Altitude:** Sea level.  
**Overview:** Mangrove forest on the north coast of the main island in the Russell group.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansel and Wall (1976).

**Wetland Name:** Wetlands of Nggela  
**Country:** Solomon Islands  
**Coordinates:** 9°00'S, 160°13'E  
**Location:** around Nggela Island, Central Province.  
**Area:** Unknown.  
**Altitude:** Sea level.  
**Overview:** Mangrove forest in the Nggela Islands, particularly in the Mboli Passage between Nggela Stile and Nggela Pile.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansell and Wall (1976).

**Wetland Name:** Sago Swamp Forests of Guadalcanal  
**Country:** Solomon Islands  
**Coordinates:** 9°33'S, 160°34'E  
**Location:** on the northeast coast of Guadalcanal Island, Guadalcanal Province.  
**Area:** Unknown.  
**Altitude:** Near sea level.  
**Overview:** A large area of sago swamp forest dominated by the sago palm *Metroxylon salomonense* on the north coastal plain of eastern Guadalcanal.

**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** One of the best stands of sago swamp forest in the Solomon Islands.  
**Source:** Dahl (1980); SPREP (1985); TCSP (1990).

**Wetland Name:** Lee's Lake  
**Country:** Solomon Islands  
**Coordinates:** 9°42'S, 160°23'E  
**Location:** in the east-central highlands of Guadalcanal, Guadalcanal Province.  
**Area:** Unknown.  
**Altitude:** c.600 m.  
**Overview:** A small freshwater lake approximately two km long and 250-500 m wide in the highlands of Guadalcanal; apparently the only freshwater montane lake of any size in the Solomon Islands.  
**Conservation measures taken:** None.  
**Conservation measures proposed:** Proposed for protection by the Tourism Council of the South Pacific (TCSP, 1990), and included within the proposed Lauvi protected area (Lees *et al.*, 1991).  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Lees *et al.* (1991); SPREP (1985); TCSP (1990).

**Wetland Name:** Marau Sound  
**Country:** Solomon Islands  
**Coordinates:** 9°50'S, 160°50'E  
**Location:** at the east end of Guadalcanal, Guadalcanal Province.  
**Area:** Unknown.  
**Altitude:** Sea level.  
**Overview:** Mangrove forest in Marau Sound at the east end of Guadalcanal Island.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansel and Wall (1976).

**Wetland Name:** Mangroves of Northern Malaita  
**Country:** Solomon Islands  
**Coordinates:** 8°08'-8°53'S, 160°55'E  
**Location:** on the northeast coast of Malaita Island, Malaita Province.  
**Area:** Unknown.  
**Altitude:** Sea level.  
**Overview:** Extensive mangrove forests along the northeast coast of Malaita Island.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansell and Wall (1976).

**Wetland Name:** Mangroves of Western Malaita  
**Country:** Solomon Islands  
**Coordinates:** 8°44'-9°02'S, 160°44'E  
**Location:** on the west coast of Malaita Island, Malaita Province.  
**Area:** Unknown.  
**Altitude:** Sea level.

**Overview:** Extensive mangrove forests along the west coast of Malaita.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansell and Wall (1976).

**Wetland Name:** Three Sisters Islands  
**Country:** Solomon Islands  
**Coordinates:** 10°07'-10°16'S, 161°58'E  
**Location:** off the north coast of Makira Island, 19-31 km north of Kirakira, Makira Province.  
**Area:** Unknown.  
**Altitude:** Sea level.

**Overview:** A group of three low-lying coral islands, Malaupaina, Malaulalo and Ali'ite, with some fringing mangroves.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** The islands support one of the three largest populations of Estuarine Crocodile (*Crocodylus porosus*) surviving in the Solomon Islands. There are also many large monitor lizards (*Varanus* sp.).  
**Noteworthy flora:** No information.  
**Source:** Dahl (1986); Messel & King (1989); TCSP (1990).

**Wetland Name:** Star Harbour  
**Country:** Solomon Islands  
**Coordinates:** 10°48'S, 162°18'E  
**Location:** at the east end of Makira Island, Makira Province.  
**Area:** Unknown.  
**Altitude:** Sea level.

**Overview:** Extensive mangrove forests in Star Harbour at the east end of Makira Island.  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Hansell and Wall (1976).

**Wetland Name:** Lake Wairata  
**Country:** Solomon Islands  
**Coordinates:** 10°50'S, 162°28'E

**Location:** on Santa Ana Island, east of Makira Island, Makira Province.  
**Area:** Unknown.  
**Altitude:** Near sea level.  
**Overview:** A small brackish lake near the north end of Santa Ana Island (a raised coral atoll).  
**Conservation measures taken:** None.  
**Noteworthy fauna:** No information.  
**Noteworthy flora:** No information.  
**Source:** Dahl (1986).

**Wetland Name:** Wetlands of Nendo  
**Country:** Solomon Islands  
**Coordinates:** 10°50'S, 165°50'E  
**Location:** on the south coast of Nendo Island in the Santa Cruz Islands, Temotu Province.  
**Area:** Unknown.  
**Altitude:** Sea level.

**Overview:** A system of lagoons with extensive mangrove forest and mudflats on the southeast coast of Nendo Island and nearby Nibanga Noi island. The site includes Tepiai Lagoon and Blamoli Lagoon on Nendo; Matimi Lagoon on Nibanga Noi, and the mangroves of Matimi Inlet between these two islands.

**Conservation measures taken:** None.

**Noteworthy fauna:** Important habitat for the Estuarine Crocodile (*Crocodylus porosus*). There are some Hawksbill Turtle (*Eretmochelys imbricata*) and Green Turtle (*Chelonia mydas*) nesting beaches on islands in the vicinity.

**Noteworthy flora:** No information.

**Source:** Hansell and Wall (1976); Messel & King (1989).

## REFERENCES

- Anon. (1990).** Gold Ridge Mines Ltd. - Environmental Impact Statement and Rehabilitation Programme. Douglas, Martin and associates Pty. Ltd. November 1990.
- Baines, G. (1985).** Study Area One: Marovo Lagoon, Solomon Islands. Working Paper on Pilot Project for the Commonwealth Science Council. Commonwealth Secretariat, London.
- Blaber, S.J.M. & Milton D.A. (1990).** Species composition, community structure and zoogeography of fishes of mangrove estuaries in the Solomon Islands. Marine Biology D105: 259-267.
- Collar, N.J. & Andrew, P. (1988).** Birds to Watch: The ICBP World Checklist of Threatened Birds. ICBP Technical Publication No. 8. ICBP, Cambridge, U.K.
- Commonwealth Science Council (1986).** South Pacific Coastal Zone Management Programme (SOPACOAST), Project Document. Environmental Planning Programme: Coastal Zone Management of Tropical Islands. CSC Technical Publication Series No.204, CSC(86) EPP-8.
- Dahl, A.L. (1980).** Regional Ecosystems Survey of the South Pacific Area. SPC Technical Paper No. 179. South Pacific Commission, Noumea, New Caledonia.
- Dahl, A.L. (1986).** Review of the Protected Areas System in Oceania. UNEP & IUCN Commission on National Parks and Protected Areas, Gland, Switzerland.
- Diamond, J.M. (1986).** A Proposed Forest Reserve System and Conservation Strategy for the Solomon Islands. Unpublished report.
- Diamond, J.M. (1987).** Extant unless proven extinct? Or extinct unless proven extant? Cons. Bio. 1: 77-79.
- Gray, W.N. (1972).** The Freshwater Plants of the Solomon Islands. Journal of the Solomon Islands Museum Association 1:45-59.
- Gray, W.N. (1974).** The Fishes of the Solomon Islands. Part 1: The Fresh and Brackish water fishes on Guadalcanal. Solomon Islands Museum Association, Honiara.
- Hansell, J.R.F. & Wall, J.R.D. (1976).** Land resources of the Solomon Islands. Volume 1: Introduction and Recommendations. Land Resources Study 18, Land Resources Division, Ministry of Overseas Development, Surrey, England.
- IUCN (1991).** IUCN Directory of Protected Areas in Oceania. Prepared by the World Conservation Monitoring Centre. IUCN, Gland, Switzerland and Cambridge, U.K.
- Leary, T. (1990).** Survey of Wildlife Management in Solomon Islands. SPREP Project PA 17. Report prepared for Solomon Islands Government, South Pacific Regional Environment Programme and TRAFFIC (Oceania).
- Leary, T. (1991).** Solomon Islands State of the Environment Report. Environment and Conservation Division, Ministry of Natural Resources, Honiara, Solomon Islands and SPREP, Noumea, New Caledonia.
- Lees, A., Garnett, M. & Wright, S. (1991).** A Representative Protected Forests System for the Solomon Islands. Report prepared for the Australian National Parks and Wildlife Service. Maruia Society, Nelson, New Zealand.
- Mayr, E. (1945).** Birds of the South West Pacific. The Macmillan Co, New York.
- McCoy, M. (1980).** Reptiles of the Solomon Islands. Wau Ecology Institute Handbook No. 7. Wau, P.N.G. 80 pp.

- Messel, H. & King, W. (1989).** Report on CITES and Solomon Islands Government national survey of the crocodile populations of the Solomon Islands, 20 July to 8 September 1989.
- Pearsall, S.H. (1991).** Solomon Islands. *In: a series of country and island databases prepared for The Nature Conservancy's South Pacific Regional Biodiversity Assessment.* The Nature Conservancy, Honolulu, Hawaii.
- SPREP (1985).** Solomon Islands Country Review. *In: Proc. Third South Pacific National Parks and Reserves Conference, Apia, Western Samoa, 1985.* Vol.3: 195-209. South Pacific Commission, Noumea, New Caledonia.
- SPREP (1992).** Solomon Islands National Environment Management Strategy. Environment and Conservation Division, Ministry of Natural Resources, Honiara, and South Pacific Regional Environment Programme, Apia, Western Samoa.
- Stats. Bull. (1990).** Labour Force Statistics 1989. Stats. Bull. 9/90. Statistics Office, Honiara.
- TCSP (1990).** Guidelines for the Integration of Tourism Development and Environmental Protection in the South Pacific. Tourism Council of the South Pacific, Suva, Fiji.
- UNEP/IUCN (1988).** Coral Reefs of the World. Volume 3: Central and Western Pacific. UNEP Regional Seas Directories and Bibliographies. IUCN, Gland, Switzerland and Cambridge, U.K./UNEP, Nairobi, Kenya.
- Vaughan, P.W. (1981).** Marine turtles: a review of their status and management in the Solomon Islands. Ministry of Natural Resources, Honiara. 70 pp.
- Wolff, T. (ed.) (1970).** The Natural History of Remelt Island. 7 Vols. University of Copenhagen, Danish Scientific Press, Copenhagen.
- Woodroffe, C.D. (1987).** Pacific Island Mangroves: Distribution and Environmental Settings. *Pacific Science* 41(1-4): 166-185.