Fiji

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INTRODUCTION

This review of marine capture fisheries management in Fiji is a component of the FAO's project on the state of the world marine capture fisheries management. The overall goal of the project is to provide an informative reference to decision makers, fishery managers, and stakeholders.

Information in this review was obtained from a variety of sources, including interviews with senior staff of Fiji's Department of Fisheries, the Department's Annual Reports, other recent documentation, Fiji portions of regional reviews of fisheries in the Pacific Islands, and the author's experience in Fiji. The Fiji country profile and management brief on the FAO website (prepared by the author) provided additional information.

POLICY FRAMEWORK

The objectives of fisheries management in Fiji do not appear in the fisheries legislation, and therefore the objectives must be obtained or inferred from other sources:

- The **broad objectives** of management interventions in the fisheries sector are suggested in the mission statement of the Fisheries Department: "to provide sustainable management and development of the nation's fishery with the aim to create employment, increase foreign exchange earnings, and improve the standards of the rural people through capture fisheries development and a well-coordinated support service program".
- For the **tuna fisheries,** management objectives appear in the recently-adopted Fiji Tuna Development and Management Plan: "The objectives of the Plan are to provide for maximum sustainable benefits to Fiji from the resource. This implies setting the harvest levels that will not damage the stock and putting into practice a licensing policy that will ensure the maximum benefits from fishing are enjoyed by Fijians. The government has also taken the opportunity to use the Plan to help improve the disparity within the segments of the Fijian population by providing preferential criteria for Indigenous Fijians to have access to licenses."
- For the **artisanal fisheries**, there are no formal objectives in the legislation or in management plans, but judging by past activities of the Fisheries Department, the management objectives are to promote sustainability of resources, maximize economic returns, and assure that these commercial fisheries do not negatively interact with subsistence fisheries.
- For the **subsistence fisheries**, there are no formal objectives for most of the 406 traditional management areas, but subsistence fisheries are managed generally for the protection of village food supplies.

Although the fisheries legislation does not contain specific objectives of fisheries management, it does provide some elements of a framework for management. The original Fisheries Act dates from 1942, with the Act and subsidiary legislation undergoing many revisions, the latest in 2000. Most revisions deal with complications of specific fisheries, rather than incorporating recent international fisheries management norms/mandates. A new Fisheries Management Bill is currently under consideration by the national parliament.

Some non-fisheries national legislation has a large effect on fisheries management objectives:

- Under Clause 4 of Fiji's 'Deed of Cession' of 1881, the ownership of islands, waters, reefs and foreshores is vested in "Her Majesty and Her Successors". Although traditional communities presently have use rights, ownership of inshore fishing areas is legally vested in the government. This is important as the management objectives could be somewhat different if the managing communities were actually the resource owners.
- The Social Justice Act passed by Parliament in December 2001 has had an effect on the fisheries management; promotion of affirmative action for indigenous Fijians is now an objective of fisheries management.

LEGAL FRAMEWORK

At the national level[1], the Fisheries Department of the Ministry of Fisheries and Forests is responsible for fisheries management. The Minister is given significant powers in that he may make regulations under the Fisheries Act which, after Cabinet discussion and approval, are promulgated by publication in the Fiji Gazette.

At the local level, traditional authorities are largely responsible for the management of inshore resources. Although the Fisheries Act indicates that a Divisional Commissioner is able to make certain management decisions, in practice these decisions (e.g. deciding whether to grant a license to fish in an area) are usually made by the local traditional authorities.

Responsibility for monitoring and enforcement is addressed by the Fisheries Act which states: "Any licensing officer, police officer, customs officer, honorary fish warden and any other empowered in that behalf by the Minister may enforce provisions of the Act". In practice, most of the enforcement activities are undertaken by fisheries officers, the police and the navy, with the latter being mainly confined to the offshore fisheries.

At the local level, enforcement powers are vested in traditional community leaders. When enforcement issues arise which involve individuals outside the concerned communities, fisheries officers or the police may be asked to intervene.

The fisheries legislation is silent on cooperation with other agencies involved in management of fisheries resources. Most overlap occurs with the Environment Department in the areas of endangered marine species, coral harvesting, and mangrove protection. Although there is some concern about this overlap, there appears to be more of a problem with under-cover than over-cover ("more gaps than overlap") in the Fisheries/Environment relationship.

There is non-fisheries legislation which has an impact on fisheries management. For the tuna fisheries, the vessel safety requirements under the Marine Act has a major effect on which vessels are able to participate in the fisheries. On the other hand, commodity export regulations are an important management tool for the artisanal fisheries. For example, restrictions on the export of unprocessed trochus shells are made by Schedule 8 of Customs Regulations.

STATUS OF THE FISHERIES

There is a huge number of exploited fish stocks in the country. For the purpose of this review, the convention established by the Fiji Fisheries Department in their Annual Report for identifying fisheries will be followed. In this scheme, there are six "fisheries" in Fiji:

[1] In Fiji with respect to fisheries management, the term "national" usually refers to the entire country (including the distant island of Rotuma); the term "local" refers to the 406 traditional inshore management areas ("qoliqoli"); and the term "regional" has a supra-national connotation as it refers to the Pacific Island region, which is made up of 22 countries and territories.

TABLE 1
Major fisheries in Fiji

	Gross Value of Catch (2002 US dollar equivalent)	Gross Landings of Catch (tonnes)	Year (Value, Landings)
Industrial tuna longline fishery	25 000 000	5 000	2001
Industrial tuna pole/line fishery	36 000	90	2001
Artisanal finfish fishery	9 000 000	4 329	2001
Artisanal non-finfish fishery	2 500 000	2 756	2001
Subsistence fishery	24 675 000	21 600	1999
Private recreational gamefish fishery	Unknown	Unknown	
Commercial charterboat sportfishing	Unknown	Unknown	

Sources: Fisheries Department (2002), Gillett and Lightfoot (2001)

- Industrial fisheries:
  - Tuna pole and line fishery
  - Tuna longline fishery
- Artisanal fisheries:
  - Finfish
  - Non-finfish
- Other
  - Subsistence fishery
  - Sports fishery (recreational, commercial)

The industrial tuna fisheries target bigeye, yellowfin, albacore, and skipjack. The most important species in the artisanal fisheries (finfish, non-finfish) are beche de mer, trochus, aquarium fish, coral, snapper, and various species of inshore finfish, especially scombrids, lethrinids, carangids, and mullets. The subsistence fishery targets mainly finfish, beche de mer, octopus, seaweed, lobster, mud crab, and various bivalve molluscs. The sports fishery usually targets tuna and large coastal pelagics.

It should be noted that under the Fisheries Act, a "fish" is "any aquatic animal whether piscine or not, and includes shellfish, sponges, holothurians, sea urchins, crustaceans and turtles and their eggs".

The relative importance of the major fisheries in recent years is as in Table 1.

There are about 97 industrial tuna vessels, 830 registered artisanal vessels, an unknown number of subsistence vessels, and about 75 sportfishing vessels. (Fisheries Department 2002, Gillett 2003, Whitelaw 2001). Some artisanal, subsistence, and recreational fishing does not involve the use of vessels.

It has been estimated that fishing contributes about US$42.9 million to Fiji's gross domestic product (GDP) of US$1.8 billion, or about 2.4 percent (Gillett and Lightfoot, 2001).

MANAGEMENT ACTIVITY

Management measures for fisheries in Fiji are developed in a variety of ways. The industrial scale tuna fisheries are managed under the Fiji Tuna Development and Management Plan. That plan provides the details of the Fisheries Department's arrangements for management (total allowable catch (TAC), limit on the number of licenses issued, criteria for distribution of licenses according to government objectives), whereas the process of management can be inferred by the "implementation arrangements" in which activities and responsibilities are specified for each objective of the plan. The major focus of the plan (adopted in 2002) is to limit fishing effort during a two-year period of improving the catch and effort database so that resource managers have better information for management. After a two-year period, the plan anticipates that a "longer term and more complex approach to management of the tuna fishery" will be developed.

BOX 1
Flow on Benefits from a Fishery Management Plan

The concept of managing the tuna fisheries under formal plans has worked well in Fiji and has encouraged positive changes with respect to transparency, effectiveness, and stakeholder orientation. The preparation of the Plan was conducted in 2001/2002 as part of Forum Fisheries Agency's programme of developing national tuna management plans and was funded under the Canada-South Pacific Oceans Development Programme. The concept has been effective to the point that political will has been generated to bring the artisanal fisheries under plan management. Initiatives are underway to begin introducing such management plans in early 2004

At the other end of the management spectrum, measures for management of the subsistence fishery are quite different. Traditional authorities, usually a single hereditary chief, in each of the 406 fisheries management areas, characteristically make management decisions after considering the views of their resident stakeholders. They sometimes receive technical advice from the Fisheries Department (which is expected to increase in the future) and a recent trend is for some of the areas to have an external partner who assists in management activities, often by promoting the concept of marine protected areas.

The process of management of artisanal fisheries is less clear. The types of management measures which may be taken are given in the Fisheries Act, and specific measures are given in the regulations. The process whereby an issue is developed into a regulation is not formally specified, but it is often triggered by a crisis or resource depletion. It is anticipated that artisanal fisheries will be increasingly managed under plans (see Box 1). In practice, licensing, a major management tool, involves procedures that are different for fishing inside customary fishing rights areas (involves negotiation with traditional authorities) and outside demarcated areas (involves negotiation with government authorities).

The two tuna fisheries (longline, pole/line) and the subsistence fisheries are closely managed, albeit by very different means. The artisanal fisheries are managed to the extent that fishers are licensed and they must follow the applicable Fisheries Regulations. Likewise, the recreational fisheries are managed to the extent that the fishers must follow the applicable Fisheries Regulations. It could therefore be considered that all six of the fisheries are "managed". Similarly, no important fishery resources of Fiji escape some form of management, but the tuna resources are the only ones to be presently covered by a formal management plan.

The degree of management has evolved slowly over the past decade. A rudimentary tuna management scheme was adopted by Cabinet in 1994 and the Fiji Tuna Development and Management Plan was adopted in 2002. In general, there has not been a remarkable change in the level of management for the other fisheries in recent years.

Stocks are assessed to varying degrees for the various fisheries. The Oceanic Fisheries Programme of the Secretariat of the Pacific Community (a regional organization based in Noumea) carries out stock assessment on the region's tuna resources, including that of Fiji. For the subsistence fisheries, the local residents are well aware of changes in abundance of the important fishery resources and this knowledge is often the basis management action. The Fisheries Department, to the extent possible, carries out resource surveys for specific resources (e.g. giant clams, beche de mer, live reef food fish) and for specific areas, including resource inventories of traditional management areas. Some of this work is in cooperation with external partners, such as the Coastal Fisheries Programme of the Secretariat of the Pacific Community.

Statements on the degree of exploitation (overfished, depleted, fully utilized) are difficult to make. Tuna catch rates characteristically show considerable fluctuation and, during the past two years, seem to be experiencing a downward trend (except for skipjack), which could be due to excess fishing effort in Fiji or in the larger region, environmental changes, or a combination of these factors. For the artisanal fisheries, the two notable patterns are (1) the high value species (clams, beche de mer, etc.) appear over-exploited and (2) most food fishes near urban centres appear over-exploited. Subsistence fishers report declines in many important fishery resources, presumably due to population growth or commercialization. In general, it could be stated that all major fishery resources in Fiji, with the exception of skipjack, could be considered over-exploited (especially those resources easily exploited by artisanal fishers) or fully utilized.

At present there is no legal requirement for fishery managers to adopt measures to address over-fishing and rebuild depleted stocks.

The basic management tool specified in the Fisheries Act is the requirement for a license. In the tuna fisheries there is a TAC, which is divided among a limited number of licenses creating a limited entry fishery. For the artisanal fisheries, the following management tools are commonly used:

- marine protected areas (more common in recent years);
- gear size restrictions (especially for fixed gear);
- gear type restrictions;
- size restrictions (minimum and maximum sizes for some species (e.g. trochus));
- license requirements (both inside/outside demarcated traditional areas); and
- export restrictions (imposed by Fiji and by importing countries).

For the subsistence fishery, a large variety of management measures are used in the 406 customary fishing rights areas. The most important management measures in place are the option of excluding outsiders from the area, requirement for payment for fishing by outsiders, closures of reef areas to all fishing activities for certain periods, bans on certain gear types, and prohibition of destructive fishing practices. Recently, the use of marine protected areas has increased, often promoted by non-governmental organizations (NGO). (Gillett, 2002).

There appear to be no noticeable trends in the use of management tools, other than the increased use of marine protected areas in the traditional management areas and some increase in export restrictions due to CITES and requirements of importing countries (e.g. aquarium fish, coral).

The major "gear" prohibition concerns destructive fishing – all forms of poisons and explosives are prohibited for fishing purposes.

There are some indications that the marine protected areas are resulting in increases in abundance of key species. For example, local residents in the Verata area attribute an increase in the shellfish *Anadara* to the recent establishment of a marine protected area and associated measures.

Opinions vary on the principal impediments to more effective management. Important constraints appear to include the lack of sufficient political will, unrealistic perceptions of large development potential, lack of an effective management framework, and the low capacity of Fisheries Department staff.

COSTS AND REVENUES OF FISHERIES MANAGEMENT

Because the costs of fisheries management are not separated in the budget from all costs of running the Fisheries Department (which include some major economic development work) it is difficult to estimate management costs and changes in these costs.

Senior staff of the Department of Fisheries and the leadership of the Ministry of Fisheries and Forests indicate that, both in real and nominal terms, the budget and cost of management have increased. They feel this is due to the increase planning for fisheries management, stakeholder consultation, monitoring, enforcement, litigation,

conflict management, and in modifying fisheries legislation. No summary data is available from revenue generated specifically by fisheries management (from the various charges to participants in the various fisheries); these are not on a cost recovery basis, but rather they are deposited in the general government fund.

As an alternative measure of management cost changes, the difference in the number of filled established positions at the Fisheries Department over a decade could be considered a proxy for the real change in costs of management. The 1992 Annual Report lists 118 filled established posts, while the 2003 Annual Report list 93 filled established posts. There could, however, be a shift in focus from development activities to management activities.

IMPLEMENTATION OF GLOBAL FISHERIES MANDATES AND INITIATIVES

Fiji was the first country to sign and ratify the United Nations Convention on the Law of the Sea (10 December 1982). To implement the fisheries-related provisions of the convention, Fiji has continually contributed data to, and participated in, regional stock assessment of tuna to determine allowable catch so that the resource is not endangered by over-exploitation. The Minister responsible for fisheries establishes a total allowable catch of fisheries resources in the EEZ, and this determines Fiji's capacity to harvest this catch. The country licenses foreign fishing vessels to harvest the remainder in accordance with the convention.

Fiji signed and ratified the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea (UNCLOS) relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks on 4 December 1995 and 12 December 1996 respectively. To implement provisions of the agreement, Fiji has taken several steps including incorporation of the precautionary principle in its fisheries management arrangements, a prohibition on illegal, illegal, unregulated, and unreported (IUU) vessels offloading catch in Fiji ports, and using boarding and inspection procedures specified in the convention. Key principles of the Fish Stocks Agreement were constantly emphasized by Fiji and other Pacific Island countries during the negotiations leading up to the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. Fiji has signed and ratified this convention.

Fiji is not a party to the Compliance Agreement.

Fiji has not taken specific steps to directly implement the recently adopted International Plans of Action relating to capacity management, IUU fishing, shark management, or seabird by-catch in longline fisheries. However, some of the concepts embodied in the various IPOAs are being promoted through various laws, regulations, and policies.

PARTICIPATION IN REGIONAL FISHERY BODIES

Fiji participates in the work of the Forum Fisheries Agency (FFA) and the Secretariat of the Pacific Community. For the FFA, this includes attendance at the Forum Fisheries Committee Meetings several times per year, and participation in the various FFA technical meetings and activities. In recent years much of this activity is associated with spearheading regional fisheries management initiatives, including establishing regional positions on the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. FFA represents one of three major sources of legal assistance that Fiji can utilize in drafting fisheries management legislation, the others being FAO and the Asian Development Bank.

Fiji participates in two aspects of the work of the SPC. In the Oceanic Fisheries Programme, Fiji cooperates by attending the annual Standing Committee on Tuna and Billfish, furnishing data and participating in activities associated with assessment of the region's tuna resources. In the Coastal Fisheries Programme, in addition to receiving substantial technical assistance, Fiji participates by attending the annual Heads of

Fisheries Meeting, contributing to technical workshops, and supporting in-country work of the Programme.

Regionally-agreed fisheries management measures include:

- In licensing for fishing vessels, countries will insist on the Harmonised Minimum Terms and Conditions for Foreign Fishing Vessel Access (MTCs)
- Multilateral access terms for the purse seine fleet of the USA as per the Treaty on Fisheries Between the Governments of Certain Pacific Island States and the Government of the United States of America.
- Reciprocal fisheries law enforcement as per the Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region

Implementation of these measures does not always involve legal mechanisms. For example, the MTCs simply form part of the licensing policy of the Fisheries Department. When a legal mechanism is required (US tuna treaty, Niue Treaty), these follow the general legislative procedure of the government (no special procedures for fisheries measures), which appears timely. Implementation by the Fisheries Department normally follows soon thereafter.

SUMMARY AND CONCLUSIONS

The management of Fiji's industrial, artisanal, and subsistence fisheries are quite distinct with respect to objectives, legal foundation, processes, and tools. The industrial and subsistence fisheries have very active management, albeit by very different means. The other fisheries of the country are managed, at least to the extent that they must comply with the relevant provisions in the Fisheries Act and Fisheries Regulations.

The major changes in fisheries management in Fiji during the past decade include:

- A movement towards management of fisheries by plan, largely inspired by the recent tuna management plan.
- Increased use of marine protected areas in the management of inshore fishery resources by communities.
- Greater participation by the Fisheries Department, other government agencies, and NGOs in assisting communities to manage their coastal resources.
- Growing recognition that most major fishery resources in Fiji could be considered fully utilized or over-exploited.
- Some increase in export restrictions due to CITES and importing countries.

The deficiencies of the Fisheries Act with respect to fisheries management are numerous and have been acknowledged. This is being addressed through the Fisheries Management Bill, now being considered by the national parliament.

REFERENCES

FFA. 2002. Regional Compendium of Fisheries Legislation. Forum Fisheries Agency, Honiara.

Fisheries Department. 2001. Annual Report for the Year Ending 2001. Parlimentary Paper No. 49 of 2002.

Gillett, R. 2002. Pacific Island Fisheries: Regional and Country Information. Asia-Pacific Fishery Commission, Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok, Rome, 168 pages.

Gillett, R. 2003. Domestic Tuna Industry Development in the Pacific Islands: The Current Situation and Considerations for Future Development Assistance. Forum Fisheries Agency, Honiara, 198 pages.

Gillett, R. and C. Lightfoot. 2001. The Contribution of Fisheries to the Economies of Pacific Island Countries. Pacific Studies Series, Asian Development Bank, World Bank, Forum Fisheries Agency, Secretariat of the Pacific Community, 218 pages.

Whitelaw, W. 2001. Country Guide to Gamefishing in the Western and Central Pacific. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea.

APPENDIX TABLES

Current Management of Marine Capture Fisheries in Fiji

Level of Management	% Fisheries Managed	% with Fisheries Management Plan	% with Published Regulations	Trends in the number of Managed Fisheries over ten yrs. (increasing/decreasing/unchanged)
National	100	33.3	33.3[1]	Unchanged
Regional	N/A	N/A	N/A	N/A
Local	100	< 1	0	Unchanged

[1] Only the tuna fisheries have specific regulations, but there are "published regulations" which are applicable to all fisheries.

Summary information for the largest fisheries (by volume) in Fiji

Category of Fishery	Fishery	Volume tons	Value* US$	% of Total Volume Caught**	% of Total Value Caught**	Covered by a Management Plan? (Yes/No)	# of Participants	# of Vessels
Industrial	1 Tuna longline fishery	5 000	25 000 000	99	99	Yes	865	96
	2 Tuna pole and line fishery	90	36 000	2	1	Yes	25	1
Artisanal	1 Finfish	4 329	9 000 000	15	25	No	5 353[1]	
	2 Non-finfish	2 756	2 500 000	9	7	No	Included in above	
	3 Subsistence fishery	21 600	24 675 000	76	68	No	30 000[2]	Unknown[3]
Recreational	1 Private recreational gamefishing	Unknown	Unknown	Unknown	Unknown	No	Unknown	> 50[4]
	2 Commercial charterboat sportfishing	Unknown	Unknown	Unknown	Unknown	No	Unknown	20-30

[1] There were 6 246 people participating in all non-subsistence fisheries (Gillett 2002) and fewer than 893 people participating in industrial fisheries (Gillett, 2003).
[2] Source Gillett (2002)
[3] Not all fishing is from vessels
[4] Source: Wadelaw (2001)
* Value in 2002 U.S. Dollars.
** % values are based on totals for each category of fishery.

Use of Fishery Management Tools within the largest fisheries in Fiji

Category of Fishery	Fishery	Restrictions				License/ Limited Entry	Catch Restrictions	Rights-based Regulations	Taxes/ Royalties	Performance Standards
		Spatial	Temporal	Gear	Size					
Industrial	1 Tuna longline fishery	No	No	No	No	Yes	Yes	No	No	No
	2 Tuna pole and line fishery	No	No	No	No	Yes	Yes	No	No	No
Artisanal	1 Finfish	Yes	No	Yes	No	Yes	No	Yes	No	No
	2 Non-finfish	Yes	No	Yes	No	Yes	No	Yes	No	No
	3 Subsistence fishery	Yes	No	Yes	No	Yes	No	Yes	No	No
Recreational	1 Private recreational gamefishing	No	No	Yes	No	No	No	Yes	No	No
	2 Commercial charterboat sportfishing	No	No	Yes	No	No	No	Yes	No	No

Costs and Funding Sources of Fisheries Management within the largest fisheries in Fiji

Category of Fishery	Fishery	Do Management Funding Outlays Cover			Are Management Funding Sources From		
		R&D	Monitoring & Enforcement	Daily Management	License fees in fishery	License fees from other fisheries	Resource rents
Industrial	1 Tuna longline fishery	Yes	Yes	Yes	Note[1] (for all fisheries)		
	2 Tuna pole and line fishery	Yes	Yes	Yes			
Artisanal	1 Finfish	Yes	Yes	Yes			
	2 Non-finfish	Yes	Yes	Yes			
	3 Subsistence fishery	Some	No	No			
Recreational	1 Private recreational gamefishing	No	No	No			
	2 Commercial charterboat sportfishing	No	No	No			

[1] The management funding is from the general government fund; it is not recovered from fees/rents

Compliance and Enforcement within the largest fisheries in Fiji

Category of Fishery	Fishery	VMS	On-board observers	Random dockside inspections	Routine inspections at landing sites	At-sea boarding and inspections	Other
Industrial	1 Tuna longline fishery	Yes	Yes	Yes	Yes	Yes	
	2 Tuna pole and line fishery	No	Yes	Yes	Yes	Yes	
Artisanal	1 Finfish	No	No	Yes	Yes	No	
	2 Non-finfish	No	No	Yes	Yes	No	
	3 Subsistence fishery	No	No	No	No	No	
Recreational	1 Private recreational gamefishing	No	No	No	No	No	
	2 Commercial charterboat sportfishing	No	No	No	No	No	

Capacity Management within the largest fisheries in Fiji

Category of Fishery	Fishery	Does overfishing exist?	Is fleet capacity measured?	Is CPUE increasing, constant or decreasing?	Have capacity reduction programmes been used?	If used, please specify objectives of capacity reduction programme
Industrial	1 Tuna longline fishery	Note[1]	No	Note[2]	No	
	2 Tuna pole and line fishery	No	No	Note[3]	No	
Artisanal	1 Finfish	Yes	No	decreasing	No	
	2 Non-finfish	Yes	No	decreasing	No	
	3 Subsistence fishery	Yes	No	decreasing	No	
Recreational	1 Private recreational gamefishing	No	No	Note[4]	No	
	2 Commercial charterboat sportfishing	No	No	Note[5]	No	

[1] CPUE has dropped recently and this may or may not be due to overfishing, and if any overfishing is occurring, this may be due to fishing outside of Fiji
[2] All tuna fisheries have characteristically much variation in CPUE, much of which could have no relationship with effort
[3] All tuna fisheries have characteristically much variation in CPUE, much of which could have no relationship with effort
[4] No CPUE data are recorded, but some notion of falling catch rates
[5] No CPUE data are recorded, but some notion of falling catch rates

Micronesia (Federated States of)

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INTRODUCTION

This review of marine capture fisheries management in the Federated States of Micronesia (FSM) is a component of the FAO's project on the state of the world marine capture fisheries management. The overall goal of the project is to provide an informative reference to decision makers, fishery managers, and stakeholders.

Information in this review was obtained from a variety of sources, including interviews with senior staff of the national and state agencies involved with fisheries management, annual reports, other recent documentation, FSM portions of regional reviews of fisheries in the Pacific Islands, and the author's experience in FSM. The FSM country profile and management brief on the FAO website (prepared by the author) provided additional information.

POLICY FRAMEWORK

The objectives of fisheries management in FSM vary considerably depending on the level of government. In FSM there are three levels which have special significance for fisheries management:

- **National government**: has jurisdiction over fisheries management in the zone between the island baselines and the outermost limits of the exclusive economic zone.
- **State governments**[1]**:** the four states (Chuuk, Kosrae, Pohnpei, and Yap) have jurisdiction over fisheries management in the waters in their respective 12-mile zones. Each state has its own administrative organisations, several agencies involved in fisheries, and its own plans for fisheries development and management.
- **Local governments:** In some of the states, local communities have a high degree of autonomy in the management of nearshore fisheries resources.

In practical terms, the national government manages the industrial tuna fisheries, in which most of the participating vessels are from distant water fishing nations. The objectives of national-level fisheries management are set out in two locations:

- Title 24 of the FSM Code, also known as the Marine Resources Act of 2002: It indicates that management measures should be adopted that promote the objectives of (a) utilizing the fishery resources of the Federated States of Micronesia in a sustainable way; (b) obtaining maximum, sustainable economic benefits from these resources; and (c) promoting national economic security through optimum utilization of resources.
- The Plan for Management of Tuna in FSM (adopted December 2001): It gives specific objectives for the management of the tuna resources, the only fishery resource managed on a national basis. These objectives are (a) Ensure that the tuna catch does not exceed sustainable levels; (b) Obtain national revenue from foreign fishing access agreements; (c) Support development of FSM-owned and/or foreign FSM-based fishing enterprises; (d) Encourage investment in enterprises

[1] In FSM, as well as in most of the South Pacific, the term "regional" has a supra-national connotation as it refers to the Pacific Island region, which is made up of 22 countries and territories.

related to tuna fisheries; (e) Promote employment opportunities; and (f) Enhance international relationships beneficial to FSM.

The objectives of fisheries management at lower levels of government are not as well articulated and therefore must be inferred from context. In most of the states, the common objectives appear to be prevention of destructive fishing, deterring of over-harvesting, and protection of endangered species. The objectives of management at the village level largely revolve around assuring the sustainability of local marine foods.

The revision of the national fisheries legislation (Title 24 of the FSM Code) took place over several years, starting in the late 1990s and was complete when the new law was adopted by Congress in early 2002. Recent international fisheries management norms/mandates are incorporated in the new legislation – specific reference is made to the UN Fish Stocks Agreement. The Code of Conduct for Responsible Fisheries is not referred to – this is likely to be because FSM was not at that time a member of FAO.

Non-fisheries legislation has a large effect on fisheries management in FSM. The FSM Constitution (Article IX) states that the national government has the power to regulate ownership, exploration, and exploitation of natural resources within the marine space of FSM beyond 12 miles from island baselines. Within the 12 mile zones the states have this power, including the establishment of any objectives for fisheries management. Because of this dichotomy, government interventions in the fisheries sector tend to be oriented to fisheries development in the 12 mile zones, while in the exclusive economic zone (EEZ) the generation of government revenue in the form of access fees for foreign fishing activity is the primary concern.

Much work in the past decade has been done in conjunction with establishing a fisheries policy at the national level. This has included substantial input from the Asian Development Bank, the World Bank, and domestic sources. A national consensus on the form and function of a fisheries policy has yet to be achieved[2].

LEGAL FRAMEWORK

The legal framework for fisheries management in the country is established by the FSM Constitution, the national fisheries law, state fisheries law, and in some locations, traditional customs.

As mentioned above, the FSM Constitution clearly establishes a division in fisheries management jurisdiction between the national government and state governments, based on the 12-mile limit. Title 24 of the FSM Code establishes an authority to carry out the management functions, the National Oceanic Resources Management Authority (NORMA). Title 24 also specifies certain principles to be followed by NORMA.

Each of the states has its own legislation dealing with fisheries management and development, and with the agencies that perform fisheries management functions. The states, laws, and agencies[3] are:

- **Chuuk State**: Fisheries Act, Department of Marine Resources.
- **Kosrae State**: Marine Resources Act of 2000, Kosrae Department of Agriculture, Land and Fisheries.
- **Pohnpei State**: Marine Resources Conservation Act 1981 and Fisheries Protection Act 1995.
- **Yap State**: Public Law 06-01-07, Yap State Department of Resources and Development.

[2] An analysis of three FSM fisheries policy initiatives (ADB, 2000) shows three very different perceptions of what constitutes a "fishery policy": (a) Objectives and strategies for tuna fisheries management, (b) Establishing a government position on two important issues so as to facilitate the commercial development of tuna fisheries. (c) An affirmation by Congress of shifts in its attitude towards certain aspects of the fisheries sector.

[3] In most FSM states there is a proliferation of agencies involved with fisheries. Those named here are the lead agencies in fisheries management.

In some of the states, most notably Yap but also in the isolated islands of other states, local traditional leaders have considerable authority over the management of fisheries. Although this has mostly not been codified or incorporated into legislation, it is recognized by the legal system as long as it does not conflict with higher level laws and regulations.

The responsibility for monitoring usually rests with the national/state fishery agencies. The Maritime Wing of the National Police enforces all laws in the EEZ, including fisheries laws. Within the 12-mile zone the four states each have fisheries officials and state police for enforcement. Although the national fisheries management scheme is often used as a model for other countries in the region, fisheries management at the state level has many problems, much of which is associated with enforcement.

Coordination of national/state fisheries management efforts is mainly an issue in the tuna fisheries. Specifically, it is important for management of tuna resources inside state waters, interaction between offshore and coastal tuna fisheries, data sharing, cooperation in enforcement, and the utilization of the national agency's expertise in licensing foreign tuna fishing vessels. In the past informal cooperation at the initiative of NORMA provided most of the coordination. Recently, an annual FSM fisheries meeting, FSM Coastal Fisheries Consortium has been charged with improving communication and coordination among FSM fishery management agencies.

With respect to non-fisheries legislation impacting fisheries management, other than the major Constitutional issue mentioned in the section above, there is national Customs/Immigration legislation that requires vessels to undergo entry/exit formalities for each EEZ fishing trip even though the vessels do not depart from the FSM EEZ. This burdens vessel operators but facilitates fisheries surveillance/enforcement (FSM Code Title 50 Customs and Immigration).

STATUS OF FISHERIES IN THE COUNTRY

There are a large number of exploited fish stocks in the country. The main resources can be divided into two categories. These resource categories and their associated resources are:

- **Pelagic tuna resources**: skipjack, yellowfin tuna, bigeye tuna, and albacore tuna. The main fisheries based on these resources are the purse seine fishery, the longline fishery, the pole/line fishery, and small-boat trolling.
- **Inshore fisheries resources**: many species of finfish and invertebrates. Smith (1992) indicates that in Chuuk, Kosrae, Pohnpei, and Yap, the number of reef fish species is 205, 351, 445, and 370, respectively. The important families are snappers (*Lutjanidae*), groupers (*Serranidae*) parrotfishes (*Scaridae*), emperors (*Lethrinidae*), wrasses (*Labridae*), surgeonfish (*Acanthuridae*). There are a similar large number of invertebrates species exploited in FSM. The important resources are trochus, sea cucumber, giant clams, and octopus. They are taken by mainly hook/line, nets, and diving – sometimes even a short fishing trip will employ these three and other methods.

It is therefore difficult in FSM to identify and enumerate discrete inshore fisheries. This situation is complicated further by the lack of a functioning statistical system for the inshore fisheries. Nevertheless, there is the notion among individuals familiar with FSM fisheries that the two most important inshore "fisheries" in terms of volume of the catch are (1) night spearfishing for reef fish, and (2) trochus collecting.

The major fisheries of the country can be summarized as in Table 1.

With respect to the contribution to gross domestic product (GDP) GDP from these fishery categories, the calculations have not yet been done. It should be noted that, as the industrial fisheries are mostly carried out by foreign vessels based outside of FSM, those vessels would not contribute to FSM's GDP under the standardized System of National Accounts (SNA, 1993). Gillett and Lightfoot (2001) indicate the contribution

TABLE 1
Major fisheries in FSM

	Gross Value of Catch (2002 US$)	Gross Landings of Catch (tonnes)	Year (Value, Landings)
Industrial tuna purse seine fishery	80 million	114 302	2000
Industrial tuna longline fishery	107 million	8 943	2000
Industrial tuna pole/line fishery	3.7 million	3 085	2000
Artisanal tuna trolling	6.3 million	2 500	2002
Artisanal night spearfishing	Unknown	Unknown	------
Artisanal trochus collecting	0.9 million	200	2001

Sources: Data from NORMA, ADB, World Bank

of all fisheries in the FSM to the GDP was about US$21.9 million in 1998 or about 9 per cent of the total GDP.

In 2000 there were 523 industrial tuna vessels licensed to fish in FSM. This was made up of 153 purse seiners (mainly from Taiwan, Korea, Japan, and the USA), 325 longliners (mainly from Japan, Taiwan, and Korea), and 39 pole/line vessels (all from Japan). There are no recent data on artisanal vessels in the country, but McCoy (1991) estimated that in FSM there were 2000 small motorized artisanal fishing craft and 600 non-motorized canoes.

MANAGEMENT ACTIVITY

Because the character of fisheries management activity is quite different at the various levels of government (national, state, local), it is necessary to break discussion of this subject into two components: national level and state/local level.

National level management activity

At the national level, the National Oceanic Resources Management Authority (NORMA) has the authority under the fisheries law to adopt regulations for the management, development and sustainable use of fisheries resources in the exclusive economic zone. Regulations adopted by the Authority have the full force and effect of law, and are considered an integral part of the fisheries law.

The law gives guidance to NORMA, but the formulation and implementation of the management process is the responsibility of NORMA. To carry out this responsibility, NORMA adopted a tuna management plan in December 2001. The plan covers the tuna resources of the EEZ and therefore provides the management for all three fisheries that operate in the EEZ. The Plan establishes overall policies, more specific guiding principles and, together with the fisheries law, a management process. As an important part of the process, proposed management measures are subjected to an evaluation in which analyzes each measure with respect to sustainability of the resource, domestic and regional implications, legal implications, operational target fleets, effects on direct investment, and environmental/social aspects. NORMA considers the evaluation, consults with domestic industry and state and national government agencies, and then decides whether to adopt the proposed measure. If so, the measure is adopted by the NORMA as a regulation which has the status of law.

The basic national fisheries management system has been in place since January 1979 when the NORMA's predecessor agency, the Micronesian Maritime Authority, was established. The same three fisheries have been managed at the national level since that time and these represent all of the fisheries operating in the EEZ during the entire period. An Asian Development Bank review of the Authority in 1999 indicated that MMA has been an effective tuna management agency and is used as a positive model for other Pacific Island countries.

Management actions are usually triggered by new developments in the tuna industry, regional agreements, and the altering balance between the desire to obtain government income from foreign vessel access fees and the desire to develop domestic industry.

BOX 1

The management tool of licensing followed by 'big stick" enforcement

Licensing:

- In 2000, 523 industrial tuna vessels were licensed to fish in the FSM zone (61 percent of which were tuna longliners).
- NORMA has invested heavily in the institutional and administrative structures to allow for efficient licensing.

"Big stick" enforcement

- FSM has air and sea fishery patrols, port inspections, and operates a Maritime Surveillance Center, which includes VMS.
- The NORMA observer is the largest national observer program in the Pacific Islands and has been emulated by several of FSM's neighbors
- Fines levied for illegal fishing and other infractions in the FSM zone have been substantial. There have been more than 70 cases brought at the national level for illegal fishing or other transgressions since 1979.

The benefits:

- According to records kept by NORMA, FSM has received over US$170 million in EEZ access fees paid since 1979 for the rights to fish for tuna.
- Fishing access fees represent about one-quarter of total domestic revenue for the national government.
- More than US$3.65 million in fines or settlements have been collected, and eight vessels forfeited to the government.

Tuna stock assessment is regularly carried out by the Secretariat of the Pacific Community. In addition, NORMA has its own staff biologist and occasionally employs stock assessment specialists. The present consensus of opinion is that the skipjack, yellowfin and albacore stocks are not over-exploited, but there is some concern for bigeye as its abundance in FSM and neighboring countries has declined in recent decades. Some stock assessment specialists therefore consider the bigeye resource to be over-fished. Others feel that additional information is required to make such an assessment. It should be noted that tuna fisheries are characteristically highly variable and large differences in catch rates are to be expected due to the biology of the fish involved as well as oceanographic and other factors.

The fisheries law states that NORMA shall have the authority to adopt regulations for the sustainable use of fisheries resources in the exclusive economic zone. In addition, the law states that NORMA "shall take measures to prevent or eliminate over fishing and excess fishing capacity and to ensure that levels of fishing effort do not exceed those commensurate with the sustainable use of fishery resources".

The management tools which are used have a strong connection to the management objectives being pursued. The two most important objectives in the management of fisheries at the national level are (1) to protect the sustainability of the resource, and (2) to generate government revenue. As stock assessments have shown that the tuna resources are largely in healthy condition, no management interventions in support of sustainability have been required to date[4]. Government revenue has been generated by the tool of licensing followed by "big stick" enforcement (see Box 1). Foreign fishing vessels are required to purchase licenses for access to the FSM fishing zone. Another tool used is a closed zone - the foreign fishing vessels are not allowed to fish within 12 miles of island baselines.

[4] Should sustainability become an issue, the tool of limited licensing will probably be used.

In one sense, the introduction of management measures has not had an effect on the status of the stocks – none of the management measures were oriented to improving the condition of stocks but rather to other objectives such as generating government revenue. In another sense, the MCS systems put into place have strongly discouraged a large amount of illegal fishing activity which would have had a major negative effect on stocks.

The basic tools used to manage the national fisheries of FSM have not changed in the last 20 years.

Some factors which could contribute to more effective national level fisheries management include:

- Reduced amount of micro-management by the national Congress
- Greater insight into the fishing industries being managed, especially in the area of economics.
- Improved information flow to the fishery stakeholders about such topics as the status of the resources, management processes, and rationale for specific management interventions.

In the future, when management interventions may be required to address the objective of resource sustainability, major constraints are likely to include: (a) the difficulty of generating political will to reduce fishing effort (and thereby possibly foregoing national income), and (b) the adequacy of arrangements to address tuna conservation on a regional and/or international basis.

State level management activity

Compared to the national level, the character of fisheries management activity is very different in the four FSM states. Furthermore, there is only minimal state/national and state/state interaction dealing with fisheries management matters. The information below is generally applicable to most of the states, but it should be noted that some exceptions occur in some states.

Management action is typically triggered by a crisis, an economic opportunity, or the urging of an NGO. Representatives in the state or municipal legislature would be asked by their constituents to act on the matter by either passing legislation or by encouraging the relevant agency to use existing legislation to address the issue. At the local level, management action is often initiated by island/village councils.

Formal stakeholder consultation is not a major feature of state fisheries management. Given the small size of the management units involved, senior members of the various agencies involved in fisheries management mostly take it upon themselves to act in the best interests of stakeholders.

Given the very small-scale of most fishing operations and the multi-species and multi-gear nature of most fishing trips, it is quite difficult to distinguish discrete fisheries and subsequently comment on the proportion of fisheries that are managed. Pohnpei is illustrative of the situation. Smith (1992) indicates that 23 different species or species groups are important for fishery purposes. In mid-2003, various types of Pohnpei State legislation specifically addressed 11 of these groupings. It could therefore be stated that about half of the "fisheries" are managed. From this perspective, the other states would probably manage a slightly smaller portion of fisheries. Due to NGO activity and external assistance (e.g. Secretariat of the Pacific Community, Asian Development Bank), the portion of species groupings that are managed is increasing.

Only a limited amount of fisheries stock assessment has been carried out on inshore resources. Preston (2000) states "there appears to be a general lack of awareness or understanding of the resource base that is available to support coastal fishery development. Few assessments have been carried out of inshore resources, and comparative information from elsewhere has not been extrapolated to the FSM situation". Some short-term assessment has occurred, including that for trochus,

turtles, mangrove crabs, baitfish, and deep-slope fish. In general, however, inshore fish stocks are not regularly assessed to determine their status.

In the absence of stock assessment information, it is difficult to pronounce the various fisheries as fully-utilized, depleted, or over-fished. In general however, the high value species (e.g. mangrove crab, lobsters, sea cucumber) are in the worst condition and could be considered depleted. The least accessible species (e.g. deep slope fish) are in the best condition and could be considered under-exploited. There is also a geographic dimension to the situation – most of the important fishery resources found near the four main urban areas are heavily exploited while those found in remote areas of the country are characteristically lightly exploited.

State level fishery managers are not legally required to adopt measures to address overfishing and rebuild depleted stocks.

Management tools at the state level include marine protected areas, protection of spawning aggregations, defined fishing seasons, size limits, and a limited amount of licensing. At the local level temporary closures, exclusion of outsiders, and gear restrictions are common. With the exception of greater use at the state level of marine protected areas and protecting grouper spawning aggregations, there has been little change in the various management tools over the past ten years. In fact, many of the management tools date from the administration of FSM by the U.S. Government which ended 25 years ago. It is not possible to state that the greater use of these tools has improved the status of the concerned stock, but it is likely that they have prevented further deterioration.

The major impediment to improved management at the state level is the lack of effective enforcement. According to an ADB review (Preston, 1999), enforcement of state fisheries laws "is impeded at every step: there are not enough enforcement officers or patrols, enforcement officers often turn a blind eye to offenders because of family connections, and on the rare occasions that cases are brought to court, they are often dismissed or dealt with lightly, providing no disincentive to the offender."

COSTS AND REVENUES OF FISHERIES MANAGEMENT

For both national and state level fisheries management the budgets have generally remained constant throughout the last ten years. The one exception to this was in 1998 when both levels of government had smaller budgets due to a reduction in funds from the arrangement between the FSM and U.S. governments.

During the same period, the costs of management increased. This was due to a number of factors, of which "wage creep" of the management agencies, additional stakeholder consultation, and increased monitoring were the most important.

Because management budgets remained mostly constant while costs increased, there was a shortfall, which in many cases was covered by input from local and external NGOs (e.g. Conservation Society of Pohnpei, The Nature Conservancy), external donors (Asian Development Bank) and regional technical assistance agencies (the Secretariat of the Pacific Community and the Forum Fisheries Agency).

The only case in which the costs of a fisheries management activity are recovered from fishing participants is for the observer program that operates on industrial tuna fishing vessels. That programme is partially supported by an observer levy on licensed vessels. There are substantial access fees for foreign fishing vessels, but they are deposited in the government's general fund and not earmarked for fisheries management.

Generation of national government revenue from licensing foreign fishing activity is a major objective of fisheries management in FSM. The 1999 access fees represented an estimated 39 percent of non-tax revenue and 22 percent of total domestic revenue for the government. According to records kept by NORMA, FSM has received over US$170 million in EEZ access fees in the period 1979 to 2001.

IMPLEMENTATION OF GLOBAL FISHERIES MANDATES AND INITIATIVES

FSM has ratified both the Law of the Sea Convention (UNCLOS) and the UN Fish Stocks Agreement (UNFSA), but is not a party to the Compliance Agreement.

Some of the UNCLOS requirements (and what FSM has done to implement the requirements) are:

- The coastal State shall determine the allowable catch of the living resources in its exclusive economic zone. FSM has a provision in the law stating that NORMA shall determine the total allowable level of fishing covered by the law. NORMA has made the determination with its own resources and by using regional organizations and external consultants.
- Available scientific information, catch and fishing effort statistics and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organizations. NORMA furnishes its fisheries data to both the Secretariat of the Pacific Community and the Forum Fisheries Agency. The new fisheries law requires NORMA to collect and share, in a timely manner and in accordance with fisheries management agreements and international law, complete and accurate data concerning fishing activities.
- Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall give other States access to the surplus of the allowable catch. Access to the surplus has been granted by FSM to foreign fishing vessels for almost 25 years.
- Where the same stock or stocks of associated species occur within the exclusive economic zones of two or more coastal States, these States shall seek, either directly or through appropriate sub-regional or regional organizations, to agree upon the measures necessary to co-ordinate and ensure the conservation and development of such stocks. FSM and its neighboring countries have formulated and formalized several measures for such cooperation/development: Nauru Agreement, FSM Arrangement, Palau Arrangement.

To implement FSM's obligations under the UNFSA, FSM has recently modified its national fisheries legislation. Specific changes were made to accommodate the UNFSA requirements for:

- Measures to ensure long-term sustainability of stocks
- Measures for high seas and EEZ to be compatible
- Precautionary approach
- Data provisions
- Authorization for FSM vessels only where it can effectively exercise responsibilities over vessels
- Measures to control vessels on high seas
- Sanctions to be adequate in severity to be effective in securing compliance

FSM has not taken specific steps to directly implement the recently adopted International Plans of Action (IPOA) relating to capacity management, illegal, unregulated, and unreported (IUU) fishing, shark management, or seabird by-catch in longline fisheries. However, some of the concepts embodied in the various IPOAs are being promoted through various laws, regulations, and policies.

PARTICIPATION IN REGIONAL FISHERY BODIES

FSM participates in the work of the Forum Fisheries Agency (FFA) and the Secretariat of the Pacific Community (SPC). The FFA provides fisheries management advice to its members[5] while the Oceanic Fisheries Programme of the SPC provides stock assessment and other scientific advice on the tuna and billfish resources of the region.

[5] The seventeen member countries of the FFA are Australia, New Zealand, Cook Islands, Fiji, FSM, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and, most recently, Tokelau.

FSM's involvement with FFA includes attendance at the Forum Fisheries Committee Meetings several times per year, and participation in the various FFA technical meetings and activities. In recent years, much of this activity is associated with spearheading regional fisheries management initiatives, including establishing regional positions on the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. FFA represents one of three major sources of legal assistance that FSM can utilize in drafting fisheries management legislation, the other being FAO[6] and the Asian Development Bank. FSM also participates in a sub-group of FFA countries known as the parties to the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest (PNA). This is an alliance of Pacific island states whose exclusive economic zones collectively account for most of the region's tuna catch. FSM has served as the chair of this group on several occasions.

FSM participates in two aspects of the work of the SPC. In the Oceanic Fisheries Programme, FSM cooperates by attending the annual Standing Committee on Tuna and Billfish, furnishing data and participating in activities associated with assessment of the region's tuna resources. In the SPC Coastal Fisheries Programme, in addition to receiving substantial technical assistance, FSM participates by attending the annual Heads of Fisheries Meeting, contributes to technical workshops, and supporting in-country work of the Programme.

Regionally-agreed fisheries management measures include:

- In licensing for fishing vessels, countries have agreed to insist on the Harmonised Minimum Terms and Conditions for Foreign Fishing Vessel Access (MTCs)
- Reciprocal fisheries law enforcement as per the Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region
- A limit on the number of tuna purse seine vessels allowed to fish in the region as per the Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery
- Promotion of local-basing for industrial tuna vessels as per the Federated States of Micronesia Arrangement for Regional Fisheries Access

The new fisheries law in FSM provides legal mechanism to implement regional management measures. The law states that NORMA "is authorized to enter into fisheries management agreements for cooperation in, or coordination of, fisheries management measures in all or part of the region". NORMA has a record of acting swiftly when it agrees to regional management measures.

SUMMARY AND CONCLUSIONS

Because of the provisions of the FSM Constitution, fisheries management is very different at the national and state levels, with only limited national/state and state/state interaction.

National level fisheries management (confined to the zone outside 12 miles from island to the outmost limit of the EEZ) is exemplary with respect to legislation, administration efficiency, enforcement, and benefits to the nation. On the other hand, state level fisheries management suffers from major problems, especially from lack of knowledge of the resources, insufficient information on the impacts of fishing, and poor enforcement of the weak legislative framework.

The most important fishery resource of the country is tuna. Because the stocks of most of the main species are in relatively good condition, national level management interventions have been oriented to objectives other than assuring biological sustainability. For this and other reasons, changes in catch per unit effort therefore do not reflect well the effectiveness of national-level fisheries management.

[6] FSM has applied for membership in FAO but as of October 2003 is not yet an official member. The country is, however, eligible for FAO assistance.

Management activities and costs have increased during the past decade, while budgets have remained constant. Input from NGOs and donors has largely accounted for the difference.

FSM has taken its regional fisheries management responsibilities quite seriously. The country is often viewed as a strong supporter of Pacific Island region management initiatives.

REFERENCES

ADB. 2000. What is an FSM "Fisheries Policy"? Fisheries Management and Development Project, TA No. 2832-FSM, Gillett, Preston and Associates, Asian Development Bank.

Gillett, R. and C. Lightfoot. 2001. The Contribution of Fisheries to the Economies of Pacific Island Countries. Pacific Studies Series, Asian Development Bank, World Bank, Forum Fisheries Agency, Secretariat of the Pacific Community, 218 pages.

Preston, G. 1999. National-Level Arrangements for Coastal Fisheries Management in FSM. Gillett, Preston and Associates Inc., Asian Development Bank.

Preston, G. 2000. FSM Coastal Consortium Proceedings and Working Papers. Fisheries Management and Development Project, TA No. 2832-FSM, Gillett, Preston and Associates, Asian Development Bank.

Smith, A. 1992. Federated States of Micronesia Marine Resources Profiles. Report 92/17, Forum Fisheries Agency, Honiara.

SNA. 1993. System of National Accounts 1993. Commission of the European Union, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations Statistics Division, and the World Bank.

APPENDIX TABLES

Current Management of Marine Capture Fisheries in FSM

Level of Management	% Fisheries Managed	% with Fisheries Management Plan	% with Published Regulations	Trends in the number of Managed Fisheries over ten yrs. (increasing/decreasing/unchanged)
National	100	100	100	Unchanged
Regional	50	0	50	Unchanged
Local	100	0	0	Unchanged

Summary information for three largest fisheries in FSM

Category of Fishery	Fishery	Volume Tonnes	Value* US$ million	% of Total Volume Caught**	% of Total Value Caught**	Covered by a Management Plan?	# of Participants	# of Vessels
Industrial	1: tuna purse seine fishery	114 302	80	90	42	Yes	3 180	159
	2: tuna longline fishery	8 943	107	7	56	Yes	3 900	325
	3: tuna pole/line fishery	3 085	3.7	3	2	Yes	975	39
Artisanal	1: Nearshore trolling for tuna	2 500	6.3	n.a.	n.a.	No	n.a.	n.a.
	2: Night spearfishing for reef fish	n.a.	n.a.	n.a.	n.a.	No	n.a.	n.a.
	3: Trochus (Trochus niloticus)	200	0.9	n.a.	n.a.	No	n.a.	n.a.
Recreational	1: Pelagic recreational trolling	n.a.	n.a.	n.a.	n.a.	No	n.a.	n.a.
	2: Commercial sport fishing	n.a.	n.a.	n.a.	n.a.	No	n.a.	n.a.

n.a. = not available/unknown
* Value in 2002 U.S. Dollars.
** % values are based on totals for each category of fishery.

Use of Fishery Management Tools within the three largest fisheries in FSM

Category of Fishery	Fishery	Restrictions				License/ Limited Entry	Catch Restrictions	Rights-based Regulations	Taxes/ Royalties	Performance Standards
		Spatial	Temporal	Gear	Size					
Industrial	1: tuna purse seine fishery	Yes	No	No	No	Yes	No	No	Yes	No
	2: tuna longline fishery	Yes	No	No	No	Yes	No	No	Yes	No
	3: tuna pole/line fishery	Yes	No	No	No	Yes	No	No	Yes	No
Artisanal	1: Nearshore trolling for tuna	No	No	No	No	Yes	No	No	Yes	No
	2: Night spearfishing for reef fish	Yes	No	No	No	No	No	Yes	No	No
	3: Trochus (*Trochus niloticus*)	No	Yes	No	Yes	No	No	Yes	No	No
Recreational	1: Pelagic recreational trolling	No	No	No	No	No	No	No	No	No
	2: Commercial sport fishing	No	No	No	No	No	No	No	No	No

Costs and Funding Sources of Fisheries Management within the three largest fisheries in FSM

Category of Fishery	Fishery	Do Management Funding Outlays Cover			Are Management Funding Sources From		
		R&D	Monitoring & Enforcement	Daily Management	License fees in fishery	License fees from other fisheries	Resource rents
Industrial	1: tuna purse seine fishery	Yes	Yes	Yes	No	No	No
	2: tuna longline fishery	Yes	Yes	Yes	No	No	No
	3: tuna pole/line fishery	Yes	Yes	Yes	No	No	No
Artisanal	1: Nearshore trolling for tuna	Yes	Yes	Yes	No	No	No
	2: Night spearfishing for reef fish	Yes	Yes	Yes	No	No	No
	3: Trochus (*Trochus niloticus*)	Yes	Yes	Yes	No	No	No
Recreational	1: Pelagic recreational trolling	Yes	Yes	Yes	No	No	No
	2: Commercial sport fishing	Yes	Yes	Yes	No	No	No

Compliance and Enforcement within the three largest fisheries in FSM

Category of Fishery	Fishery	VMS	On-board observers	Random dockside inspections	Routine inspections at landing sites	At-sea boarding and inspections	Other (please specify)
Industrial	1: tuna purse seine fishery	Yes	Yes	Yes	No	Yes	arial
	2: tuna longline fishery	Yes	Yes	Yes	No	Yes	Arial
	3: tuna pole/line fishery	Yes	Yes	Yes	No	Yes	arial
Artisanal	1: Nearshore trolling for tuna	No	No	No	No	No	
	2: Night spearfishing for reef fish	No	No	No	No	No	Airport inspection
	3: Trochus (*Trochus niloticus*)	No	No	Yes	Yes	Yes	
Recreational	1: Pelagic recreational trolling	No	No	No	No	No	
	2: Commercial sport fishing	No	No	No	No	No	

Capacity Management within the three largest fisheries in FSM

Category of Fishery	Fishery	Does overfishing exist?	Is fleet capacity measured?	Is CPUE increasing, constant or decreasing?	Have capacity reduction programmes been used?	If used, please specify objectives of capacity reduction programme
Industrial	1: tuna purse seine fishery	No	No	Fluctuating	No	---
	2: tuna longline fishery	Yes	No	Fluctuating	No	---
	3: tuna pole/line fishery	No	No	Fluctuating	No	---
Artisanal	1: Nearshore trolling for tuna	No	No	Fluctuating	No	---
	2: Night spearfishing for reef fish	Yes	No	Decreasing	No	---
	3: Trochus (*Trochus niloticus*)	Yes	No	Decreasing	No	---
Recreational	1: Pelagic recreational trolling	No	No	Fluctuating	No	---
	2: Commercial sport fishing	No	No	Fluctuating	No	---

Samoa

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October 2003

INTRODUCTION

This review of marine capture fisheries management in Samoa is a component of the FAO's project on the review of the state of the world marine capture fisheries management. The overall goal of the project is to provide an informative reference to decision makers, fishery managers, and stakeholders.

Information in this review was obtained from a variety of sources, including interviews with senior staff of Samoa's Fisheries Division, the Division's Annual Reports, information from the Australia-funded Samoa Fisheries Project, Samoa portions of regional reviews of fisheries in the Pacific Islands, other recent documentation, and the author's experience in Samoa. The Samoa country profile and management brief on the FAO website (prepared by the author) provided additional information.

POLICY FRAMEWORK

The objectives of fisheries management in Samoa appear in the legislation only in very broad terms. The Fisheries Act states that the Director of the Department of Agriculture, Forests and Fisheries may "propose management and development measures designed to obtain the maximum benefits from the fishery resources for the people of Samoa, both present and future".

Specific fisheries management objectives must therefore be obtained or inferred from other sources.

The latest annual report of the Fisheries Division states that the goal of the Division is to promote "the optimum and ecologically sustainable use of the country's fishery resources and the development of suitable alternatives to harvesting of depleted resources in order to maximize benefits to Samoa."

The Samoa tuna management plan (adopted December 1999) states "the aim of managing the longline tuna fishery in Samoa should be to maximise catch-rates, profits and foreign exchange by restricting the number of boats in the fishery. This should be tempered with the secondary aim of encouraging wide and local participation in the fishery."

At the local level[1] within Samoa, fisheries management occurs on a geographic basis within village fishing areas. Each village has its own management scheme and objectives. Because there are about 230 coastal villages in Samoa, the number of management schemes and associated objectives is quite large. King *et al.* (2001) give a typical objective for village level management in Samoa: "to protect the marine environment in order to increase the numbers of fish and shellfish available for present and future generations". Typically the plans and objectives are reviewed (and often revised) after a three year period. A village management plan may consist of by-laws which, if scrutinized and endorsed at the national level, are enforceable as law.

The Fisheries Law dates from 1988. The preparation of the law involved cooperation between the Samoa Government, FAO, and the Forum Fisheries Agency. Although there was an amendment of the law in 1999, that revision did not incorporate recent

[1] Within Samoa, there is no government level known as "regional level". With respect to governance and fisheries management, there are two important levels: the national level and the village level.

international fisheries management norms/mandates (e.g. Code of Conduct for Responsible Fisheries, UN Fish Stocks and the Compliance Agreement).

The most important non-fisheries legislation that affects fisheries management in Samoa is the Samoa Constitution. Under Article 104 of the Constitution, all land lying below the line of high water is vested in the State and all Samoans have equal access to these areas. This effectively creates a national open access situation in a country that traditionally managed its fisheries resources on a village basis. These two concepts are able to co-exist by having village by-laws that are nationally endorsed/recognized and which apply to all Samoans (both locals and people from outside the village concerned).

Other legislation affecting fisheries management and associated objectives is the Lands and Environment Act 1989. It has as one of its established objectives the protection of the environment. The Small Vessel Safety Regulations 1999 under the Shipping Act 1999, adopted after the loss of many lives on small tuna longliners, also has a major effect on fisheries management as there are extensive safety requirements.

LEGAL FRAMEWORK

The Fisheries Act empowers the Director of the Department of Agriculture, Forests and Fisheries to carry out many of the management functions, including propose management and development measures. In practical terms, national level fisheries management is undertaken by the Department's Fisheries Division. The Fisheries Division also promotes fisheries management at the village level and assists requesting villages with formulating their fisheries management arrangements.

Enforcement associated with national level fisheries management is covered by the Fisheries Act which states that the Act's provisions can be enforced by any police officer authorised in writing by the Commissioner of Police, or any other person authorized in writing by the Minister responsible for fisheries. Fisheries Divisions officials have been so authorized. At the local level, fisheries management rules are enforced by the traditional village authorities. Traditional punishment can range from a simple warning, to fines, and even banishment from the village.

With respect to jurisdictional issues, the village level fisheries management covers inshore areas (water's edge to outer reef slope). National level management interventions by the Fisheries Division are largely focused on those fisheries which occur outside the reef. An important aspect is that the Fisheries Division is primarily a facilitator of management at the village level, rather than being actively involved in management interventions and associated enforcement. It also should be noted that, at the village level, the Fisheries Division acts on the request of villages rather than on the initiative of the Fisheries Division. This consists mainly of assisting with introducing the management planning process and providing technical input into fisheries management and development.

Some of Samoa's environmental legislation covers the same area but is oriented towards the interventions of the Environment Department. In Samoa, as well as in many other Pacific Island countries, cooperation between the Fisheries Division and the Division of Environment and Conservation, could be improved.

STATUS OF FISHERIES IN THE COUNTRY

There are a large number of exploited fish stocks in the country. The main resources can be divided into two categories: the offshore resources (tuna and bottomfish) and the inshore species (many species of shallow reef species and invertebrates) (Table 1).

Offshore resources: The resources that support major fisheries are:

- The tunas: albacore tuna (*Thunnus alalunga*), yellowfin tuna (*Thunnus albacares*), bigeye tuna (*Thunnus obesus*), skipjack (*Katsuwonus pelamis*)
- The deepslope bottomfish short-tailed red snapper which include (*Etelis carbunculus*), long-tailed red snapper (*E. coruscans*), sharp-tooth jobfish

TABLE 1
The major fisheries of Samoa

	Gross Value of Catch (2002 US dollar equivalent)	Gross Landings of Catch (tonnes)	Year (Value, Landings)
Tuna longlining	$10 million	5 360	2002
Deepslope bottomfish fishery	$0.7 million	212	2002
Diving/spearing	$5.0 million	2 653	2000
Gillnetting[1]	$2.4 million	1 290	2000
Hook/line fishing	$2.3 million	1 218	2000
Recreational sport fishing	Unknown[2]	Unknown	------
Commercial sport fishing	Unknown[3]	Unknown	------

[1] The landings by fishery were estimated by taking the total and multiplying that by the portion of time spent in each of the major fisheries. The total landings and portion of time are given in Passfield (2001).
[2] Probably quite small
[3] Probably quite small

TABLE 2
Summary contributions from Samoan fisheries

GDP Current market prices; Local currency	Fishing contribution to GDP Local currency	GDP in US$ Current market prices	Fishing contribution in US$	Fishing contribution as % GDP
T$705 914 000	T$56 399 000	$233 506 665	$18 656 015	7.99

(*Pristipomoids typus*), gold-banded jobfish (*P. multidens*), golden-eye jobfish (*P. flavipinnus*), crimson jobfish (*P. filamentosus*), oblique jobfish (*P. zonatus*), humpback snapper (*Paracaesio kasakari*, and cocoa snapper (*P.stonei*).

Inshore fisheries resources: The more important families or genera are surgeonfishes and unicornfishes (*Acanthuridae*), parrotfishes (*Scaridae*), groupers (*Serranidae*), rabbitfishes (*Signidae*), snappers (*Lutjanidae*), goatfishes (*Mullidae*), soldierfishes and squirrelfishes (*Holocentridae*), emperors (*Lethrinidae*) moray eels (*Muraenidae*), and trevallies and jacks (*Carangidae*). There is also a large number of crustaceans, molluscs, and other invertebrates, the most important of which are sea cucumbers, sea urchins, jellyfish, seaweeds, octopus, giant clams, and crab.

In general, Samoa's inshore fisheries exert a large amount of fishing pressure on a relatively limited resource base and many of the fishery management areas could be categorized as over-exploited. The offshore tuna fisheries target resources that are much larger but these are shared between many countries of the region. The tuna catch rates, quite high in the early days of the fishery in the early/mid 1990s, have fallen during the last few years. Fishing pressure on the deepslope bottomfish resources was quite high in the late 1980s but eased up as many vessels converted to tuna fishing in the mid-1990s. Fairly recently, with the local fall in tuna catch rates many vessel have reverted to bottomfish fishing.

The production from all village-level fishing (subsistence and small-scale commercial) is about 7 169 tonnes (Passfield, 2001). Combining this with the tuna longline catch, the deepslope bottomfishing catch and an estimate of the sport fishing catch, gives a crude annual catch estimate of about 12 750 tonnes. In terms of weight, the tuna longline catch therefore represents about 42 percent of the total landings from all fisheries in Samoa, bottomfish fishing 2 percent, diving/spearing 21 percent, gillnetting 10 percent, hook/line fishing 9 percent, and sportfishing less than 1 percent.

With respect to the contribution to Samoa's gross domestic product (GDP), the calculations have not been done for the specific categories above. Gillett and Lightfoot (2001) used three different classifications of fisheries in calculating fishing contribution to GDP:

- Monetary tuna fishing contribution: T$14 874 219
- Subsistence fishing contribution: T$19 434 411
- Small-scale commercial contribution: T$11 940 000

MANAGEMENT ACTIVITY

Because the character of fisheries management activity is quite different at the two different levels of government, it is necessary to break discussion of this subject into two components: national level and village level.

National level management activity

The process of developing and implementing management measures has changed in recent years. Prior to the late 1990s, management measures were primarily an initiative of the Fisheries Division in response to a political directive or to a crisis. In December 1999 the Commercial Fisheries Extension Service of the Fisheries Division promoted the establishment of the Commercial Fisheries Management Advisory Committee (CF-MAC), made up of representatives of the fishing industry and concerned government departments. Together with the Fisheries Division, the CF-MAC developed a management plan for the tuna longline fishery. That plan was adopted by Cabinet in December 1999 and subsequently revised February 2002. A bottomfish management plan has been developed by the Fisheries Division and there is presently a dialogue with CF-MAC on the content of the plan.

These recent changes in the management process allow fisheries stakeholders substantially more impact on the decision-making process in the management of commercial fisheries. It should be noted that the legal system has yet to incorporate the sentiment of such increased involvement – the 1989 Fisheries Act goes only as far as requiring the Director of the Department of Agriculture, Forests and Fisheries to "consult with fishermen, industry and village representatives concerning conservation, management and development measures for fisheries".

Village level management activity[2]

Recognising the difficulties involved in trying to manage remote fisheries from Samoa's main city, the Fisheries Division has recently adopted a community-based approach to village level fishery management. The government is now removing itself from direct management and is playing a supporting role to assist the villages to manage the fisheries located in nearby inshore areas. The Fisheries Division facilitates the management process by showing the benefits of villages managing their own resources, and subsequently by demonstrating a workable management process and providing technical services to the villages. The process is to encourage a village community to analyse its fishing practices and problems, and suggest solutions. The articulation of the solutions takes the form of a management plan.

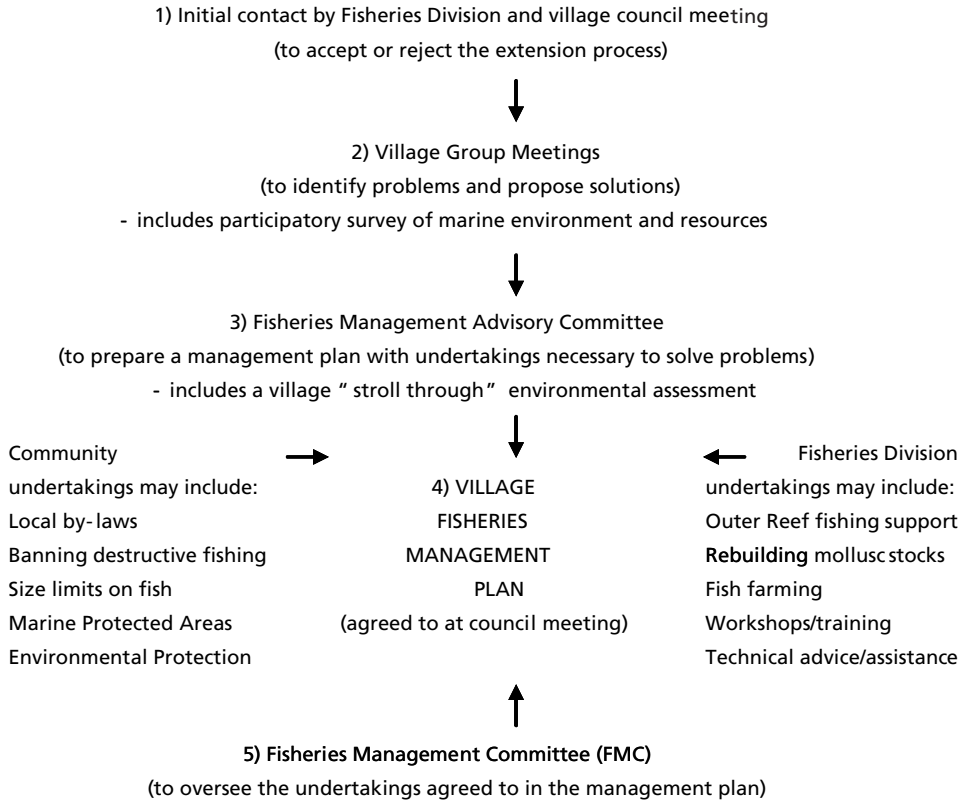
There are actually two management-related processes involved: (1) the process whereby the Fisheries Division encourages and facilitates the setting up of village management arrangements, and (2) the process whereby the villages formulate and implement management measures. The Fisheries Division promotion scheme has been quite successful and has received much attention throughout the Pacific Islands region. Figure 1 shows the two processes.

Thirty percent of Samoa's 230 coastal villages have village fishery management plans, and villages continue to join the programme (Passfield *et al.*, 2001). Important points in the process are:

- Villages are not required to participate in the Fisheries Division scheme. In fact, they must actively request the services of the Fisheries Division to facilitate the management arrangements. In this way, the Fisheries Division does not expend scarce time/effort on villages that are not interested.

[2] Much of this section is from King *et al.* (2001), King and Fa'asili (1998), Passfield (2001), and Passfield *et al.* (2001).

FIGURE 1
Facilitating Fisheries Management at the Village Level



Adapted from King and Faasili (1998)

- The by-laws that may come out of the management plan process are eligible for national government endorsement, after which they can be enforced as law.
- It is inconsistent with the Samoa Constitution to differentially restrict fishing activities; the village by-laws must be equally applicable to residents of the concerned village and outsiders.

Although many villages choose not to participate in the Fisheries Division's programme (about 2/3 of Samoa's coastal villages are not formally involved), they are quite active in managing the fishery resources in their fishing areas. The primary village institution for this management is the village council (*fono* in Samoan). The objectives are varied but many revolve around the theme of safeguarding local seafood supplies.

Further comments on national and village management activity

With respect to the proportion of fisheries which are managed:

- In Samoa's inshore fishing areas there is a great diversity of marine species and many harvesting techniques. The number of "fisheries" could therefore be considered very large. As all inshore fishing occurs in traditional village fishing areas and most areas are actively managed, there are very few fisheries which are not managed.
- In the offshore area, there is very active management of the tuna longline fishery as stipulated in the management plan. Although the bottomfish fishery management plan has not been formally adopted, the fishery does not escape management as there are stringent safety requirements on all boats operating offshore. This could

be considered a fisheries management intervention which has the objective of saving the lives of fishers[3].

From the above, it could be considered that most of the inshore and offshore fisheries are subject to some form of management.

The inshore fisheries have had management controls for many generations, and it is not possible to state that the number of managed fisheries has changed during the past decade. The major change has been the character of the management; the use of management plans and formally recognized by-laws greatly increased in the mid-1990s with the encouragement of the Australia-funded fisheries project.

Although there has been some management of the two significant offshore fisheries in Samoa (tuna and bottomfish) since 1988 when the present Fisheries Act was passed, the intensity of management interventions increased markedly with the adoption of the Small Vessel Safety Regulations and the tuna management plan, both in 1999.

The major factors driving the changes in management actions for the offshore fisheries were:

- Public outrage at the large number of lives lost in the tuna longline fishery
- Decreasing profitability of tuna longline vessels as the number of vessels increased.
- Over-crowding in the harbour area
- The perception that large locally-based foreign vessels were unfairly competing with the smaller local vessels.
- The formation of the Commercial Fisheries Management Advisory Committee to allow fishers a mechanism to promote measures perceived to be in their interest
- An Australia-funded fisheries project providing fisheries management expertise

In the inshore areas the main factors driving the changes in management actions were declining village seafood supplies, NGO interest in promoting community based management, and the Australia-funded fisheries project.

The major fisheries are regularly and/or periodically monitored with a view to obtain indications of the condition of the targeted resources. Catch rates of the tuna longline fishery are monitored by both the Fisheries Division and the Oceanic Fisheries Programme of the Secretariat of the Pacific Community. The bottomfish resources were subjected to a stock assessment exercise in the late 1980s, but the importance of periodically doing this work diminished in the 1990s because most vessels switched to tuna longlining. Inshore resources are often quantitatively monitored by the village management programmes. Less formal monitoring (but in many cases just as effective) occurs by the villagers' keen sense of the abundance of the important marine organisms in their fishing areas.

The above monitoring most often does not result in an assessment of status (e.g. overfished, depleted) but rather it produces information on trends in the important fisheries. There is however, a general feeling that the resources supporting the offshore fisheries are in reasonably good condition, while many of the key inshore resources are either heavily exploited or depleted, with the situation being especially acute for the valuable benthic invertebrates (e.g. giant clams and sea cucumbers). There is also a geographic dimension to the situation – the important fishery resources found near the main urban area, Apia, are characteristically more heavily exploited than those of the sparsely populated Savaii Island.

The government fishery managers are required by the Fisheries Act to "propose management and development measures designed to obtain the maximum benefits from the fishery resources for the people of Samoa, both present and future". As such, the fishery managers are not legally *required* to adopt measures to address overfishing and rebuild depleted stocks.

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[3] Although Samoa does not have a large offshore fishing fleet, many lives have been lost in recent years. Since 1996 there have been 107 search and rescue incidents with 37 lives lost (Gillett, 2003).

TABLE
Management tools used at the village level

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
Enforce (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 (*Actinaria*).	<10
Protecting areas where palolo worms, Eunice sp, are traditionally gathered.	<10
Offering prayers for the safe-keeping of the marine environment.	<10

The primary management tools for the offshore fisheries are limited entry and safety certification. In the latest version of the plan (approved February 2002) there are provisions for the following numbers of tuna longline vessels:

- Class A: vessels up to and including 11 metres: Licences available: No limit
- Class B: vessels over 11 metres and up to 12.5 metres; Licences available: 19
- Class C: vessels over 12.5 metres and up to 15 metres Licences available: 21
- Class D: vessels over 15 metres and up to 20.5 metres; Licences available: 16
- Class E: vessels equal to or greater than 20.5 metres; Licences available: 9

King and Faasili (1998) give the management tools in use at the village level (Table 2). Figures in the right-hand column indicate the percentage of all villages using the particular action or regulation.

Limited entry for offshore fishing was unknown in Samoa prior to the late 1990s. A similar situation occurred for the safety certification. The major change in management tools for the inshore areas in recent years is the much greater use of marine protected areas and the use of management plans to organize and formalize the management arrangements.

The only fishing "gear" that is prohibited at the national level is "any explosive, poison or other noxious substance". National gear restrictions are mainly for mesh sizes. At the village level a common gear prohibition is on the use of underwater lights for night spearfishing.

The management measures used in the tuna longline fishery are not oriented to improving the status of the stock but rather toward other objectives (e.g. vessel profitability, safety of fishers). Not surprisingly, the measures did little to change the status of the stocks. In the 70 villages which have recently adopted fisheries management plans and new management measures, there are anecdotal reports of increased abundance of target species in villages with such arrangements. Passfield (2001) in his 2000 village fisheries survey indicates that villages with fisheries management plans developed with Australian Fisheries Project assistance had catch rate 55 percent higher than villages without such plans.

After a decade of remarkable progress in fisheries management in Samoa, the main constraint to more effective fisheries management in Samoa appears to be one of momentum. After the completion of the Australia-funded fisheries project, the funds available for national government fisheries management interventions and support to village level management are now more limited and the expatriate advisors have departed.

COSTS AND REVENUES OF FISHERIES MANAGEMENT

At the national level, the costs associated with managing the commercial fisheries and providing support to village level fisheries management have increased markedly in the last ten years. Additional staff have been recruited and there is the need for staff to travel throughout the country in management-related work. The government budget for this work has increased, but not as great as the costs. The Australia-funded Samoa Fisheries Project has covered much of the extra costs, including the salaries for several expatriate fisheries advisors.

License fees in the tuna longline fishery have increased, especially for the larger vessel categories. For example, the fees for a longliner between 15.0 and 20.5 metres increased from T$5 000 to T$10 000[4]. These fees are not earmarked for management purposes, but rather are deposited in the government's general fund.

At the village level, due to the subsistence and traditional nature of village life, there are few real "budgets" for fisheries management activity. Since the mid-1990s and the start of the Fisheries Division's scheme for promoting village level management, many villages have additional fisheries management activities, which have opportunity costs, but they occur largely outside the cash economy. Some villages may fine offenders for violations of the fisheries rules, but this can consist of items other than cash such as pigs. Some of the proceeds from fines could end up supporting management activities in some villages.

Generation of national government revenue from licensing foreign fishing activity is an objective of fisheries management in Pacific Island countries, and Samoa is no exception. In the late 1990s, Samoa annually received from the access arrangements for the foreign and domestic vessels about US$281 233 (Gillett *et al.* 2001).

IMPLEMENTATION OF GLOBAL FISHERIES MANDATES AND INITIATIVES

Samoa has ratified both the United Nations Convention on Law of the Sea (UNCLOS) and the UN Fish Stocks Agreement (UNFSA), but is not a party to the Compliance Agreement.

Some of the UNCLOS requirements (and what Samoa has done to implement the requirements) are:

- Available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organizations. The Samoa Fisheries Division furnishes its fisheries data to both the Secretariat of the Pacific Community and the Forum Fisheries Agency.
- Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall give other States access to the surplus of the allowable catch. Access to the surplus has been granted by Samoa to foreign fishing vessels for almost 25 years. Presently the U.S. fleet has access.
- Where the same stock or stocks of associated species occur within the exclusive economic zones of two or more coastal States, these States shall seek, either directly or through appropriate sub-regional or regional organizations, to agree upon the measures necessary to co-ordinate and ensure the conservation and development of such stocks. Samoa and its neighbouring countries have cooperated through the Forum Fisheries Agency for over two decades on tuna management matters. Presently Samoa actively participates in the negotiations to establish the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific.

Samoa is in the process of modifying its national fisheries legislation. It is understood that consideration is being given to incorporating in the new law, elements

[4] About US$3 225

of international treaties to which Samoa is a party, including the requirements under the UN Fish Stocks Agreement.

Samoa has not taken specific steps to directly implement the recently adopted International Plans of Action relating to capacity management, IUU fishing, shark management, or seabird bycatch in longline fisheries. However, some of the concepts embodied in the IPOAs are being promoted through various policies and activities of the Fisheries Division.

PARTICIPATION IN REGIONAL FISHERY BODIES

Samoa participates in the work of the Forum Fisheries Agency (FFA) and the Secretariat of the Pacific Community (SPC). The FFA provides tuna fisheries management advice to its member countries[5]. The Oceanic Fisheries Programme of the SPC carries out stock assessment and other scientific advice on the tuna and billfish resources of the region and SPC's Coastal Fisheries Programmes provides management and development advice for the inshore fisheries.

Samoa's involvement with FFA includes attendance at the Forum Fisheries Committee Meetings several times per year, and participation in the various FFA technical meetings and activities. In recent years much of this activity is associated with spearheading regional fisheries management initiatives, including establishing regional positions on the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. FFA represents one of three major sources of legal assistance that Samoa can utilize in drafting fisheries management legislation, the others being FAO and the Asian Development Bank.

Samoa participates in two aspects of the work of the SPC. In the Oceanic Fisheries Programme, Samoa cooperates by attending the annual Standing Committee on Tuna and Billfish, furnishing data and participating in activities associated with assessment of the region's tuna resources. In the SPC Coastal Fisheries Programme, in addition to receiving substantial technical assistance, Samoa participates by attending the annual Heads of Fisheries Meeting, participation in technical workshops, and supporting in-country work of the Programme.

Regionally-agreed fisheries management measures include:

- In licensing foreign fishing vessels, countries have agreed to insist on the Harmonised Minimum Terms and Conditions for Foreign Fishing Vessel Access (MTCs)
- Reciprocal fisheries law enforcement as per the Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region
- A ban on tuna transshipment activities, except in authorized locations.

There is no established mechanism to implement management measures adopted by regional fishery organizations, but rather the procedure followed depends on the nature of the measure:

- Some regional measures can be implemented with only a change in policy – the Fisheries Division in its dealings with foreign fishing vessel access simply began insisting on the Harmonised Minimum Terms and Conditions for Foreign Fishing Vessel Access.
- Some regional measures may require a change in legislation – The head of State acting on the advice of Cabinet made the Fisheries (Vessel Monitoring System) Regulations 1999 in response to a regional agreement.

[5] The seventeen member countries of the FFA are Australia, New Zealand, Cook Islands, Fiji, FSM, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and, most recently, Tokelau.

SUMMARY AND CONCLUSIONS

Samoa's fisheries management regimes show great differences between the national and village level, especially with respect to objectives, legislative framework, tools, and support from the government fisheries management agency. It also should be noted that at the national level, the management is fishery-focused whereas at the village level, the primary management unit is the fishing area.

In terms of weight, the tuna longline catch represents about 42 percent of the total landings, bottomfish fishing 2 percent, diving/spearing 21 percent, gillnetting 10 percent, hook/line fishing 9 percent, and sportfishing less than 1 percent. With respect to the condition of the resources, in broad terms:

- The inshore fishery resources are subject to a great amount of fishing pressure and many of the fishery management areas could be categorized as over-exploited.
- The offshore tuna fisheries target resources that are exhibiting falling catch rates during the last few years.
- Fishing pressure on the deepslope bottomfish resources has eased up as many vessels converted to tuna fishing in the mid-1990s.

The legislative framework for fisheries management, although dating from the late-1980s, seems to have allowed in the past decade for a very favourable evolution in domestic fisheries management. Samoa is very active participant in regional fisheries management cooperation, but has been less involved in implementing global fisheries management initiatives.

Samoa has made remarkable progress in fisheries management in the past decade and is in many respects a model that other countries in the region aspire to. Much of the recent improvements have been due to the work of an Australia-funded project. A major challenge for the future will be to continue the momentum, or at least preserve the gains made, after the completion of the external assistance.

REFERENCES

Gillett, R. 2003. D*omestic tuna industry development in the Pacific islands: the current situation and considerations for future development assistance*. Forum Fisheries Agency, Honiara, 198 pages.

Gillett, R. and C. Lightfoot. 2001. *The contribution of fisheries to the economies of Pacific Island countries.* Pacific Studies Series, Asian Development Bank, World Bank, Forum Fisheries Agency, Secretariat of the Pacific Community, 218 pages.

Gillett, R., M. McCoy, L. Rodwell, and J. Tamate. 2001. *Tuna: a key economic resource in the Pacific Islands* - A Report Prepared for the Asian Development Bank and the Forum Fisheries Agency. Pacific Studies Series, 95 pages.

Gillett, R. 2003. *Aspects of sea safety in the fisheries of selected Pacific Island countries*. Food and Agriculture Organization of the United Nations, Rome, 72 pages.

King, M., K. Passfield, and E. Ropeti. 2001. *Village fisheries management plan: Samoa's community-based management strategy*. Samoa Fisheries Project, Fisheries Division.

King, M. and U.Fa'asili. 1998. *Community-based management of subsistence fisheries in Samoa*. Fisheries Division, Ministry of Agriculture, Forests, Fisheries and Meteorology, Apia, Samoa.

Passfield, K. 2001. *Profile of village fisheries in Samoa*. Samoa Fisheries Project, Fisheries Division.

Passfield, K., L. Bell, A. Solofa, and A. Mulipola. 2001. *The enhanced capacity of the Samoa Fisheries Division to facilitate management of commercial and subsistence fisheries, incorporating a review of the fishery regulations (1996).* Samoa Fisheries Project.

Peteru, C. 1993. *Western Samoa environmental legislation review*. South Pacific Regional Environment Programme, Apia.

Whitelaw, W. 2001. *Country guide to gamefishing in the western and central Pacific*. Oceanic Fisheries Programme, Secretariat of the Pacific Community.

APPENDIX TABLES

Current Management of Marine Capture Fisheries in Samoa

Level of Management	% Fisheries Managed	% with Fisheries Management Plan	% with Published Regulations	Trends in the number of Managed Fisheries over ten yrs. (increasing/decreasing/unchanged)
National	100	50	50	Increasing
Regional	n/a	n/a	n/a	n/a
Local/Village	100	30	0	Unchanged

n/a = not applicable

Summary information for three largest fisheries (by volume) in Samoa

Category of Fishery	Fishery	Volume Tonnes	Value* US$ million	% of Total Volume Caught**	% of Total Value Caught**	Covered by a Management Plan?	# of Participants	# of Vessels
Commercial	1: Tuna longline	5 360	$10	96	93	Yes	674	153
	2: Deepslope bottomfish fishery	212	$0.7	4	7	No	60	20
Artisanal	1: Diving/spearing	2 653	$5.0	51	52	Yes[1]	Unknown	Unknown
	2: Gillnetting	1 290	$2.4	25	25	Yes	Unknown	Unknown
	3: Hook/line fishing	1 218	$2.3	23	24	Es	Unknown	Unknown
Recreational	1: Recreational sport fishing	Unknown	Unknown	Unknown	Unknown	No	120	40
	2: Commercial sport fishing	Unknown	Unknown	Unknown	Unknown	No	15	3

* Value in 2002 US$.
** % values are based on totals for each category of fishery.
n/a = not applicable.
[1] Some of the villages have plans which cover these three artisanal fisheries

Use of Fishery Management Tools within the three largest fisheries in Samoa

Category of Fishery	Fishery	Restrictions				License/ Limited Entry	Catch Restrictions	Rights-based Regulations	Taxes/ Royalties	Performance Standards
		Spatial	Temporal	Gear	Size					
Commercial	1: Tuna longline	Yes	No	No	No	Yes	No	No	Yes	No
	2: Deepslope bottomfish fishery	No	No	No	No	Yes	No	No	No	No
Artisanal	1: Diving/spearing	Yes	No	Yes	Yes	Yes	No	No	No	No
	2: Gillnetting	Yes	No	Yes	Yes	Yes	No	No	No	No
	3: Hook/line fishing	Yes	No	Yes	Yes	Yes	No	No	No	No
Recreational	1: Recreational sport fishing	No	No	No	No	Yes	No	No		
	2: Commercial sport fishing	No	No	No	No	Yes	No	No		

n/a = not applicable.

Costs and Funding Sources of Fisheries Management within the three largest fisheries in Samoa

Category of Fishery	Fishery	Do Management Funding Outlays Cover			Are Management Funding Sources From		
		R&D	Monitoring & Enforcement	Daily Management	License fees in fishery	License fees from other fisheries	Resource rents
Commercial	1: Tuna longline	Yes	Yes	Yes	No	No	No
	2: Deepslope bottomfish fishery	Yes	Yes	Yes	No	No	No
Artisanal	1: Diving/spearing	No	Yes	Yes	No	No	No
	2: Gillnetting	No	Yes	Yes	No	No	No
	3: Hook/line fishing	No	Yes	Yes	No	No	No
Recreational	1: Recreational sport fishing	No	Yes	No	No	No	No
	2: Commercial sport fishing	No	Yes	No	No	No	No

n/a = not applicable.

Compliance and Enforcement within the three largest fisheries in Samoa

Category of Fishery	Fishery	VMS	On-board observers	Random dockside inspections	Routine inspections at landing sites	At-sea boarding and inspections	Other (please specify)
Commercial	1: Tuna longline	No	No	Yes	Yes	No	
	2: Deepslope bottomfish fishery	No	No	Yes	Yes	No	
Artisanal	1: Diving/spearing	No	No	No	Yes	No	
	2: Gillnetting	No	No	No	Yes	No	
	3: Hook/line fishing	No	No	No	Yes	No	
Recreational	1: Recreational sport fishing	No	No	No	No	No	
	2: Commercial sport fishing	No	No	No	No	No	

n/a = not applicable.

Capacity Management within the three largest fisheries in Samoa

Category of Fishery	Fishery	Does overfishing exist?	Is fleet capacity measured?	Is CPUE increasing, constant or decreasing?	Have capacity reduction programmes been used?	If used, please specify objectives of capacity reduction programme
Capacity	1: Tuna longline	Maybe	No	Decreasing	No	---
	2: Deepslope bottomfish fishery	No	No	Constant	No	---
Artisanal	1: Diving/spearing	Yes	No	Decreasing[1]	No	---
	2: Gillnetting	Yes	No	Decreasing	No	---
	3: Hook/line fishing	Yes	No	Decreasing	No	---
Recreational	1: Recreational sport fishing	No	No	Constant	No	---
	2: Commercial sport fishing	No	No	Constant	No	---

n/a = not applicable.

[1] In some of the 230 areas the CPUE for these three fisheries may be constant or increasing.