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FISHERIES MANAGEMENT AND CONSERVATION IN
AMERICAN SAMOA

BY

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Fisheries Management and Conservation in American Samoa.

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Abstract

Inshore fisheries in American Samoa have always been an important natural resource. In the past village leaders had the responsibility of regulating the use of reef areas adjacent to their villages. Because of the large, rapidly growing population, and a shift from a subsistence to a cash-based economy, traditional fisheries management practices are not as effective as they were in the past. The Department of Marine and Wildlife Resources of the American Samoa Government have had the powers and duties to protect and preserve the nearshore fisheries resources since 1986, and in 1990 issued fishing regulations concerning areas, activities, gears, and specific fisheries. Obvious inshore fisheries management problems include over-fished spiny lobster (*Panulirus penicillatus*) and giant clam (Tridacnidae) stocks. The regulations to preserve the spiny lobster fishery such as size limits and no berried females, may be ineffectual, gear restrictions such as no spearing or closed areas would be more effective. Slow growth rates of giant clams coupled with its high demand is probably responsible for its poor stock size, and DMWR has launched a clam hatchery program to mitigate this problem. Less distinct management problems include the bottomfish and coral reef fish fisheries. The bottomfish fishery is not over-fished at this time, but because there is very little bottomfish habitat, intensive fishing could deplete the stocks in a very short period of time. The coral reef fish fishery on Tutuila Island has decreased in total pounds landed and in CPUE by over 50% in the past several years. This decrease is probably due to habitat degradation. A five-year fisheries plan was developed in 1994 to address these and other fisheries issues.

Introduction

American Samoa, the only US Territory south of the equator, consists of a chain of seven small islands and atolls between 11° and 14° S latitude and 168° to 171° W longitude. The total land area is 200 km sq. The islands include Tutuila Island, the Manu'a group (Olosega, Tau, and Ofu), Swains Island, and uninhabited Rose Atoll. The waters surrounding these islands have an area of 390,000 km sq and fall under two jurisdictions. It is the mandate of the American Samoa Government to manage the nearshore, or Territorial waters, while the United States Government through the Western Pacific Regional Fisheries Management Council has been responsible for offshore waters that lie within American Samoa's exclusive economic zone (EEZ).

Tutuila Island is the largest and most densely populated island in the group. It is approximately 32 km long and averages 4 km in width and is home to most of the 55,000 residents of American Samoa. Tutuila has a population density of 365 people per km sq and is highly urbanized by South Pacific standards.

The domestic fisheries of American Samoa include a shoreline, reef-based fishery, offshore bottomfish and pelagics fisheries, and tournament fisheries. The shoreline fishery has both subsistence and commercial components, bottomfish and pelagics fisheries are largely commercial, while tournament fisheries are recreational. Combined, these fisheries accounted for an estimated 1991 harvest of over 240,000 kg of which the vast majority (81% by weight) was taken in the inshore, reef based fishery

(Craig et al 1993). It is the responsibility of the Department of Marine Resources to preserve and protect these fisheries within the structure of the Samoan culture. To accomplish this, we encourage the use of traditional village methods of conservation as well as western-style enforcement in cooperation with the village councils.

Traditional Fisheries Management

Ownership of the reefs and their resources was traditionally vested in the chiefs of each village. Seldom did a member of one village fish on the reefs within sight of another village. Marine resources were, thus, controlled by a council of village chiefs who could institute any management measure they desired or felt necessary. A complex system of taboos reserved certain species and sizes of fish for the chiefs and restricted effort to certain seasons and locations. These taboos served to protect the reefs from over-exploitation (Wass 1980).

To some extent, these traditional management practices are still in effect, particularly the exclusion of "outsiders" from fishing on village reefs. In some villages the "Aumaga" (a group of young men of the village) are charged with guarding the fishing areas, though watches seem erratic. The Aumaga today mainly watch for outsiders and illegal fishing activities such as the use of poisons or explosives. In the past when people were more dependent on the resource, more emphasis was placed on guarding the reefs. In recent years the population of American Samoa has grown rapidly, and the food-base of the island has shifted, as have priorities for resource use and protection. Outsider use of the reefs is now tolerated in some areas that are particularly accessible or where non-villager (renter) inhabitants live. In general it is not accepted for outside commercial fishermen to exploit village reefs, however, boats fishing at the edge of a reef at night are easily overlooked.

Territorial Management: The Department of Marine and Wildlife Resources

Because of the rapidly growing population and increased importance of a cash economy, the American Samoan Government realized that villages were no longer able to effectively manage the Territorial fisheries alone. The Department of Marine and Wildlife Resources (formerly the Office of Marine Resources) was created in 1970 and began monitoring American Samoa's fisheries. Since 1986, DMWR has had the powers and duties to (DMWR 1990):

- (1) manage, protect, preserve, and perpetuate the marine and wildlife resources in the Territory,
- (2) develop and prepare comprehensive plans for the management, protection, and preservation of marine and wildlife resources in the Territory,
- (3) collect, analyze, and disseminate data and information relating to the marine and wildlife resources in the Territory,
- (4) keep records necessary to monitor and regulate the commercial and recreational fisheries,
- (5) encourage and conduct studies, investigations, and research relative to commercial and recreational fisheries,

- (6) conduct education and training programs in coordination with the local government relating to the management and preservation of marine and wildlife resources in the Territory,
- (7) adopt and amend rules or regulations implementing and consistent with this chapter to protect, preserve, and perpetuate marine and wildlife resources in the Territory,
- (8) issue such orders such as may be necessary to effectuate the purposes of this chapter and enforce the same by all the appropriate administrative and judicial proceedings,
- (9) hold hearings related to any aspect or matter in the administration of this chapter, and in connection therewith, compel the attendance of witnesses and the production of evidence, and
- (10) accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of this chapter.

To carry out these duties, DMWR has a fisheries and administrative staff of approximately 30 and a budget of over \$460,000 per year. The agency operates from a new, modern office that is well equipped for Department needs. Boats include a 52 foot sea-going vessel which is used for offshore research, deployment of fish aggregation devices, and research trips to remote islands such as Rose Atoll. Smaller vessels include a 22 ft. Boston Whaler, used for various inshore surveys and enforcement activities, a 16 ft. Whaler used for diving research and an Avon inflatable, also used for diving research trips. The Department is also equipped with a laboratory and dive shop. Each project has at least one vehicle assigned to it.

As Department activities evolved and expanded, the need for local management became more apparent. DMWR began actively managing, rather than passively monitoring, our fisheries resources. Though Territorial fishing regulations were first issued in 1986, DMWR issued few citations, preferring to concentrate its efforts in education rather than enforcement. However, by 1994, DMWR personnel felt that it was time to increase its enforcement capabilities, and we are now actively enforcing the fishing regulations.

Though the Department has the authority to issue orders and promulgate rules, the process is complex and fairly time consuming. At this time, to put a regulation into effect, DMWR must first prepare a draft administrative regulation. This documents the history of the regulation, cites the annotated code that gives DMWR authority to promulgate the proposed rule, and cites existing and past code sections having to do with the rule. The regulation is then sent to the Attorney General's Office for review and approval. Once approved, the regulation is submitted to the Clerk of the House, the Speaker of the Senate and the Lieutenant Governor. At the same time, a plan for a method to obtain public comment is submitted. There is then a 45 day public comment period. During this time, the public may comment and the Legislature may pass legislation modifying or nullifying the proposed regulation. Following this period, the regulation becomes legally binding and enforceable.

This process works well for rules that do not need to change, such as prohibitions against dynamite fishing or the use of poisons to take fish. However, many fishing regulations such as seasons and bag limits, need to be more dynamic, because they often must be changed annually. Ultimately, the Department hopes to develop a more flexible framework that will allow us to issue an annual proclamation of fisheries regulations that could be modified as needed each year.

Currently, DMWR has passed the following rules pertaining to fisheries through the administrative rule making process:

Fishing areas

At present there are regulations against certain types of fishing (including coral collection) in the Fagatele Bay National Marine Sanctuary and the Rose Atoll National Wildlife Refuge.

Prohibited Activities

Explosives are illegal to use to take fish or possess in fishing areas

Poisons are illegal to use to take fish or possess in fishing areas

Electrical devices designed to take fish are illegal to possess or use

Drift nets may not be used to take fish

Illegally taken fish may not be possessed, received, transported, bought sold or offered for sale

Coral may not be willfully damaged or destroyed by fishing operations

Fish habitat may not be willfully damaged or destroyed at any time

Fishing gear

Hand nets may only be used to take aquarium fishes, bait fish, shrimp, and palolo. The frame opening may not exceed one meter.

Fine mesh fence nets may only be used to take aquarium fish (permit required).

Cast nets must have a stretched mesh size of .75 inch or greater. Cast nets with mesh size .75 - 1.5 inches can only be used for taking seasonal juveniles and baitfish for subsistence use. Cast nets with mesh sizes greater than 1.5 inches may be used for any legal fishing activity.

Gillnets must have a stretched mesh size of greater than 1.5 inches, may not be deployed in a series of continuous lengths in excess of 700 feet, cannot be deployed within 50 feet of another gillnet or weir, may not be abandoned, placed in such a way as to make them navigational hazards, and cannot be attached to buoys moored in excess of 60 feet deep. Gillnets must be checked at least every three hours and cleared of fishes and debris.

Seines, surround nets, and drag nets must have a stretched mesh of greater than 1.5 inches, except for traditional fishing (using lau) for subsistence take of scad (atule), seasonal juvenile fishes, and baitfish.

Fish weirs cannot exceed 500 feet in length, with wings of 300 feet or less in length. Mesh size must be large enough to pass a fish or object approximately one inch in diameter. Deployment is unlawful where it is a hazard to navigation. Weirs must be checked at least every six hours and cleared of fishes and debris. A permit is required and the weir must be removed upon expiration of the permit.

Fish and shellfish traps may not exceed six feet in any linear dimension, must be checked and emptied at least every twenty-four hours, may not be deployed where they are a hazard to navigation, and may not be discarded in the water. A permit is required for commercial trapping.

Specific fisheries

Aquarium fish collection for commercial purposes requires a permit.

Live Coral collection is unlawful above the 60 foot contour around all islands and banks in American Samoa. Commercial harvest below 60 feet requires a permit.

Giant clams (*Tridacnidae*) measuring under six inches (across the longest part of the shell) may not be taken. Giant clams measuring less than seven inches cannot be sold, and any tridacnid clams offered for sale must be in the whole condition with meat still attached to the shell. A commercial fishing license is required to sell giant clams.

Ornamental shells commercial harvest requires a valid shell collection permit.

Mangrove crab (*Scylla serrata*) bearing eggs cannot be taken, all must measure six inches or greater across the widest part of the carapace, and a permit is required for commercial trapping.

Coconut crab (*Birgus latro*) bearing eggs may not be taken, may not be interfered with while releasing larvae, and must measure three inches or greater across the widest part of the carapace.

Slipper lobster (*Parribacus spp.*) bearing eggs may not be taken, and may not be speared or snagged, a permit is required for commercial harvest.

Spiny lobster (*Panulirus spp.*) bearing eggs may not be taken, must measure greater than 3.125 inches carapace length, a permit is required for commercial harvest

Sea turtles and Marine mammals. The Federal Endangered Species Act of 1973 applies to American Samoa. Generally the act states that it is unlawful to: import, export, take, possess, sell, deliver, carry, transport, or ship by any means whatsoever, any of these species:

- *Chelonia mydas* (green sea turtle)
- *Eretmochelys imbricata* (hawksbill turtle)
- *Dermochelys coriacea* (leatherback turtle)

Federal Management: The National Marine Fisheries Service

Waters outside the Territorial limit are regulated and managed by the United States government. In Concerned with the impact of foreign fishing within the US. EEZ, the US. Congress, in 1976, passed the Magnuson Fisheries Conservation and Management Act (MFCMA). This act gave the National Marine Fisheries Service (NMFS) the authority to develop Fisheries Management Plans for the EEZ and to regulate or prohibit foreign fishing as needed. At this time, foreign fishing is prohibited within the American Samoa EEZ.

Unlike many Pacific island nations, the offshore waters of American Samoa are not considered to be unusually rich fishing grounds and only a small amount of fishing takes place. However, the port of Pago Pago is a major base for transshipment and canning of tuna. Thus, it has been important for NMFS to

maintain a presence in American Samoa not so much to protect our offshore waters as to assure that fish taken by the high seas fleet are taken legally and that American Samoa does not become a base for the processing of fish poached from other nations.

Currently DMWR and NMFS cooperate on enforcement activities in American Samoa waters. NMFS has sent several DMWR officers off-island for extensive marine law enforcement training. Additionally, DMWR officers, who are deputized to enforce federal fisheries regulations, assist the small NMFS office with daily boardings and routine investigations on foreign vessels.

Management Issues

There are several obvious management needs in the Territory. Slipper lobster, spiny lobster and giant clam are over-fished on Tutuila Island. This has been addressed by placing size limit regulations on all of these species, as well as making it illegal to take female lobsters in berry, or to spear slipper lobster. However, spiny lobster regulations are ineffective since lobsters are generally killed before the fisherman can see the size or condition of the catch. Throwing small or berried lobsters back is intuitively wasteful, but taking them is illegal. Perhaps closed seasons (or years) or gear restrictions (no spearing) would be a better management tool.

These regulations, however, would not be popular, as the species of spiny lobster in American Samoa (*Panulirus penicillatus*) does not enter traps and is very difficult to catch by hand. Size limits for giant clams do not appear to have had the desired effect. Not only are clams of legal size extremely uncommon, but smaller clams are quite rare as well. Probably the ease with which these animals can be taken illegally, along with their slow growth rate, is preventing stock recovery. Hopefully, more aggressive enforcement, coupled with programs to reduce demand through the Department's giant clam hatchery program, will help to improve the situation.

Management needs for other fisheries are not as clear. We know, for example, that the deepwater bottomfish fishery in American Samoa could easily be over-exploited because these fish are a high-value product (when exported) and are found only on steep slopes at around 200 meters. In general, it has been found that the amount of available bottomfish habitat in a region can best be expressed as the length of the 200 meter isobath. Using this method, there are only 143 nautical miles of available habitat in the Territory.

At this time, low demand for large, deepwater bottomfish results in low exploitation rates. However, a small number of boats harvesting these fish for export could quickly cause the fishery to become over-exploited. Unfortunately, we do not yet have the data necessary to make reasonable predictions of the maximum sustainable yield for the fishery and thus are not able to develop an effective management plan.

Another "indistinct" management problem involves the near-shore coral reef fish fishery. We believe that, for this fishery, habitat degradation is a more important problem than over-fishing. The coral reef habitat was severely damaged by a crown-of-thorns outbreak in the late 1970's and two hurricanes in the early 1990's. Live coral cover decreased from 60% in 1979 (Wass 1982) to 3 - 13% in 1993 (Maragos *et al.* 1994). Under normal circumstances we would expect the coral reefs to recover, but human-induced impacts such as eutrophication, solid waste pollution, and heavy sedimentation from poor land-use practices may be inhibiting recovery of the reefs. We are addressing this problem by directing some of our research efforts towards identifying the major causes of reef degradation and determining which of these can be mitigated.

Research needs.

In September, 1994, the Department held a "five year plan" workshop for the fisheries section (DMWR 1994) in order to determine future needs and priorities. During the workshop, several "high priority" data needs were identified from a field of potential fisheries-related issues. The two highest priority needs identified were further study of the inshore (coral reef) subsistence/artisanal fishery, and the health of local coral reefs. These two needs took priority primarily because the inshore fishery contributes about half of all fish taken domestically in the Territory and the CPUE for this fishery has dropped about 50% in the past several years, probably due to declining quality and availability of reef habitat. Other high priority issues included public education, identifying public concerns, and training local staff.

To address these priorities, DMWR has launched several programs in various stages of completion, including:

- quantification of coral reef fishes and habitat
- expanding the existing inshore, pelagic and bottomfish fishery monitoring programs.
- a public concerns survey was completed, to help DMWR further pinpoint fisheries priorities
- an in-house, intensive "staff training" program was completed, in which the administration and biologists gave talks about their work and answered questions for the rest of the staff.

At the Department of Marine Resources, we hope that our strong research programs and activist approach to management will enable American Samoa's fisheries to remain productive in spite of growing population, industrialization and continued environmental degradation.

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