Spearfishing in the Pacific Islands

Current Status and Management Issues

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Executive Summary

The SPC/FAO Pacific Islands Spearfishing Project

The purpose of this report is to review spearfishing in selected Pacific Island countries, identify the important species caught, ascertain the major difficulties caused by spearfishing, explore interventions to mitigate the problems, and consider the assistance likely to be required by Pacific Island countries in the management of their spearfisheries.

Approach to the study

Several days of fieldwork were undertaken in each of five Pacific Island countries: Fiji, Tonga, Samoa, Tuvalu, and the Solomon Islands. Additional spearfishing information was obtained from other Pacific Island countries, developing island countries in the Indian Ocean and Caribbean and from available literature.

Important spearfishing issues in Fiji

- Commercial spearfisheries depleting fishery resources in areas which may be quite important for village food supplies.
- The low priority given to enforcing legislation related to spearfishing.
- The exclusion of "spearing" from commercial fishing activities that require a license, and the exclusion of "spearing" by outsiders from activities that can be regulated by traditional authorities under the Fisheries Act.
- The difficulty of collecting evidence required for a successful prosecution of fishing with scuba gear
- The difficulty of villagers enforcing rules on fisheries activities that mainly occur at night
- The incompatibility of marine-oriented tourism and spearfishing, or at least commercial spearfishing
- The health risks of scuba to untrained divers
- The use of large "fish collection vessels" in conjunction with spearfishing.
- The targeting of fish spawning aggregations by spearfishers

Important spearfishing issues in Tonga

- In Tonga's open-access regime there is some concern that nothing practical can be done about the excessive fishing effort, the major element of which is spearfishing.
- There are very few controls on spearfishing, and very lax enforcement of ones that do exist
- Although the use of scuba for spearfishing appears to be contained, there is some worry that the situation may change if the beche-de-mer fishery and associated scuba use re-commences.
- It is difficult or impractical to collect the evidence required for a successful prosecution of using scuba for spearfishing.
- Some individuals are concerned about the long-term impacts of visits by industrial-scale spearfishing operations to Tonga's isolated reef areas.
- Spearfishing inside the fish fences for fish, which other people considered have already been "caught" is growing.

Important spearfishing issues in Samoa

- Balancing the need to protect Samoa's inshore fisheries from the deleterious effects of spearfishing with the political directive to allow the existing group of spearfishers to continue.
- Reconciling the village by-laws (which may ban scuba spearfishing) with the national level de-facto permission granted to a group of scuba spearfishers
- The difficulty of reducing fishing effort from a variety of inshore fishing techniques, the most important of which is spearfishing.
- Whether the export of inshore fisheries resources (an important component of which is the catch from spearfishing), is justified.

Important spearfishing issues in Tuvalu

- There is sometimes conflict between spearfishing and other gear; the contention that spearing reduces the amount of fish available for line fishing.
- The complexity of reducing Funafuti inshore fishing effort
- The concept that there are limits to inshore fisheries production is new to many Tuvaluans
- The perception by some government officials that any controls placed on inshore fishing (including spearfishing) by the Fisheries Department could be thought by the general public as being contradictory to the Fisheries Department's development efforts.
- The increased algal growth in the lagoon area around the populated centre of Funafuti could be, at least partially, as a result of the removal of herbivorous fish by spearfishing.

Important spearfishing issues in the Solomon

- Fishing is an important component of inshore fishing effort and, even in areas away from the urban centres, there is the perception that inshore resource are declining due to fishing pressure.

Islands

- Nighttime spearfishing with flashlights is having a major impact on parrotfish and spawning aggregations of groupers.
- There is considerable concern about coral damage while spearfishing.
- At least some fisheries officers feel that spearfishing is wasteful because of the damage to fish flesh and because a spear hole results in faster bacterial decomposition.

Other Pacific Island countries

Attempts were made through correspondence to acquire information on spearfishing and its management from Pacific Island countries besides those visited (Fiji, Tonga, Samoa, Tuvalu, and the Solomon Islands). These responses are summarized in Appendix 1. Some important features are:

- Spearfishing appears important in all Pacific Island countries and territories. In no country is spearfishing unimportant, nor does any country completely ban spearfishing like some countries in other regions of the world.
- Other than bans on the use of scuba for spearfishing, there appear to be few, if any, national level rules that apply specifically to spearfishing.
- In some of the more affluent countries/territories of the region (e.g. Guam, New Caledonia, parts of the Cook Islands) recreational spearfishing is quite important.
- Research on aspects of spearfishing by the government fisheries agencies has been carried out largely in the French and American territories. Most of the research relevant to spearfishing in independent countries has been undertaken by NGOs or as academic research.

American Samoa and Satawal, FSM

Information on spearfishing obtained from two locations was especially informative and provided some insight as to the justification for management intervention in spearfishing in two very different environments.

PROCFish-C

PROCFish-C is an SPC project that is establishing a regional database on the current status and the current user level of reef and lagoon resources and possibly identifying useful indicators to help improve subsistence and small-scale artisanal fisheries management in Pacific Island countries. While spearfishing is not the focus of the project, information on spearfishing activity has been collected during the project's socio-economic field surveys. The rural/subsistence orientation of the PROCFish/C socio-economic surveys is useful in the context of the SPC/FAO spearfishing study. The PROCFish/C focus complements the information collected during the field visits of the spearfishing study, which were to some extent oriented to urban/commercial spearfishing, with the combined result being a more accurate overview of the spearfishing situation in the region.

Industrial Spearfishing

Spearfishing is generally thought of as a small-scale fishing activity. But what about a 40 metre vessel with dozens of spearfishers? This sort of operation may not be rare in the Pacific Islands region.

Spearfishing in the Indian Ocean and the Caribbean,

From the limited information obtained on spearfishing in the Indian Ocean and the Caribbean, a few comments can be made. It appears that there are generally more restrictions on spearfishing in the islands of the Caribbean and Indian Ocean than in the Pacific Islands. The tourism industry seems to have had an important role in promoting these restrictions. It should be noted that the influence of indigenous people is much reduced or absent in the islands of the Caribbean and southwest Indian Ocean.

Species composition of the spearfishing catch

Some observations can be made on the species composition of the spearfishing catch in several studies cited: These include:

- The families Acanthuridae and Scaridae seem to be responsible for most of the spearfishing catch in most of the studies.
- The families Siganidae and Serranidae seem quite important in some countries, but apparently much less important in others.
- A large number of other species make up the remainder of the catch.

Selectivity of spearfishing

The concept that selectivity is good and virtuous comes from two ideas: (1) that through selectivity, discards are reduced/avoided, and (2) selecting for species that can support fishing pressure. This virtue concept is less relevant in fisheries where there are no discards, or where fishers are selecting for species that cannot support the pressure. Specifically with respect to spearfishing selectivity, the available information indicates that, despite spearfishing gear having selective qualities, the gear is used rather non-selectively.

The selectivity of spearfishing as compared to gillnetting

- A limited amount of information suggests that spearfishing catching are made up of slightly more fish families or species than that of gillnetting.
- It appears that a more crucial issue than selectivity in comparing spearfishing to gillnetting in the Pacific Islands is whether the specific fish populations exploited by the particular gear can support the fishing pressure.

Sources of fishing mortality for the main spearfishing species

A catch/gear survey in Tonga shows that spearfishing is responsible for almost all of the fishing mortality on six out of the seven species commonly caught by spearfishing; about half of the groupers were caught by methods other than spearfishing.

The catch of low trophic level herbivorous fishes by spearfishing

- The Tonga study indicates that, for the herbivorous fish common in the inshore catch, spearfishing is much more important than line fishing as a source of fishing mortality.
- The removal of herbivorous fish from an area can cause serious problems associated with increased algal growth

Major difficulties with spearfishing

The ten most important spearfishing difficulties appear to be the contribution of spearfishing to inshore over-fishing, the use of scuba in spearfishing, night spearfishing, industrial spearfishing, negative interaction with line fishing, poaching and difficulties of surveillance, devastation of certain species, devastation of spawning aggregations, incompatibility of spearfishing with marine tourism, and increased algal growth due to the removal of herbivores.
Table 10 summarizes these difficulties and lists some successes/failures in their mitigation.

The contribution of spearfishing to inshore over-fishing

The problem of inshore over-fishing is complex and there are no easy solutions. With respect to spearfishing, an important points are:

- Management interventions dealing spearfishing alone are unlikely to be effective at addressing inshore over-fishing, but rather spearfishing must be treated as one of many fishing methods that contribute to the problem.
- An appropriate role of the national fisheries agency seems to be in facilitating the effort reduction process and providing information to communities, rather than attempting active management.

Scuba spearfishing

Problems include reducing fish populations to low levels and diminishing or eliminating the positive effects of deep water acting as a sanctuary for fish. Also important is that, despite the best attempts of government agencies, allowing the use of scuba in small-scale fisheries will inevitably result in the use of that gear by unqualified and/or careless people and the accompanying injury and death.

What works in the management of spearfishing ?

Suggestions are offered on three levels:

- What seems to mitigate specific problems
- What general types of rules and regulations work
- Some specific examples of management interventions that have apparently been successful

Responsive management needed

Not only does enforcement of existing legislation relevant to spearfishing need to be more rigorous in most countries, but as new spearfishing issues arise, measures to deal with these issues need to be explored, promoted, and championed to fruition.

FAO Code of Conduct for Responsible Fisheries

- FAO provided about two-thirds of the funding for the present SPC/FAO Pacific Islands Spearfishing Project. It was therefore thought appropriate to identify Code of Conduct issues that are especially relevant to spearfishing in the Pacific Islands.
- Much of the Code is applicable to spearfishing in the Pacific Islands. Sections of particular relevance are identified.

A special SPC initiative on spearfishing in the future?

As an alternative to a having a special spearfishing initiative, another strategy that may warrant consideration is to analyse the array of important coastal fisheries management issues, determine the areas where regional and national expertise is lacking, and carry out several specialised “mini-initiatives” in those areas.