

## POLYNESIA

### COOK ISLANDS

In pre-Contact times community-based marine resource management systems existed on most islands, although there seem to have been marked differences among the islands in system type (Sims, 1990). But information is sparse, and only remnants of systems remain. However, the harvest of pearl shells in the lagoons of Penrhyn and Manihiki islands is subject to modified forms of traditional management, as is the harvest of trochus on Palmerston, Aitutaki and Manuae islands (Utanga, 1988). Essentially, however, commercial pearl shell and trochus fisheries are now managed by the central government, whereas small-scale commercial fin-fisheries and subsistence fisheries are largely unregulated. The latter have been managed, often by default, by each Island Council (Sims, 1990).

#### *Rights*

In the *makatea* (a barrier rim of ancient raised reef) islands of the south, settlements were separated from the sea by the *makatea*. Fishing was done mainly in the leeward side of these islands, and canoe access was physically limited to one or two passages. Access to the sea was generally unrestricted on these islands. On Mangaia Island men from different tribes might have made joint fishing expeditions (Gill, 1894). In contrast, on Atiu, another *makatea* island, "family" or clan tenure systems were traditional, with reef sector boundaries delineated by landmarks on the cliffs onshore (Mokoroa, 1984). The difference in access rights systems between Atiu and Mangaia might have been the result of both topographical and political differences. Canoe access through the *makatea* on Atiu is easy compared with Mangaia (Sims, 1990). Further, on Mangaia, power was centralized in a single ruler (Hiroa, 1934), whereas the independent chiefs on Atiu controlled their separate domains (Crocombe, 1967). On the smaller *makatea* islands of Mauke and Mitiaro there were no traditional reef tenure systems (Sims, 1990).

The inhabitants of Rarotonga and Aitutaki had rights of ownership over adjacent reefs and inshore waters, based on clan subdivisions within tribal districts. Lagoon and reef resources were managed by tenure systems, and on Rarotonga, in addition, codes of access to canoe passages (Crocombe, 1961; 1964; Utanga, 1988). The broader, deeper passages on Rarotonga remained workable even when adverse weather conditions arose suddenly, and so it was a privilege, rather than a necessity, to use another passage (Sims, 1990).

On Pukapuka, marine resource rights included that to exploit resources within the clan's sector of reef and lagoon, and right of access or passage through another clan's area (Beaglehole and Beaglehole, 1938). These arrangements were strictly enforced. They might have existed also in other northern atolls.

There is no evidence of pre-Contact community-based marine resource management in Manihiki and Rakahanga, islands which were occupied alternately by a single population that migrated between them. In Manihiki, a tenure system has been applied to the pearl shell fishery in post-Contact times. Commercialization has distorted any system that might have existed (Sims, 1990).

Evidently, the traditional marine tenure system was still largely retained under the early *Laws of Penrhyn Islands*. Under this, the *Law for the Sea and Ocean* declared an open access system, except for turtle (Sims, 1990). But traditional marine management systems were greatly overshadowed by the development of the post-Contact pearl shell fisheries, which gave impetus to the establishment of ownership over lagoon areas. Tupper (1899), Gudgeon (1902) and Hiroa (1932) show that the only lagoon tenure in Penrhyn was for the pearl shell fishery.

permission of the owners, and only after an inventory of them had been made. Octopus fishing was done on the basis of reciprocal temporary access rights (Mokoroa, 1984).

### *Conservation Rules*

Periodic areal closure (*ra'ui*) was commonly used throughout the Cook Islands, either to allow an area of reef and lagoon to lie fallow, or to add ceremonial effect to the closure of a seasonal fishery. *Ra'ui* is still strictly observed on Pukapuka and Palmerston atolls, and to a lesser extent in Manihiki, Penrhyn and Rakahanga (Utanga, 1988).

Those closures applied to perennial reef and lagoon fisheries, however, and were recognized as a means of restricting effort. The concept was applied regularly only to reef and lagoon areas in atolls of the Northern Group, where dependence on marine resources is greater than elsewhere. In some locations a closed area was marked by a sign, often a coconut frond tied to a tree along the path leading to the closed area. The area was also invested with supernatural powers (Utanga, 1988).

The time and areal extent of closure varied among the islands. For example, in Manihiki, until the 1950s, the entire southern and eastern reef area was managed by a rotational *ra'ui* system. Sectors of the *ra'ui* area were declared open for several days when onshore winds on the western or village side of the island restricted fishing activity there. Today, on Manihiki, traditional *ra'ui* extend only over the brackish ponds periodically stocked with milkfish (*Chanos chanos*) fingerlings. The Island Council co-ordinates the fingerling fishing drive, and decides when to open the pond for fishing (Mokoroa, 1981). On Pukapuka, the two outer islets and the adjacent reefs are still covered by a *ra'ui*. The islets are occupied for periods of weeks to several months for copra-making, and during this time the *ra'ui* on the corresponding reef area is temporarily lifted.

*Ra'ui* have been readily incorporated into commercial fisheries management strategies administered or enforced by the central government. Both the pearl shell fisheries of the northern atolls and the trochus fishery of Aitutaki (Sims, 1985) have operated under closed seasons, with periodic harvests permitted and permanent reserve areas established to preserve breeding stocks. The weakened traditional mechanisms of enforcement have been replaced with fines and catch confiscations operating under the modern legal framework. In both fisheries these tradition-based regulations have been fairly well accepted, in contrast with the less traditional concepts of size limits and harvest quotas.

On Palmerston Atoll, in the 1950s, local regulations banned the taking of nesting turtles (*Chelonia mydas*) or turtle eggs, but swimming turtles were still not prohibited (Crocombe, 1974). Essentially, this is a restriction on an over-efficient harvesting technique, to protect a single, valued species. Most of the atolls have similar traditions of *ra'ui* to protect nesting turtles, but these have not been applied recently.

Palmerston Islanders were also, for a time, obligated by local regulations to hatch, raise and release a specified number of young turtles each year. Turtles by then, however, possessed a commercial value, with shell, meat and preserved hatchlings sold to passing yachts, or in Rarotonga. This was probably a response in recognition of the increased pressures of commercialization. There are no records of such husbandry practises from subsistence fisheries of earlier times or other islands.

On Pukapuka, destructive fishing techniques, such as the use of stupeficients or dynamiting, were conspicuous by their absence (Andrews, 1987). On this island conservation practises are reviewed regularly by the Island Council, which has codified the *ra'ui* within its by-laws (Utanga, 1988), and which applies it to the reef for spear fishing. The waters in certain atoll islands (*motu*) are

thus closed for 6-12 month periods. Since mid-1985 all forms of spear fishing have been prohibited within the reef (Andrews, 1987).

#### *Punishment*

Breach of a *ra'ui* was punishable by both secular (not specified in the source) and supernatural sanctions. Nowadays guards appointed by the Island Council enforce a *ra'ui* (Utanga, 1988).

Infringement of rights, especially those relating to mackerel scad schools, was settled by "...a whole family talk". The transgressor was obliged to pay a pig or some taro as compensation to the offended family (Mokoroa, 1984).

#### *Traditional Authority*

In pre-Contact times, island societies were relatively isolated, and high chiefs ruled most islands (tribal districts). Nowadays authority resides with the Island Councils.

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## FRENCH POLYNESIA

There is little information available on traditional community-based marine resource management for French Polynesia.

In the Society Islands, traditional society was divided into three classes. At the top was a king (*ari'i*) together with priests and district chiefs. The second rank consisted of the *ra'atira*, chiefs of lower rank and royal servants. These were allocated estates. The third class was the *manahune*, who were allocated land as usufruct, in return for which they paid the two higher classes part of the harvest as tribute.

Resource areas were held by the extended family (*'opu*) and were inherited as a birthright by the eldest descendant, regardless of gender.

Estates included inshore marine waters to the outer edge of the barrier reef. The best areas were reserved for the two upper classes. However, persons who were not members of these classes could obtain outsiders' rights in return for a portion of the catch. Other areas were fished by the *manahune*, or lowest class (Tetiaraahi, 1987).

### *Traditional Authority*

Traditional priests played a major role in resource management in the Pacific Islands, and particularly hierarchical societies of the high volcanic islands (Sahlins, 1958). Thus in the Marquesas, of French Polynesia, the priests could place a taboo on virtually any resource (Handy, 1923), and on Raroia Island, of the Tuamotu Islands, they could restrict fishing (Danielsson, 1956). On the island of Tahiti, in the Society Islands, the social organization of each of the nine named districts into which the island was divided centred on its religious shrine (*marae*), and priests, who together with district chiefs who surrounded the king (*ari'i*) at the pinnacle of the social hierarchy (Tetiaraahi, 1987), exercised a major role in resource management.

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## NIUE

Despite a lack of documentation, it is apparent that traditional community-based fisheries management system existed in Niue in pre-Contact times, since some elements of it were incorporated by the New Zealand colonial administration into its centralized management system. The traditional system was also given legal expression in the *Niue Fish Protection Ordinance 1965*, particularly with respect to the harvesting of bait fish.

### *Fishing Rights Territory*

Since ancient times, each district has possessed a stretch of coastline proportionate to the district's land area. All residents of a district had equal access to coastal resources. However, families with agricultural or hunting lands adjacent to the coast were recognized as having special authority or privileges to the adjacent reef (Ryan, 1981). Tidal pools and some reef tracts were sometimes claimed by powerful chiefs as their personal reserves (Loeb, 1926).

Two forms of marine tenure to fishing areas (*ava*) have been used traditionally on Niue. One was to village fishing areas for round scad fishing. These areas were designated by Village Councils solely for the purpose of catching round scad. The fish could not be taken outside these specific areas. The second type of tenure system is for family-owned *ava*. Families owned a stretch of about 50 m along a reef.

### *Acquisition of Rights*

Rights to family-owned *ava* were acquired through inheritance (Anon., n.d.).

### *Rights of Outsiders*

Outsiders had first to seek permission before fishing in both a village's round scad *ava* and another family's *ava* (Anon., n.d.).

### *Rules*

#### *(a) Seasonal Closure*

A taboo (*fono*) is also declared to implement seasonal closure. This is done to prevent swimming over reefs during the spawning seasons of goatfish (*Mulloides flavolineatus*) and big-eye scad (*Selar crumenophthalmus*). A public notice of declaration of a *fono* is posted near the reef to which it applies (Anon., n.d.). A seasonal closure is implemented during the January - March calm season, and on the west coast in particular, when all reef activities, apart from fish drives for migratory species, were prohibited (Ryan, 1981).

#### *(b) Area Closure*

Village Councils would implement an area closure by declaring a *fono*. For example, to mourn the death of a villager, the reefs adjacent to the village are closed for one year, by a *fono*.

*(c) Gear Rules*

In certain fisheries traditional gear restrictions are applied. For example, tradition prohibits the use of nets to catch round scad (*Decapterus* sp.). Rather, they must be taken by one of two allowed rod-and-line methods (Anon., n.d.).

*(d) Fishing Behaviour Rules*

Behavioral rules are strongly adhered to, and particularly with reference to the round scad fishery. Individual fishing for round scad is prohibited. Fishermen had to follow strictly the "fleet leader's" instructions regarding positioning and formation of the fleet, type of bait used, timing of bait release, noise levels, and general behaviour (Anon., n.d.). These have been codified into the *Niue Fish Protection Ordinance* 1965.

*Traditional Authority*

Authority over the fishery resides in the Village Council and, in the case of round scad fishing, the "fleet leader" whose role and importance varied by village (Anon., n.d.). Conforming to fishing rules is assured through peer group pressure and the desire to avoid loss of face. Fishing is managed using tenure systems, closed areas, closed seasons, gear restrictions, and behavioral rules, which form the core of traditional community-based fisheries management on Niue (Anon., n.d.).

*Sanctions*

Sanction was by scolding, abuse and humiliation (Anon., n.d.).

*Traditional Conservation*

That resource conservation was of major concern under the traditional community-based fisheries management system of Niue is implicit in the rules described above.

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## SAMOA (WESTERN AND AMERICAN)

### I: WESTERN SAMOA

In Western Samoa coastal waters are owned by the State, but customary village ownership of fishing rights within them remains strong. By law, village rights can extend seaward for up to five miles from the mean high water mark.

In 1902, von Bülow, a long-term resident of Apia, described the traditional management of inshore fishery resources in Samoa. Ownership of fishing grounds was legally protected, and entitled the owner to use all types and any amount of gear on his grounds, including the construction of stone traps.

Ownership entailed obligations regarding catch distribution, closed periods, and access rights to other persons. Thus species of large fish and turtles had to be presented to the Village Assembly or to chiefs, depending on village regulations; Village Council proclamations of temporary closures of *atule* (South Sea Herring) fishing to allow accumulation for communal fishing with large drag nets had to be observed, as did taboos imposed following the death of a high chief or during the ritual sea-bathing of disinterred bones before reburial; and access to members of his own village and of neighbouring localities to use their large drag-net (except within stone fish traps) had to be allowed as did that to persons dragging a fishing lure. Trespass was punished by the "Local Assembly".

#### *Boundaries*

Most seaward boundaries are over 1 km offshore, and are demarcated by the seaward slope of the fringing reef. But where offshore islands are included, village tenured waters are more extensive. For example, Manono villagers, both on Manono Island and Manono village on Upolu, claim the area between Upolu and Manono Island, a distance of some 3-4 km (Fairbairn, 1991). Lateral boundaries comprise a seaward projection of a village's terrestrial boundaries.

#### *Primary Rights*

Residence in a village confers primary fishing rights in a village's tenured waters. Individuals have equal collective rights.

Within that village common tenured area, individual households located on the water's edge can claim occupation rights over lagoon areas adjacent to their house site and extending 5-10 m offshore from the high tide mark (Fairbairn, 1991).

Customary fishing rights in Samoa extend beyond resource use to a custodial obligation requiring the management and regulation of fishing and other resource use activities. This obligation was reinforced by the passage of the *Village Fono Bill*.

#### *Rights to Outsiders*

Until recently, access rights have been widely permitted to neighbouring villagers. Such fishing requires either tacit or formal approval, and is usually permitted on a reciprocal access basis. It usually occurs on the outer fringes of the "host" village's rights area, as at Fusi Village (Fairbairn, 1991). Two communities can also share the same rights area, as do Savaia and Tafagamanu, at Lefaga.



Recently these rights have been curtailed, and village reefs reserved exclusively for the use of village residents, owing to increased food demands of a growing population and because of the commercialization of resources. Thus, for example, Manono villagers formerly fished up to a distance of 10 km, in the waters of Leulumoega, Fasito'outa and Mulifanua villages. But the host villages have now withdrawn these rights (Fairbairn, 1991).

Residents of inland villages without direct access to the coast are also given rights, through historical and kinship ties, since population pressure in coastal villages caused a migration inland. Thus, for example, the inland village of Manunu has access rights to the fishing areas of Saluafata and Luatuanu'u villages, as does Magiagi village to those of Fagali'i and Moata'a (Fairbairn, 1991).

In some instances, restrictions on the catching of certain species may be imposed on outsiders. Thus, for example, only the inhabitants of Manono Island are allowed to catch mullet and *atule* (van Pel, 1960); in Savai'i, Gataivai villagers have the exclusive right to catch "whitebait" during its annual run (Johannes, 1982); and in Fusi crab-trapping is restricted to local villagers (Fairbairn, 1991).

#### *Traditional Authority*

Regulatory authority over reef and lagoon is community-based, and resides in the Village Council (*fono*) of chiefs and orators (*ali'i*) and District Representatives (*faipule*), in concert with the Central Government. In each village, or sometimes over a section of a large reef, a "chief fisherman" controls the fishery (Buck, 1930). All village residents have rights within their village waters, subject to that authority.

Via the *Fisheries Act (1988)*, any village regulation pertaining to coastal waters promulgated by a Village Council can become a national by-law after acceptance by the Fisheries Division, signature by the Director of the Department of Agriculture, Forestry and Fisheries, and gazetting.

Traditional authority has recently been reinforced by the *Village Fono Bill (1990)*, which amended the Constitution to provide for the exercise of chiefly authority in accordance with Samoan custom. Since the Central Government recognizes the primacy of village rights and community-based management of coastal fisheries, it intervenes little in the sector. Community-based management has worked well, and the Central Government lacks resources for monitoring and enforcement.

#### *Sanctions*

Traditional regulations of *sa* and *tapu* are upheld by cash or in-kind fines. Customary sanction could extend to a permanent or temporary ban on a person fishing, the catching of a particular species, or the use of a particular fishing method.

Thus the use of dynamite and the stupeficient derris (*Derriis elliptica*) has been banned by village *sa*, as, in some villages, has night-time fishing and the use of gill nets.

#### *Conflict Resolution*

Fishing rights disputes between villages are rare, and, if they occur, are settled in the traditional manner by discussion between the village *fono*. Those that cannot be settled in this manner are taken before the Land and Titles Court, in Apia, the capital, for resolution (Fairbairn, 1991).

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II: AMERICAN SAMOA

Some of the regulations described by von Bülow have survived. Ownership of reefs and inshore resources was vested in village chiefs (Wass, 1982). Village Councils control access by temporary closures and denial of access to outsiders (Wass, 1982). They also restricted effort by season and location and by invoking taboos (Wass, 1982). As a result of the impact of Christianity, some villages prohibit fishing on a Sunday. The deleterious fishing methods of dynamiting and stupeficients, especially chlorine bleach, are prohibited by most villages (Wass, 1982). Seldom did villagers use the reefs belonging to another village, or within sight of another village (Wass, 1982).

There seems to have been a distinction between authority over land and that over the sea. The former was controlled by the *matai* whereas the latter was under the authority of the *tautai* (specialist fishermen), as demonstrated by the expression "The authority of the land does not apply to the sea," and "the authority of the sea does not apply to the land" (Buck, 1930:518).

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## TOKELAU

### *Fishing Territories*

On each of the three atolls that comprise Tokelau, residents share a common sea territory. Whereas land was divided into named sections and held by extended families (*kaiga*), reefs and lagoon were not (Hooper, 1985; 1990). Stone fish traps are common property, and maintained under the direction of the Council of Elders.

### *Gear Rules*

The use of stupeficients has always been prohibited (Hooper, 1985; 1990). Home-made spearguns ("Hawaiian slings") are prohibited because it is claimed that they injure many fish which are not eventually caught, such that fish gradually become scared of humans (Hooper, 1985; 1990).

### *Seasonal and Area Closures*

According to Hooper (1985, 1990), seasonal and area closures were not used traditionally in Tokelau. The sea was closed traditionally by a taboo (*ha*) on all other kinds of fishing prior to launching a skipjack-fishing expedition (Hooper, 1985; 1990). However, Toloa *et al.* (1991) mention that the Council of Elders close sections of the reef (see below). This may or may not be a traditional measure.

### *Catch Distribution Rules*

Catches were distributed through the village *ināti* system, via which all residents received equal shares (Hooper, 1985; 1990).

### *Traditional Authority*

In traditional Tokelauan social organization, two institutions were of principal importance: the "Council of Elders" (*taupulega*) and the extended family (*kaiga*), that is basically a cognatic descent group headed by a selected senior male (Hooper, 1970; Huntsman and Hooper, 1975; 1976). Each of the three villages in the nation is governed by a Council of Elders, which traditionally played the principal role in resource allocation and management. They organize communal fishing expeditions, even to the extent of allocating men to crew canoes. All canoes and gear belonged to the *kaiga* (Hooper, 1985; 1990).

### *Sanctions*

Incompetence was punished by joking and ridicule, whereas behaviour that infringed on the rights and opportunities of others was sanctioned by scolding (Hooper, 1985; 1990).

### *Traditional Conservation*

Three types of traditional marine conservation measures have been distinguished for Tokelau. These are specific measures, indirect measures, and the perfection of non-destructive fishing techniques (Toloa *et al.*, 1991).

The *lafu*, invoked by the Council of Elders, via which all fishing is banned in specific areas on the main reef, is the most explicit conservation measure. A *lafu* may be announced to permit stock recovery, or to build-up supplies in anticipation of a future need, such as for a festival.

On Nukunonu Atoll, the harvesting of turtle eggs was banned for four years (Lear, 1989) and, since the early-1970s, on Atafu Atoll the Council of Elders has banned the collecting of eggs, except for the few used to raise pets (Balazs, 1982). Prohibiting the taking of turtle eggs does not seem to have been a traditional practise (Balazs, 1982).

Other such measures are the return to the sea of undersized fish, and the ban on fishing using *bêche-de-mer* toxins, which are known to damage corals and have long-term negative repercussions on fisheries. And, although of doubtful biological validity, the obligation to tow harvested clams around the reef to release eggs demonstrates an awareness of the need for conservation for sustained management.

A range of Tokelauan practises may serve the cause of conservation indirectly. For turtles, these include the restriction to only certain highly respected masterfishermen of the right to capture copulating turtles; the deterrent effect of the long period spent fulfilling the obligation to capture nesting turtles; and the similar deterrent effect of the obligation to share turtle meat among the entire community. Pressure is relieved on reef species, which many believe should be reserved for harvesting during periods of inclement weather, by the encouragement of fishing for pelagic species, such as tuna and billfish, which are thought to be plentiful, and the capture of which elevates a fisherman's status (Toloa *et al.*, 1991).

The conscious perfection of non-destructive fishing techniques and skills has a conservational spin-off. Such skills are transmitted during the many years of training of a *tautai* (specialist), who uses only the "proper" fishing techniques, rather than those that just give results. An example, based on a detailed knowledge of octopus behaviour, is the preparation and use of an octopus stick to extract the animal, which obviates the need for the destructive crushing of the coral or the use of poison (Toloa, *et al.*, 1991). Traditional conservation practises are increasingly beset by pressures of the modern world.

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## TONGA

Since 1887, by Royal Proclamation of King George Tupou I, ownership of all territorial waters has been vested in the Crown. This was recapitulated in the *Land Act of 1927*.

However, Gifford (1929) noted that the rights to fishing both in inshore waters and further out belong to the inhabitants of the adjacent coast. Trespassers might have their traps destroyed and the catch confiscated. Gifford also observed that, at that time, the system might be breaking down.

As a consequence all fishing is under open access and, with one exception, all traditional community-based exclusive fishing rights have long-since lapsed into disuse. The exception is the recognition of an owner's exclusive rights, on payment of an annual license fee, to reef area surrounded by fish fences and for a distance of 1.6 km around them, although the right of passage is permitted. In the outer islands, residual notions of village-based rights persist, but have no practical implication these days (Fairbairn, 1992).

### References

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