

7. Community-based management measures

Community versus national fisheries regulations

In previous chapters, a case has been made that fisheries have to be managed, and that in order for fisheries to be sustainable, regulations which control fishing and fish catches will have to be imposed. To be effective, fisheries regulations must be enforced. In the case of national fisheries regulations, government staff, often fisheries or police officers, have the task of enforcing fisheries laws. In the case of community-based fisheries management, communities themselves enforce their own fisheries regulations.

This manual is concerned with encouraging communities to take conservation actions necessary to exploit seafood resources on a sustainable basis. Under such community-based management, fisheries regulations are more likely to be effective as they are enforced by communities with a direct interest in their continuation and success.

However, it must be recognised that there are many things that a local community cannot do. Some environmental problems are complex and involve activities and areas beyond the control of a local community. For example, fish catches may be falling in a particular village because silt from a nearby river is killing the corals in its lagoon. Mangroves may be dying because a sea-front road has been built without proper planning. These effects may be caused by decisions and actions taken some distance from the village. Siltation, for example, may be the result of poor farming techniques or the logging of timber in hills many kilometres away from the village.

Such problems can only be addressed by an integrated effort by government agencies and community groups working together. Integrated Coastal Zone Management (ICZM) takes into account the inter-dependence of ecosystems, and the involvement of many different agencies (for example, those responsible for agriculture, forestry, fisheries, public works and water supply) and other stakeholders. This is beyond the scope of this manual, but it may be possible for extension staff to provide the necessary link between communities and government to begin to address these issues.

Community conservation measures

In many respects, conservation measures and regulations that a village can impose on its own community will reflect and support those imposed by the government. The difference is that the measures and regulations are owned, imposed and enforced by the community. Communities must be allowed to take actions and to impose regulations that they have developed themselves (as long as these do not contradict national laws). Many communities have tradition-based controls on fishing. The following sections describe some types of fisheries regulations and controls in the Pacific, and discuss where these are applicable to village communities.

Limiting the number of fishers

In commercial fisheries, the numbers of fishers are often controlled. Often this is done by issuing a limited number of fishing licences. In the Cook Islands, for example, a set number of licences is issued for people to collect trochus. In subsistence fisheries, the method has little application.

However, some village communities in Samoa have limited the number of fishers permitted to use fence traps (see Chapter 2).

Numbers of fishers in the past were also controlled, in effect, by restrictions in access to a community fishing area. Trespassers who fished without permission in an area not controlled by their own group, would be stopped and punished by clan leaders. Some communities with strong traditional control over the marine resources are still able to practise this, but public ownership of the sea up to the high tide mark has made it legally unenforceable under the national government law. The increasing mobility and range of fishers has also made it difficult to maintain village control over who fishes in its waters.

Limiting the efficiency and types of fishing gear

The use of some highly efficient fishing methods may be restricted in the interests of conserving fish stocks and allowing more people to use the resource. Limitations on gear types may include banning a specific fishing method in particular areas, or on a particular species. For example, the use of gill nets may be banned in lagoons, or the use of scuba diving to catch lobsters may be banned. These regulations are more appropriate in subsistence fisheries (where the resource provides food for a large number of fishers) than in commercial fisheries where efficiency is more important. In Samoa, for example, some communities have placed restrictions on the use of underwater torches for spearfishing at night. In some subsistence fisheries, the survival of the resource depends on inefficient exploitation!

Commercial gillnetting has been banned by communities in parts of Fiji and this is supported by the government – in order to obtain the neces-

sary government-issued licence for commercial fishing the applicant must first produce a district administration permit which is only given with the permission of the customary fishing rights holder. So, in effect, control over the fishing area and method rests with the local community. In Tuvalu, net fishing in the lagoons is also banned or strictly controlled by chiefs in some of the outer islands.

Banning destructive fishing

Highly destructive methods of fishing, such as those involving the use of chemicals, bleaches or explosives are illegal in most Pacific Island countries. Village communities may wish to support and enforce these laws, and add others of their own. Some village communities may ban the use of traditional plant-based fish poisons (*Derris*) even though this is not banned under national law. Some communities in Samoa have banned the traditional smashing of coral to catch small sheltering fish. Local clans of Marovo lagoon in the Solomon Islands enforce prohibitions on the use of dynamite and plant poisons.

Closed areas and seasons

Closed areas can be used to protect juveniles and the spawning stock. Shallow water mangrove habitats, for instance, are known to be nursery areas for many species and are permanently closed to fishing in some coastal areas. In some countries, for example, known breeding areas for trochus are permanently closed to fishing. Fishing can be banned either during particular seasons, or in particular areas, or both. If the spawning season of a particular species is known from traditional community knowledge, for example, a closed season at the time of spawning may allow adults to breed without interference. Turtles, for

example, are protected in some countries during the egg-laying months of November to February. Closures can also be used to prevent stocks being overfished.

Villages in Vanuatu have periodically closed their fishing areas for the collection of trochus and green snails. Following a radio advertisement by a government fisheries biologist, offering to provide advice to villages interested in managing their trochus stocks, a number of villages in Vanuatu implemented harvesting closure periods (Johannes, 1998). The closures were similar to customary taboos in design and enforcement but were also based on basic biological principles explained to them by the government fisheries team.

In response to concern about the high level of exploitation of sea cucumbers for the export market in the atoll of Ontong Java in the Solomon Islands, village leaders have closed the waters for fishing for the animals during alternate years. During the closed year the lagoon is open to trochus diving (Gillet & Lam, 1999).

In Samoa, a large number of villages have chosen to establish small areas closed to fishing in part of their traditional fishing areas. By social necessity, many of these community-owned MPAs are small. In terms of total fisheries production, a small reserve is unlikely to be as effective as a large one. Larger reserves are more likely to provide suitable breeding areas for small inshore pelagic fish such as mullets and scads, but even small reserves may be beneficial for non-migratory species. For non-migratory species, the combined larval production from many small reserves is likely to be greater than that from a smaller number of large ones. Although the community-owned MPAs are small, they are large in number, often with small separating distances,

and form a network of fish refuges around the coast. Such a network may maximise linking of larval sources and suitable settlement areas and provide the means by which adjacent fishing areas are eventually replenished with marine species through reproduction and migration (King & Faasili, 1998a).

Minimum mesh sizes

Minimum mesh sizes in nets, and escape gaps in traps are applied in many fisheries to allow small individuals to escape and grow to a size at which they can reproduce at least once before capture. In many island countries, governments have imposed mesh size regulations, and rules set by local fishing communities can support and enforce these regulations. Some communities may set their own larger mesh sizes, to further reduce the catch of small fish.

Size limits (minimum legal lengths)

Limiting the size of individuals caught involves returning captured individuals smaller than a prescribed minimum size to the sea. Traditionally, size limits have been applied to allow individual fish to spawn at least once before capture. Minimum legal size limits have been applied by national governments in Pacific Islands to many species including sea cucumbers, trochus, pearl oysters, giant clams, spiny lobsters, mangrove crabs and many species of fish. Size limits are only useful in fisheries where individuals are not harmed by the catching method, such as molluscs gathered by hand, or crustaceans caught in traps. Although some shallow-water fish caught on hooks may survive well if returned to the water immediately, this type of regulation has little application to spear-caught and deepwater fish species. Fish caught

in deep water are unlikely to survive after being hauled to the surface and released. Village communities may decide to support and enforce national regulations on minimum sizes. Some villages in Samoa have set their own minimum size limits, which are larger than those set under national regulations.

Rejection of females, or spawning females

Regulations making it illegal to retain females, or females bearing eggs, can only be applied sensibly to species in which the sexes can be distinguished easily by fishers, and where the catching method does not harm the individuals caught. The sex of most fish cannot be determined by external examination. In most crustaceans the sexes are readily distinguished, and regulations making it illegal to retain egg-bearing, or "berried", lobsters and crabs are commonly used in Pacific Islands. In subsistence fisheries, the regulation may have application in certain cases. One example is where crabs are caught in traps, and females bearing eggs can be returned to the sea. However, in cases where lobsters are caught by spearing, the regulation would be of no use.

Catch quotas

Fisheries agencies may determine that, in order to protect fish stocks, total catches should not exceed a certain amount called a quota. In the trochus fishery in the Cook Islands, for example, fisheries scientists have estimated that fishermen should be allowed to catch about 30% (or about 40 tonnes) of the total trochus stock each year. Once this quota has been reached the fishery is closed. In subsistence fisheries, catch quotas have little application. However applying a daily quota, or bag limit, for particularly desirable species is a possibility.

Protecting the marine environment

Different government organisations are responsible for, and make laws to protect, the marine environment. Community actions can often complement and extend these actions. Such actions can include protecting corals and mangroves, organising the collection of crown-of-thorns starfish, controlling the removal of beach sand, and banning the dumping of rubbish in lagoon waters. Some have, or can re-vitalise, customary controls on environmentally damaging practices. In a community-based project in Samoa, over 60 villages produced their own Village Fisheries Management Plans with a range of community undertakings which differed from village to village. The most common undertakings are summarised in Table 7.1.

Table 7.1: Community actions and regulations in villages in Samoa. Figures in the right-hand column indicate the percentage of all villages using the particular action or regulation (from King & Faasili, 1999).

ACTION/REGULATION	PERCENTAGE
Banning the use of chemicals and dynamite to kill fish.	100%
Banning the use of traditional plant-derived fish poisons.	100%
Establishing small protected areas in which fishing is banned.	86%
Banning other traditional destructive fishing methods (eg smashing coral).	80%
Organising collections of crown-of-thorns starfish.	80%
Enforcing (national) mesh size limits on nets.	75%
Banning the dumping of rubbish in lagoon waters.	71%
Banning the commercial collection of sea cucumbers (Holothuroidea).	41%
Banning the capture of fish less than a minimum size.	41%
Banning removal of mangroves (in villages with mangroves).	27%
Restricting the use of underwater torches for spearfishing at night.	21%
Banning the removal of beach sand.	14%
Placing controls or limits on the number of fish fences or traps.	<10%
Prohibiting the collection of live corals for the overseas aquarium trade.	<10%
Banning the coral-damaging collection of edible anemones (<i>Actinaria</i>).	<10%
Protecting areas in which palolo worms, <i>Eunice</i> spp., are traditionally gathered.	<10%
Offering prayers for the safe-keeping of the marine environment.	<10%

Community compliance and enforcement of regulations

Under community-based fisheries management, the rules and regulations described in the previous section are enforced by village communities. Under such community-based management, fisheries regulations are more likely to be effective as they are enforced by communities with a direct interest in their continuation and success.

Village rules and regulations are set by members of a community, and are therefore usually only applicable to members of that community. In cases where people from outside a village come into local waters to fish, the community may be powerless to insist that the visitors obey local rules. However, there may be customary ways of dealing with this problem, including negotiations with the home villages of offenders. Samoa has an infrastructure which allows rural communities to make their village rules into by-laws which, after government approval, apply to all people and become enforceable under national law (Faasili, 1997).

Some villages may decide to include the fines associated with breaches of various community regulations in their Village Fisheries Management Plan. Other communities may want to have village leaders or councils set fines, or apply them on a case-by-case basis. Although it is best left for the community to decide on appropriate fines, extension staff may be asked for advice.

The first and most important aspect of enforcement is education, and prosecution should be regarded as a measure of last resort. Each Fisheries Management Committee should be encouraged to make all

members of the community familiar with any regulations, and the reasons for their imposition. However, necessary regulations must be rigorously enforced to be effective and fair. If regulations are unenforced, benefits will accrue to those who ignore the regulations at the expense of those who fish according to the rules. Penalties applied should be significant to the offender, and relevant to the offence. For example, although a small fine may be appropriate in the case of a young person catching undersized fish, the use of explosives to catch fish should attract a large fine to act as an effective deterrent. Depending on local custom, village leaders can impose fines of cash, pigs, or food on offenders.