

**NIUE**

**FIRST COUNTRY REPORT  
TO THE  
CONVENTION ON BIOLOGICAL DIVERSITY**

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## 1. Introduction to this report

This First Country Report to the Conference of the Parties for Niue is being submitted around the same time as the National Biodiversity Strategy and Action Plan (NBSAP) and 2nd Country Report, to complete the outputs under a UNDP-funded Enabling Activities project. Given its timing it has been decided to format this First Country Report according to the headings used for the ‘Synthesis of Information contained in National Reports...’ (UNEP/CBD/COP/4/11/Rev.1). More detailed information is available in the NBSAP.

## 2. Introduction to Niue

The nation of Niue consists of a single island of 261 km<sup>2</sup>, the largest raised coral atoll in the world. It is situated in the South Pacific Ocean (Lat. 169°55’W, long. 19°02’S) approximately 480 km southwest of Tonga, 660 km south of Samoa, 930 km west of Cook Islands, 2,400 km northeast of Auckland-New Zealand and 3900 km northeast of Sydney-Australia. The current population on the island is about 1770 individuals of which 14% are of non-Niuean ethnicity. Over 20,000 Niueans reside overseas, mostly in New Zealand. Most of the land is in the customary ownership of family descent group, or **magafaoa**.

The island still has an extensive forest cover (65-70% of the land area) though only about one sixth of this is primary forest. Historically there has been a high rate of forest clearance for agricultural purposes, but this has slowed in recent years. Niueans retain a close relationship with the forest, which provides timber for building, canoes and some carving, leaves and fruits used for food or medicinally. Three species of animal found there are of particular importance, the **uga** or coconut crab (*Birgus latro*), the **peka** or flying fox (*Pteropus tonganus*) and the **lupe** or Pacific pigeon (*Ducula pacifica*), all of which are hunted for food.

Niue is primarily an agriculturally based economy, providing people with their main means of support, and more recently, some exports. Fishing, particularly for tuna or billfish, and collection of marine invertebrates are also important as providers of food. In recent years there has been an increased effort to develop a tourism industry, largely based on the natural attractions of the island and surrounding seas.

The small size of the country and the current small population, which results in less pressure on natural resources, provide opportunities to put sustainable conservation practices in place in Niue. However, this small size also results in a natural instability, common to many small island states. Natural disasters such as cyclones can devastate a very high proportion of the land area, and introduced animals or plants may rapidly become pests in an environment of relatively few native species.

The conservation of biological diversity is vital to Niue, given the close relationship between the people and the land and their dependence on natural resources for food, materials and encouraging tourism. There is an urgent need to address some of the same negative trends evident here as in the rest of the world, such as the degradation of soils and habitats and the over-hunting of species.

### 3. Current status of biological diversity and its conservation

#### 3.1 TERRESTRIAL

##### 3.1.1 Plants

The last comprehensive listing of the flora of Niue was by Sykes (1970) though both he and Art Whistler of Isle Botanica, Hawaii have made further small collections since. At that time, 175 native vascular plant species were identified. No plants are confirmed as endemic to Niue though further work needs to be done on one, *Psychotria insularum*, which may be different from forms found elsewhere (DAFF, 1998b).

There are a large number of introduced plants. A recent survey identified 26 species as potential invasive weed pests and others as aggressive weeds that could become a problem in the future (Space & Flynn, 2000).

##### 3.1.2 Vegetation (Most information sourced from DAFF, 1998b)

Seven types of vegetation are currently recognized, comprising Cropland and Fern land (both grouped as Managed Land Vegetation) and Littoral Shrub land, Littoral Forest, Coastal Forest, Mature Forest and Secondary Forest (grouped as Natural Vegetation) (Whistler & Atherton, 1997).

Mature forest has a high, closed canopy dominated by **kolivao** (*Syzygium richii*) and **kafika** (*S. inophylloides*), with **moota** (*Dysoxylum forsteri*), **kanumea** (*Planchonella torricellensis*), **tava** (*Pometia pinnata*) and **le** (*Macaranga seemanii*). A range of climbers, other trees and ferns form the under-storey and ground layers. Coastal forest has a similar range of tree species with a more open scrub on the seaward margin dominated by salt-resistant trees like **futu** (*Barringtonia asiatica*) and shrubs. Secondary forest lacks the upper canopy layer of the mature forest and is dominated by a wide range of 'pioneer' species such as **fou** (*Hibiscus tiliaceus*) and **koka** (*Baccaurea seemanii*).

### 3.1.3 Native mammals

The only native land mammals found on Niue are the Tongan flying foxes or peka. They are vital to the survival of some native trees as the only species known to pollinate them, and they play a major role in the dispersal of fruits. A survey in 1998 estimated the population at 1900-3800 (Brooke, 1998). Peka are hunted by shooting, permitted only in December-January but reported as occurring illegally at other times and have also suffered from loss of forest habitat. The current level of hunting is considered too great and likely to threaten the survival of the species.

### 3.1.4 Introduced mammals

Two species of rat are numerous and widespread, the **kuma** or Polynesian rat (*Rattus exulans*) probably introduced with the first Polynesians, and the ship rat (*Rattus rattus*) that arrived between 1900 and 1950 (Hay & Powlesland, 1998). The house mouse (*Mus musculus*) is also present. Feral pigs, dogs and cats are also fairly common. Cattle were introduced for farming in the past but few remain.

### 3.1.5 Reptiles

Five species of lizard have been recorded (Wodzicki, 1969), 2 geckos and 3 skinks though no detailed studies have been undertaken.

### 3.1.6 Invertebrates

A survey in the 1960s recorded 376 insect species in 15 orders (Eyles, 1965). More recent, comprehensive information will shortly be available from a survey conducted for DAFF by the South Pacific Commission.

### 3.1.7 Birds

Thirty-one birds species have been recorded in Niue, 6 seabirds, 10 shorebirds and 15 landbirds (Powlesland et al., 2000). Fifteen of these have been confirmed as breeding on the island. None of the birds are endemic to the island at the species level, but there are two endemic sub-species the **heahea** or Polynesian triller (*Lalage maculosa whitmeei*) and **miti** or Polynesian starling (*Aplonis tabuensis brunnescens*). A notable feature is the presence of only one introduced species, the feral fowl (*Gallus gallus*). A recent study has documented the fossil avifauna of the island recording the former presence of a megapode, a large flightless night heron and a flightless rail (Worthy et al., 1998).

Observations made in 1994-1995 suggest that the status of three species was of particular concern (Powlesland et al. op. cit.). The Pacific pigeon which is hunted by shooting appeared to be in decline and the **hega** or blue-crowned lory (*Vini australis*) and **moho** or spotless crane (*Porzana tabuensis*) close to extinction.

### **3.1.8 Land Crabs**

There are eight known species of which the most significant and largest is the coconut crab, which is hunted as an important traditional food. A detailed study by Schiller (1992) estimated the population at 200,000 and it is considered to be in decline due to over-harvesting, clearance of forest areas and the impact of dogs. Other varieties of land crabs are eaten while the smaller species are used for fish baits.

## **3.2 MARINE**

(Most of the information in this section is derived from Dalzell et al. (1991))

Niue has no lagoon and the coastline descends precipitously to over 1000m within 5km from the shore. There is a narrow fringing reef round most of the island with a thin layer of corals, with richer coral growth at the edge. The total area of reef flat and sub-tidal reef has been estimated at 620ha. The country has an Exclusive Economic Zone (EEZ) of 390,000 sq. km. Within this lies Beveridge Reef, a partially emergent reef containing a sandy lagoon c.7 km long. Visits by divers suggest it has a rich and varied reef fauna.

### **3.2.1 Corals**

There are 70 coral genera commonly known in the Pacific Islands and at least 43 had been recorded on the Niue rock shelf (UNEP/IUCN 1988).

### **3.2.2 Algae**

Niueans are familiar with only about five species of seaweed, three edible (though largely eaten in the past) and two inedible (Sisikefu, S. personal comment).

### **3.2.3 Mammals**

Humpback whales are the most common whales in Niuean waters and single minke whales and pods of pilot whales are also seen together with one species of dolphin, the spinner dolphin. All marine mammals are protected in Niue.

### **3.2.4 Reptiles**

Two species of turtle are found in Niuean waters, the hawksbill and green. In the past, they were taken as food, but fewer are seen today and they are fully protected (Domestic Fishing Regulations 1996). The endemic Niuean banded sea snake is relatively abundant.

### **3.2.5 Fish**

A preliminary checklist of fish lists c.240 species (excluding small bullies and eels found in freshwater caves) (Yaldwyn 1970). A 1998 survey of the Namoui Marine Reserve (Labrosse et al., 1999) recorded 103 of these species in 19 families, including 79 used for food. The family with most species and highest densities and biomass was the Acanthuridae (surgeon fish), followed, in terms of density, by Serranidae (grouper, cod), Chaetodontidae (butterfly fish) and Mullidae (red mullet). The Scaridae (parrot fish) were the second family in terms of biomass.

Niuean waters contain significant populations of tuna and billfish, which are the subject of an important fishery.

### **Invertebrates**

There is a rich though largely undocumented marine invertebrate fauna. Groups of possible commercial value have been subject to study that is more detailed. Crabs and crayfish/lobsters are well represented with c20 species; there are five species of beche-de-mer (most of low value), and two of giant clams (*Tridacna maxima* and *T. squamosa*). Clam numbers were found to be depleted, though consumption rates were not sufficient to threaten their survival, some active conservation was recommended with the formation of 'clam circles' to enhance breeding.

The Domestic Fishing Regulations 1996 impose quotas of 10 clams or crayfish/day and determine minimum sizes for these: tail length of 130 mm and length of 180 mm respectively.

## **3.3 FRESHWATER**

Niue has no surface wetlands though there is standing water in some caves. Two species, a small bully and an eel have been found at these sites (Yaldwyn, 1970). No amphibians are known from Niue.

## **3.4 TRENDS IN BIODIVERSITY**

There is little detailed information to quantify declines in Niue's biodiversity. Most information is available for birds. Studies of cave deposits have found three species of

birds to be extinct, the Niue night heron, Niuafo'ou megapode and Niue rail (Worthy et al., 1998), probably associated with hunting by early peoples and with the mammalian pests (such as the Polynesian rat) that accompanied them. Numbers of remaining forest birds and plants will have declined as forest was cleared and natural disasters such as cyclones will also have taken their periodic toll. Declines through over-harvesting have undoubtedly occurred in species such as the lupe, peka, uga and reef fish and invertebrates.

Niue's forests now cover an estimated 64% of the land area compared to c. 90% in the 1950s, representing a severe rate of deforestation (DAFF, 1998b). The area of primary and regenerating forest have been reduced by 30% between 1966 and 1994 with most clearance occurring in the inner parts of the island, as coastal areas are typically very rocky and rugged. While clearance for agriculture has been the main reason for forest loss, together with limited accidental burning, some timber have been directly harvested for domestic construction.

The coral reefs of Niue have been subject to damage by cyclones, particularly Cyclone Ofa and some fishing techniques such as the use of poisons. Coral bleaching has occurred in recent years.

### **3.5 CONSERVATION**

Niueans have always applied a number of traditional conservation practices to land use, particularly the closing of areas or restricting activities within them through the imposition of **fono** (a temporary control) or **tapu** (a longer term taboo involving sacred beliefs, strongly observed for its spiritual power). Forest protected by tapu is a key element in a recently created conservation area (see 7 below).

The country's geomorphology also plays a role, with some land too rugged to be used for agriculture and the natural inaccessibility of the eastern coast meaning that this area is important for marine conservation.

## **4. Status of national biodiversity strategies and action plans**

The NBSAP has been completed after a participatory process lasting 21-months and is currently being printed. Priority tasks have been identified for urgent implementation.

## **5. Action to integrate conservation and sustainable use of biological diversity into other sectors**

Niue's national planning document, the Integrated Strategic Plan (NISP) 1999 – 2003 identifies as a key tenet to "Preserve the natural environment and biological diversity so that it may continue to support both the resident population and the private sector in the

long term.” The process of developing the NBSAP has involved several Government Departments and the private sector, and its implementation should further the integration of biodiversity conservation into their plans and programmes.

## **6. Action to identify and monitor biological diversity and impacts upon it**

A series of surveys have been carried out in recent years providing a comprehensive picture of Niue’s terrestrial and inshore marine biodiversity. They provide baseline figures for animals like the uga and peka and for fish and invertebrates in the marine reserve, which can be used for future monitoring purposes. Monitoring programmes are under development.

Surveys of Huvalu Conservation Area - Forests (Whistler & Atherton, 1997), peka (flying foxes) (Brooke, 1998), uga (coconut crab) (Bereteh, 1999).

Surveys of Anono Marine Reserve (Labrosse et al., 1999)

South Pacific Commission survey of insects – Report not yet available

NZ Horticultural Research survey of invertebrate pests – Report not yet available.

Survey of Sub-fossil (Worthy et al., 1998) and extant Birds (Powlesland et al., 2000).

Merchantable Forest Survey, (DAFF, 1992).

## **7. Protected areas**

Protected areas such as parks and reserves are only one way that habitats can be protected on Niue. Several others are included in this section.

### **7.1 HUVALU FOREST CONSERVATION AREA PROJECT.**

This project was established in 1992 by the Environment Unit in consultation with the villages of Liku and Hakupu, and with financial and technical assistance from the South Pacific Biodiversity Conservation Programme (SPBCP). The Huvalu Forest Conservation Area is situated on the eastern part of the island covering an area of c.54km<sup>2</sup> (5,400 ha) surrounding the largest area of primary forest in Niue. The project site is divided into three areas according to local, traditional practices. The core of the reserve of c.100 hectares in size is tapu, a most sacred site, and hunting, logging or even research is prohibited. A surrounding area of c2500 ha of primary forest provides some protection to the core but is used for hunting and other activities and outside this is a buffer zone of 2800 ha of agricultural land subject to controlled, shifting cultivation to ensure sustainability.

### **7.2 HAKUPU HERITAGE AND CULTURAL PARK (HHCP)**

The Hakupu Heritage and Cultural Park extends south from the Tuhiā Access Track in the village of Hakupu and was initiated by members of a family owning the land. Its primary objective is to inventory and protect areas of historical and ecological

significance, including caves used traditionally for burials and others where the women of the village traditionally undertook weaving, as well as fortress sites identified as ancestral dwellings, and a flying fox sanctuary (**tauga peka**).

### **7.3 ANŌNŌ MARINE RESERVE.**

This site located south of Makapu Point was registered as a Fisheries Reserve in 1998 as a precautionary measure to protect and preserve its overall marine biodiversity for the benefit of future generations. Its total water surface area to the 50m isobaths is 27.67 ha.

### **7.4 TRADITIONAL VILLAGE RESERVES (FONO and TAPU)**

Villages or members of extended families have traditionally and still use two practices to manage land and prohibit activities, being **fono**, a temporary restriction imposed, usually for a year, prohibiting access to an area (land or marine) and harvesting in it, as a mark of respect to a deceased family member, and **tapu** a permanent restriction imposed by the whole village, protecting a certain area because it is sacred or vital to the breeding of certain species, e.g. flying foxes.

### **7.5 LOCAL AREA PLANS**

Staff of the Environment Planning Unit, Department of Lands, Justice and Survey are developing Local Area Plans in consultation with villagers to divide land into that to be used for agriculture and that to be managed for cultural or environmental purposes (e.g. forest reserved as an uga area).

## **8. Implementation of policies and actions across borders**

Niue shares no land borders, but is active regionally on issues like the management of migratory fish stocks (tuna and billfish) and invasive alien species.

## **9. Financial and human resources**

Niue's financial and human resources are limited by the country's small size and population. Three Government agencies have mission statements that tie into the conservation of biodiversity:

**Department Of Community Affairs (DCA)** (which houses the Environment Unit)  
*'We will endeavour to serve our people by supporting effective, sustainable development initiatives, opportunities and policies through consultation in order to enhance the delivery of quality community services in the fields of: Environment,*

*Community Development and Services...*’ (And 6 other units including arts and cultural matters).

(The Environment Unit’s goal for 2000/2001 is *‘to effectively manage our natural resources whilst promoting sustainable practices to ensure inter-generational equity’*)

**Department Of Justice, Lands And Survey (DJLS)** (which houses the Environment Planning Unit)

‘To contribute to economic development by facilitating an effective and transparent management of lands, resources, judicial, electoral and related information services’.

**Department Of Agriculture, Forestry and Fisheries (DAFF)**

‘To promote and protect the development of an environmentally sustainable and viable agriculture, fishing and forestry base.’

Funds for biodiversity conservation work have been obtained through bilateral arrangements, particularly with New Zealand, also Australia, and through regional and international programmes (e.g. SPREP, UNDP). Such funding will be particularly important now to implement the NBSAP.

## **10. Infrastructure resources**

Niue has limited infrastructure resources. Quarantine programmes are in place at the International Airport and the port. The Government is the only agency to undertake major development works.

## **11. Mechanisms for sharing national experiences**

Such mechanisms should be developed through actions identified in the NBSAP.

## **12. Conservation of agricultural diversity**

The identification, development and implementation of the conservation of the genetic resources of the agricultural crops of Niue have been identified as an NBSAP action. Such work needs to occur on a regional basis as varieties tend not to be held by one country alone.

## **13. Involvement of Communities**

The involvement of village communities and extended families has to be a part of all biodiversity conservation initiatives in Niue, because they own the land. They have been closely involved in the establishment and management of conservation areas.

Consultations that occurred as part of the development of the NBSAP, including national workshops for men, women and youth, should have helped communities develop more understanding of issues relating to biodiversity, however further education programmes are identified as priorities.

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