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## MARINE CONSERVATION: PRESENT STATUS IN WESTERN SAMOA

by

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### Introduction

Western Samoa achieved political independence in 1962 after the German rule which was later replaced by New Zealand in 1914 after World War I, initially under a League of Nations mandate and later as a Trust Territory of the United Nations. Three of its four inhabited islands are mountainous and volcanic in origin with an oceanic climate and high rainfall.

Samoa was first sighted in 1722 by Roggewein, but western impact was minor until 1830, when the London Missionary Society, beachcombers, and traders began to arrive. The pre-European population was estimated to be about 29,000 in 1880.

The basic social unit in a village was, and remains, the **aiga**, (extended family), headed by the chiefly **matai**. Political organisation rested largely upon the village council in which the heads of the extended families and their chiefs joined in dealing with local problems and order (Bell, 1985).

Village settlements were noted to be mainly on or near the shore, close to river-mouths or fresh water springs, with arable land readily accessible. These sites were determined mainly by safe and easy access to sea; rocky coasts unprotected by offshore reefs were sparsely populated, even where the land was capable of development. The traditional terrestrial staples were taro, breadfruit, yams and coconuts while fish and shellfish provided virtually all of the protein requirements. These two sources of livelihood, land and sea, were especially protected by customary rights with their utilisation carefully controlled by prohibitions and folklore. In the marine environment fishing grounds as far out as the reef had owners. Buck (1930) noted that the Samoans had a rich material culture which included a range of specialised canoes, hooks, nets, lures, spears, traps, etc. for inshore and offshore fishing. Roggewein gave the group the name of the 'the Isles of the Navigators' when he noted how much the natives used canoes. Gilson (1970) wrote that 'considering the Samoan pattern of life, along with the population, the physical environment seemed indeed to have provided, in the past, an ideal basis for comfortable and convenient settlement'.

At present, Article 104 of the Constitution provides that all land lying below the line of high-water mark is public land, and that all persons have a right to navigate over the foreshore and to fish in the sea within the limits of the territorial waters of the state. However, Samoans have a reputation for cultural conservatism.

The passage of the National Parks and Reserves Act in 1974 which led to the establishment in 1979 of the first Marine Reserve in Western Samoa, the growing concern shown by villages over their marine resources, the increasing awareness in the rural areas of the need and benefits of conservation through the efforts of the National Conservation Committee, and the nature and direction of proposed legislations, offer opportunities for establishment of true marine reserves throughout the country.

## Fisheries

Samoans were traditionally known to be inshore fishermen and gleaners as well as ocean fishermen. Fishing methods varied from simple groping between the rocks with bare hands to skilled devices with traps, nets and hooks. The canoe took men outside the reef to seek the deep sea fish, but waters within the bounding reefs provided the main source of fish.

Subsistence fishery within the reefs continues to be crucially important to the majority living in the rural areas. A catch assessment survey for Western Samoa in 1978 indicated that the inshore catch comprised 61% of the total landing for that year. A preliminary survey in 1984 indicated that reef fish comprised about 87% of the total rural meat consumption. Fairbairn (1973) reported that 72% of Samoans were engaged in village agriculture and that most of these households were actively engaged in subsistence fishing.

Due to government development of offshore fisheries, especially those for tuna, the inshore landings have now been estimated to be second in terms of weight of the total fish landings. Comparative surveys on fish and shellfish landings at the Apia Fish Market have indicated declines in certain species and also decreasing fish and shellfish average sizes. These are negative indicators of the state of the resource.

## Pressures on the Reef and Lagoon Resources

Johannes (1982) noted that the immediate improvement of Samoa's reef and lagoon resources depends on the reduction of marine pollution and destructive fishing practices. It seems that the change in sea tenure and western ideologies have resulted in additions to destructive fishing practices. Fishing using dynamite and poison from the derris root are persistent problems. Recent rumours are that household bleach and herbicides are being used.

Soil erosion during rainy seasons as a result of land clearing for development, poor land management, and felling of trees along river banks, has contributed to the destruction of reef communities, and deterioration of fishing. Certain traditional fishing methods which involve manual destruction of corals to drive the fish out, are still practised in some villages.

Waste disposal in mangrove areas continues to pose a threat not only to the very limited mangrove areas but also to the linked fisheries. Cutting and filling of mangroves is largely uncontrolled. Effluent from factories and industries are discharged directly into the adjacent marine environment. Sites for dredging of lagoons and for use in construction are not properly selected and the present two main operations are dangerously close to reefs and certain fisheries.

Certain stocks of fish, shellfish, and other seafood species are known to be decreasing and becoming scarce. The causes remain unknown but are most probably due to the use of destructive methods and uncontrolled marine pollution from land. Overfishing of the more vulnerable species, is apparent but the increased effort in most cases, is to catch more for sale.

Infestations of reefs by the crown of thorns starfish (*Acanthaster planci*) has always been problematic. Vast reef areas near some villages have been devastated by this predator. Again, infestations have been hypothesised as being associated with pollution, dredging, reef blasting, and soil erosion from land development.

## **Traditional Marine Tenure and Management**

### **Past**

Settlements were predominantly found on the coast and safe and easy access by the sea was very much a determining factor in deciding on these specific sites (Bell, 1985). Gilson (1970) noted that traditionally, the lagoon or shallow water bordering villages was a special preserve in which the village maintained rights of use and access in much the same way it controlled its land, that is, the lagoon and out to the reef was considered to be the property of those whose village was adjacent. Kramer (1888) further noted that 'fishing grounds, like landed property have their owners'. The foundation of the Samoan way of life rested, and still largely does today, on the matai system of family titles. The matai system in turn depended (and still does), on the matai's authority over the members of his family, and his authority over the family lands. The lands were owned by the family, just as they owned the chiefly matai title to which they elected one of their members.

The highest ranking chief or the council consisting of each family's chiefly matai of a village regulated fishing by boat and net and imposed conditions upon outsiders who wished to use or traverse the village's inshore water. Travellers were given access as a matter of courtesy. Neighbouring villagers were permitted to use the fishing grounds but were expected to give a portion of their catch to the village that owned the fishing grounds. Utilisation of most resources was controlled by prohibition and folklore beliefs. Von Bulow (1902) during the German rule, listed five general duties of a fishing ground owner as being:

If he catches certain large species of fish e.g. turtle, he has to turn them over to the village assembly or in some villages, to particular chiefs or orators.

In addition, he has to follow the orders of the village assembly, if for a certain period, it forbids the catching of 'atule' (big-eye scad), in order for the assembly to gain time to prepare to catch this fish in the village's large drag net.

If the assembly declares the ocean forbidden because a high chief has died, or because during the transfer of the remains of a long deceased person from the present grave to a new grave, his bones were 'bathed' by the sea

The owner has to allow his own village or neighbouring localities to cast their large drag nets, but to do so without searching through the stone heaps, he, himself has set up.

As well, he has to allow everyone to cross his fishing ground while dragging a fish lure anytime of day or night.

Traffic through the village by the lagoon was prohibited when a chief died. This opened again when the funeral rites has been performed.

Fishing in general, except scavenging of the reef and lagoon bed was a communal effort led by the village's principal fisherman (tautai). Authority was given to this expert to restrict boat fishing to parties which he organised or sanctioned. In turn, he was bound to ensure that all catches were fairly divided among the households of the village, and that specific fish species reserved for chiefs were given only to those who had a right to them (Gilson, 1970).

A lot of villages had fisheries which were specific to them, and over which they had exclusive fishing and distribution rights. For example, the village of Pu'apua's on the big island of Savai'i had a red-lipped mullet fishery and only the villagers were allowed to be involved in the fishing operations during its run. Furthermore, distribution was limited to the villagers only, and no part of the catch was supposed to be taken out in any form. The story behind this particular fishery was that it was given as a gift by a spirit of human form, in return for the generosity accorded her by the high chief of that village. It was also told that if the village had many visitors during its normal run period, the fish would not appear. This particular fishery does not exist anymore in Pu'apu'a, and its failure to appear again is believed by the villagers to have come about as a result of part of the catch being given away, and even sold to outsiders. Very few of these types of rites still exist, but many have modern versions.

A fishing spirit is believed to have existed in the past in many villages, and was normally referred to as Gege. He only appeared at certain times of the year, and only at night. When he is seen on the reef or in the lagoon, which sometimes lasted for a week, no village fisherman would dare go out fishing at night.

Migration patterns of certain species were well-known to the fishermen, especially the tautai, i.e. where they were at particular times of the year. They knew the spawning grounds and the time the fish were there, and prohibitions on fishing were accordingly made. Prohibitions on fishing activities on spawning reefs during the time the fish were there for that purpose were common.

Every fisherman was free to fish beyond the reef but there were valid rules, particularly for shark and bonito fishing which were determined by the guild of the fishermen and the tautai and were enforced by the latter (Von Bulow, 1902).

It was this 'communal' nature of traditional Samoan village and family labour and ownership which upset Europeans since the missionary days when Turner (1888) said that the Samoan 'communistic system is a sad hindrance to the industrious and eats like a canker worm at the roots of individual and national progress'.

### **Present**

Colonial governments altered property rights as private restrictions upon the free use of Samoa's waters were unacceptable to them. Von Vulow (1902) also noted that the native fishing grounds were surrendered to strangers.

The Constitution spells out that all soil below the high water mark in the territorial waters is vested in the State, and is therefore, public land. Thus the right to navigate over the foreshore and to fish in the sea within the territorial waters of the State is common to all citizens of the country. However, Samoans are known for their cultural conservatism. Farrell (1962) wrote that:

'Tradition dies hard in Samoa. The many aspects of the Samoan way of life are vigorously and steadfastly protected. Nowhere else in the Pacific is innovation so resolutely resisted, and in few other territories, is the cult of custom so deeply revered.'

Thus, villagers still feel that the utilisation of the lagoon and reef adjacent to the village is their responsibility. Outsiders using poison and other destructive methods are chased away. Banning of certain fishing methods and fishermen by villages is now a common message in the media. These are respected by fishermen from other villages.

In many cases mangrove tree-cutting is regulated by adjacent villages or families in the village. Private land owners often consider mangrove adjacent to their land as part of their private land.

Although traditional rights have largely disappeared, there are indications of their existence in some villages. For example, fishing for 'atule' (big-eye scad) in Sato'alepai and Manono and for 'white bait' in Gataivai is the exclusive right of each particular village.

## **Legislation Affecting the Marine Environment**

### **Present**

#### **Constitution for Western Samoa**

Article 104 of the Constitution provides that all land lying below the line of high water mark is public land. The public right to fish however, must be exercised reasonably, and so as not to damage the fishery.

#### **Land Ordinance 1959**

The Land Board is established under the Ordinance, and sections 25 to 26 provide that the Land Board, with the approval of the Minister of Lands, shall have primary jurisdiction, in conjunction with any government department, over works or other improvements upon government lands, which includes lagoons and reefs.

#### **Agriculture, Forests, and Fisheries Ordinance 1959**

Responsibility for the protection of the Marine Environment is given to the Minister of Agriculture, Forests, and Fisheries under this Ordinance. Section 4(b) provides in particular, that one of the principal functions of the Department is 'to promote the conservation, production, and development of the natural resources of Western Samoa ...'

#### **Public Works Ordinance 1959**

Section 4(1)(f) of the Ordinance vests the Minister of Public Works with the responsibilities for constructing and maintaining wharves, harbour works, buoys, and other navigational aids.

#### **Fisheries Protection Act 1972**

The Act provides controls to protect the fishery resource of the country by restricting foreign fishing vessels in Western Samoan territorial waters. Exemptions may be granted if they are for purposes of fisheries research, or otherwise in the national interest.

#### **Fish Dynamiting Act 1972**

Section 2 of the Act makes it an offence for any person to use dynamite or other explosives to catch fish. While the Act applies strictly to those employing explosives for the purpose of catching fish, the underlying purpose is clearly to protect the marine environment from harmful activities.

#### **National Parks and Reserves Act 1974**

The Act provides for the establishment, reservation, and administration of national parks and reserves for the benefit of the people of Western Samoa.

#### **Exclusive Economic Zone Act 1977**

The Act prohibits foreign fishing crafts from fishing in the Western Samoan exclusive economic zone unless it has been issued with a license under the Act.

## **Proposed**

### **Fisheries Act**

A Fisheries Act has been drafted to provide for the conservation, management, and development of fisheries in waters subject to the jurisdiction of Western Samoa, for the licensing and controls of foreign fishing and for related matters. Under Part 3 of the Draft Act, the Director may consult with fishermen, industry, and village representatives in the formulation of management and development measures. Furthermore, the 'Pulenu'u' of any village may, on the advice of the village, make by-laws for the conservation and management of fisheries in village waters.

### **Marine Pollution Act**

An Act has been proposed to cover ship-source pollution, contingency planning for pollution incidence, the implementation of global and regional marine environment protection conventions, and land-based sources of pollution such as sewerage and industrial plant pollution.

### **Accession to International Maritime Conventions**

Western Samoa was a signatory to the Convention for the Conservation of Nature in the South Pacific 1976.

It has also been proposed that Western Samoa should accede to the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL 73/78).

## **Conservation and Marine Reserves**

Although the establishment of reserves in Western Samoa dates back to 1958, it wasn't until 1974 that a system of national parks and reserves was first proposed following a joint study by the International Union for Conservation of Nature and Natural Resources and a United Nations Advisory team (Anon 1986). The National Parks and Reserves Act was passed in 1974. The government then declared the first Friday in November every year as Arbor Day and proclaimed it an annual public holiday. Establishment of the first marine reserve took place in 1979. Other related legislation with conservation provisions was passed thus consolidating the growing concern of the need to properly manage the natural resources. A Conservation Committee was formed and an annual conservation week was established.

The 1980-1984 Five Year Development Plan recommended the establishment of an Environmental Management Unit. Subsequent government plans also recognise the need to protect the environment and conserve natural resources as is evident from provisions included in the proposed legislation described above.

In 1987 SPREP carried out a preliminary survey to ascertain the possibility of the Nu'utele Island Group for a National Marine Park which would include the coral reefs surrounding the islands.

The present single marine reserve, Palolo Deep, 'encompasses a deep hole in the reef flat hosting a good display and small fish' (Anon, 1986). It is approximately 200m in diameter, 10m deep, and extends to the surrounding reefs to the north and north east, and 500m east of the fringing reef. The National Parks and Reserves Act 1974 is administered by the Department of Agriculture, Forests, and Fisheries. Management and implementation of the reserve is under the Parks and Reserves Section of the Forestry Division.

## PROBLEMS AND PROSPECTS

1. The manpower of the National Parks and Reserves Section presently consists of only two local staff, a Peace Corp Volunteer, and a support group of caretakers. A person qualified in marine biology is not included. Creation of a marine biologist post in the Section would be a valuable addition especially where marine reserves are concerned. Advantage should also be taken by certain villages of the growing concern for their marine environment to establish new reserves.
2. The definition of marine reserve needs to be clearly spelt out in the National Parks and Reserves Act. The reserve classification under which the present Palolo Deep marine reserve falls is obscure. It is most likely a recreational reserve considering its status as alterations to its environment are very apparent. A Marine Nature Reserve Classification is very much preferred considering the state of the marine environment and its resources.
3. There is a lack of scientific information on the status of the marine ecosystem and its resources. This information would be valuable in the planning and establishment of marine reserves. However, obtaining the information would probably require the assistance of international organisations and employment of scientists in the Fisheries Division, as well as through the research conducted by other government departments.
4. There is also a need to record the remaining traditional fishing knowledge and marine tenure. This would be valuable in the formulation of management strategies. Kunatuba (1988) noted the importance of involving the local villages in the management in that 'controls are exercised at a local level but not from outside'. Furthermore, 'this promotes self confidence amongst members of the community and creates a harmonious relationship with the government. The system effectively minimises enforcement costs of management, as well as social and political conflicts. The fishing community is likely to have a better understanding and appreciation of management principles if discussed at a local level'. Other government departments could assist in obtaining the above information.
5. Statistics on village fish landings and village dependence on reef and lagoon resources for subsistence etc. are not well documented. Knowledge of these would help in identifying possible sites for marine reserves, as well as the type and management strategies applicable. Again, this information can be obtained from other government departments.

## Conclusions

The immediate improvement of the fisheries and deteriorating state of the marine environment in Western Samoa depends on the reduction, and preferably elimination, of the existing destructive fishing methods, as well as the application of proper land development management. This reflects the need for tighter enforcement of existing laws.

Manpower for the enforcement of regulations and establishment of marine protected areas is very limited within the Parks and Reserves Section. Efforts should be made to employ a marine biology graduate to work in the field of marine environment protection.

Other sources of scientific information, existing traditional fishing knowledge and sea tenure, villages' dependence on the marine environment for subsistence etc., should be tapped.

Although the establishment of truly marine nature reserves seems uncertain at present efforts could be made to initiate protected areas in villages which have placed restrictions on certain fishing methods on a scale suitable to each village's specific requirements and the state of the resources. For practical and economic reasons the village itself should be involved in enforcement and management.

In view of the growing concern over depletion of marine resources and especially the need for proper resource management, establishment of a separate Environmental Management Unit may be necessary.

Finally it is concluded that proposed government legislation together with the initiatives already taken by some villages towards marine management and conservation, suggests that the creation of nature marine reserves applicable to Western Samoa's villages can be a reality.

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