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ASPECTS OF TRADITIONAL MARINE CONSERVATION IN TOKELAU

by

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Introduction

Tokelau consists of three atolls set on a northwest-southeast axis between 8 and 10 degrees south latitude and 171 and 173 degree west longitude. Each atoll is made up of a number of reef-bound islets encircling a lagoon. These islets vary in length from 90 meters to 6 kilometres and in width from a few metres to 200 meters. At no point do they rise higher than 5 metres above sea level.

The total land area is 12.2 sq km. Nukunonu, the biggest atoll, is 4.7 sq km. Fakaofu is 4.0 sq km and Atafu 3.5 sq km. The atolls are basically coral rubble and sand mixed with a thin layer of humus. Tokelau has a average mean annual temperature of 28 degree C and an annual rainfall of 290 cm. The population is approximately 1700 for the three atolls.

Tokelau is highly dependent on its marine resources for protein and livelihood in general. The harvesting of marine resources is one of the most important aspects of the traditional Tokelau lifestyle, and there is a growing amount of literature on the subject. Conservation practices in Tokelau, however, have never been adequately documented.

Until fairly recently each of the three atolls of Tokelau had just one village. This may be one factor responsible for traditional conservation practices having a character somewhat different than in other areas of the Pacific

Islands. For example, the concept of reef tenure does not exist. This departure from the more typical conservation systems may have caused some researchers to assume that there were no explicit marine conservation strategies in Tokelau. Alternatively, because some of the practices are quite subtle, they may have been overlooked by outside workers.

An understanding of the governing structure in Tokelau is a requisite for a discussion of conservation. Central governing authority in Tokelau is vested in a Council of Elders, comprised of most adult males over the age of sixty years. The Council, about 25 people on each atoll, historically has had total responsibility for the management of marine resources. In recent times, however, this authority has been somewhat eroded.

Many of the current conservation issues involve species where there is some degree of concern over the present abundance. Often this involves turtles (Chelonia mydas and Eretmochelys imbrica) and giant clams (Tridacna squamosa and Tridacna maxima). It is interesting to note that in Tokelau for the purpose of conservation, birds and land crabs are placed in the same category as marine organisms.

Marine Conservation Measures

In Tokelau traditional marine conservation measures can be considered into two categories: those that are specifically designed for conservation and those aspects of the Tokelau traditional system which indirectly result in a reduced amount of fishing effort on particular species.

Probably the most important explicit conservation measure is the "lafu" system whereby all types of fishing are banned in specific areas of the main reef. An example would be prohibiting activity on the entire windward reef shortly after the bi-annual change in direction of the prevailing wind. The decision to establish a "lafu" is made by the Council of Elders and an attempt is made to define the geographic area in such a way that no family will suffer a disproportionate amount of hardship by the ban. Although the "lafu" may be established for reasons other than a reduced abundance of a particular species, it is generally agreed that it results in a substantial increase in the availability of fishery resources in that area. At times a "lafu" may be established in anticipation of a future need. To assure that marine foods will be especially plentiful at an important festival, fishing may be banned from a section of the reef until just prior to the event.

Another specific conservation measure is the rejection of undersized fish when captured alive in most types of

fishing. Fishermen believe that the potential benefits of returning the fish to the sea are worth the reduce catch. Scolding by one's father and elders serves to re-inforce this practice.

For conservation purposes, destructive fishing methods are discouraged in the traditional system. The best example of this is the ban on the use of the toxins from beche-de-mer as a fish poison. Although the technique is highly effective in killing fish, it is thought that the use of the poison is detrimental to coral in the vicinity of its use and results in long term negative effects.

In addition to the specific conservation measures above, there are a wide variety of practices in the Tokelau traditional system, which result in the conservation of marine resources through restricting the amount of specific fishing effort. Customs associated with turtle fishing illustrate how this can operate. Green turtles are relatively easy to capture when they are copulating in the open ocean, however, not everybody is allowed to take turtles in this fashion, only certain highly respected masterfishermen. When somebody is successful in locating a turtle nest with eggs, he is traditionally obliged to capture the nesting turtle. As the exercise may require several nights of uneventful, boring waiting on the nest beach, it is in effect a deterrent to hunting for turtle eggs. Turtles in Tokelau are considered "sacred fish", meaning that a captured turtle must be divided among the entire community. This requirement results in a reduced incentive for an individual to participate in turtle fishing.

In Tokelau there is the perception that the pelagic fish (tunas and billfish) resources are far greater in magnitude than the reef and lagoon species. There are a number of mechanisms whereby offshore fishing effort is encouraged which, in effect, relieves pressure on the more vulnerable inshore species. The elevated status in the community of a good tuna fisherman, serves to influence fishing effort. There is also the contention that many of the lagoon species should be reserved for harvesting only when weather conditions do not allow journeys into the open sea.

There are examples of attempts at marine conservation in Tokelau which, although they have a doubtful biological basis, demonstrate an intent to manage marine resources for conservation purposes. When giant clams are harvested, there is a requirement that the string of clam meat must towed around the reefs where they were collected in order to release eggs from the harvested meat.

Modern Problems with the Traditional Conservation System

Recently there have been difficulties with the traditional marine conservation system in Tokelau. Probably the most serious is a general reduction in the authority of the Council of Elders which results in less effective management of marine resources. This diminished power is due to several factors including the introduction of a cash economy lowering respect for the now-salaried elders, venturing by the Council into non-traditional areas such as budgetary processes, having Tokelauans present on the atolls who were raised in New Zealand outside the traditional system, less severe punishment for violators which could consist of a relatively painless cash payment, the presence of an educated elite who can easier escape the wrath of the system, and the convenient option of escaping the authority of the Elders by departing for New Zealand.

Another difficulty with the traditional conservation system concerns the development of overseas markets. The isolation of Tokelau has until recently resulted in all harvesting of marine resources for exclusively local use. There was no incentive for accumulating surpluses excess to domestic needs. The improvement in the transportation situation has created the possibility of marketing marine products in Western Samoa. The demand for giant clams has grown tremendously, and is now far greater than what the resource can support, resulting in a marked drop in clam abundance.

The introduction of modern fishing gear has also created conservation problems. The virtual absence of pearl oysters in the lagoons has been attributed to diving goggles, unknown in traditional times. Gill nets and spearguns have also presented difficulties which the traditional system has yet to resolve.

With changes to the economic and educational systems there has been a marked deterioration in the level of fishing skills. Fishing effort is becoming more concentrated in the "easy" fisheries while the types of fishing requiring special knowledge or intense physical effort, such chasing giant maori wrasse or eel fishing, are being practiced much less often. The end result is an excess of fishing effort on certain easy to capture fish, such as parrotfish.

Future Issues in Marine Conservation

The people of Tokelau feel that the traditional conservation system has served them well over the centuries. They are also aware, however, of the need for modification of the system to reflect recent changes.

Some Tokelauans believe that the foremost need with regards to traditional marine management is to restore the authority of the Council of Elders. Although this is an area of great controversy, many educated Tokelauans feel that this could be at least partially accomplished by restricting the Council's activities to those areas of their expertise and delegating responsibility for subjects alien to them, thus preserving the perception of the wisdom of the Elders. It is also believed that the effective management of marine resources by the Elders could be improved by establishing a more effective system of punishment for violators which could deal with both the traditional and introduced aspects of Tokelau life.

As the deterioration of traditional fishing skills is having a negative impact on marine conservation, there have been attempts to document the knowledge associated with particular fisheries. This has included the tuna, nearshore pelagic, and bottomfisheries in both written and photographic forms. There are plans to continue this work for reef and lagoon species.

It is important that aspects of marine conservation be introduced into the curriculum of primary and secondary schools. Presently, the science component includes conservation and there is instruction by Elders on fishing and marine resources, but there is potential for greater collaboration between the two subjects. Aspects of the above mentioned traditional fishing documentation projects could be effectively modified for use in schools.

It is believed that biological information from stock assessment studies could be used to enhance traditional management. Scientific studies have been carried out in Tokelau on tuna, baitfish, turtles, clams, beche-de-mer, coral, bottomfish, and crabs. Although output from these studies has been utilized to some extent, a mechanism should be established so that the results are more fully incorporated in the Council of Elders management plans.

The positive value of traditional marine conservation in Tokelau is undisputed by the residents. The future challenge will be to modify the traditional framework to allow flexibility for the realities of modern life and to permit consideration of the results from scientific studies.