

FISHERIES INFORMATION FOR  
WESTERN SAMOA AND THE KINGDOM OF TONGA

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## WESTERN SAMOA

In Western Samoa, fishing is basically a subsistence activity, although some commercial fishing occurs; there is no organized fish market through which the fish are sold. Fishing is concentrated primarily on the fringing reefs and lagoons. The Western Samoan fishermen catch any edible organisms, irrespective of size, including fish, shells, crustaceans, turtles, bêche-de-mer, squids, octopus, and sea urchins as well as large quantities of "palolo," the wormlike sacs of eggs and sperm of a sea annelid (Eunice viridis) when in season. In use are 1,500 canoes and 50 catamarans, all powered with outboard motors.

To capture their prey, the fishermen use fixed fish traps, gill net, beach seine, stake net, eel trap, spear, pole-and-line, trolling line, handline, and cast net. There are about 400 full-time and 7,000 part-time fishermen using mainly spear and net to harvest organisms from the reef area. The result is that there is considerable fishing pressure exerted and the reef and lagoon fauna are undoubtedly overfished. Fortunately, schools of bigeye scad enter the lagoons occasionally, thus relieving some of the pressure on the reef stock.

Trolling for tuna is another of the principal methods of fishing. Using motorized double-hull canoes and fishing outside the reef, about 400 Western Samoan fishermen find trolling one of the most economical ways to fish because of the low initial investment in gear, simplicity of the technique, and the recreational value involved. Despite the seasonally good catches made by these trollers, there are periods when the availability of tuna is either low or tuna are entirely absent from Western Samoan waters. Therefore, to insure profitability of these trollers, bottom handline fishing along the outer reef was begun in 1975.

Good bottom fishing grounds are usually located at the drop-off of the outer reef at depths between 100 and 150 m. Because currents around the islands are generally swift, the boats anchor on the grounds. The major species caught by handlining in Western Samoa include shark, sharptooth snapper (Pristipomoides typus), rosy job fish (Aprion microlepus), Malabar red snapper (Lutjanus malabaricus), longface emperor (Lethrinidae), castor-oil fish (Ruvettus pretiosus), red snapper (Lutjanus bohar), grouper (Serranidae), green job fish (Aprion virescens), snake mackerel (Promethichthys prometheus), and small-toothed job fish (Aphareus furcatus).

The small domestic catch of Western Samoa is either consumed directly by the fishermen and their dependents or sold locally. The demand for fish far exceeds the domestically

caught supply; therefore, very considerable imports of mostly canned pilchard from South Africa and small amounts of frozen New Zealand fish are necessary.

There is an almost total lack of marketing infrastructure and the result is that very little fresh fish reach Apia, the chief town and population center. Furthermore, there is a serious shortage of scientific and technical skills in every sector of the fishing industry and the effect has been to restrict rapid development of the local fisheries. Attempts to develop fishing village associations by the Fisheries Division have not succeeded, but family ownership of outboard motors and boats have shown a steady increase.

In 1965-76, the domestic catch of marine fish and shellfish changed very little, varying between 900 and 1,100 MT and averaging 925 MT.

The potential for increasing local fish production lies in developing a fishery for skipjack tuna, sizeable schools of which have been sighted near Western Samoa. UNDP/FAO presently has a project to develop such a fishery; however, baitfish is very scarce. In 1970-72, for example, bait surveys conducted by National Marine Fisheries Service in the bays and harbors of Western Samoa showed very small quantities of baitfish, primarily silverside (Pranesus pinguis), in Apia Harbor. Because scarcity of bait has handicapped development of the skipjack fishery, Western Samoa has embarked on a program of culturing mollies or topminnows (Poeciliidae) to be used as bait, similar to a large-scale experiment presently being carried on in American Samoa.

Another area which offers considerable potential for further development is the deep-water handline fishery for snappers, groupers and other demersal fishes, because Western Samoa is blessed with extensive shelf areas. But local crafts needed to be upgraded to give them the capability to fish outside the reef and the local fishermen needed training in new techniques, boatbuilding, engine operation, and maintenance.

In a step to provide such assistance, UNDP/FAO has acquired the services of a master fisherman and a fishery advisor to train the local citizens in various fishing techniques. A demonstration team of two boats with outboard motors and each manned by two fishermen taught fishing techniques in Western Samoa for an 11-month period. The results demonstrated that an 8.5-m boat operated by an experienced crew can catch up to 10 MT of bottom fish in about 115 trips per year. Furthermore, two types of fishing crafts have been tested and were found to be sufficiently seaworthy to remain at sea for night fishing

and also provide reasonable comfort in the choppy waters often encountered around Western Samoa. One was a catamaran-type boat, a modified version of the local double-hulled canoe but built of pressure-treated marine plywood. The other was an 8.5-m, 20-hp, diesel-powered boat averaging speeds of 9 knots.

In Western Samoa, ciguatera poisoning is not a serious problem. The red snapper, L. bohar, which is the only species thus far implicated in poisoning cases, constitutes only 5% of the total catch.

## TONGA

Tonga has no organized fishing industry in a strictly commercial sense. The industry lacks professional fishermen and is at a very early stage of development, based mainly on the inshore and nearshore fish resources. There are between 1,300 and 1,400 residents engaged in fisheries in the southern and central islands and an additional 300 in the northern islands. Among the 500 small crafts in use are outrigger canoes, skiffs with outboard motors, launches with inboard engine, and sailing boats.

The fishing gear used are the traditional types including spear, gill net, trammel net, beach seine, cast net, coconut frond net, turtle net, handline, and pole-and-line. The main fisheries include tuna longlining, reef and inshore handlining (commonly used at night with light attraction), surface trolling and trapping.

Longline fishing for tuna and miscellaneous pelagic species within Tongan waters began in 1970 and continues to show relatively good progress, although the present operation is not self-sustaining. The Fisheries Division of the Department of Agriculture operates the 112-GRT vessel, which is crewed by Tongans. A second longliner, donated to Tonga by the Japanese Government, recently went into service with an all-Tongan crew.

Concerning the development of a skipjack fishing industry, feasibility studies conducted by the Japanese and subsequently by UNDP/FAO showed that among the 200-300 islets scattered throughout the Tongan Archipelago, waters around the northern islets seem most promising as baiting sites. Although stocks of baitfish appear to be insufficient to support full-scale development of a skipjack fishery, fishing trials and reports from fishermen indicate that surface tuna schools occur in sufficient numbers in October-March to justify the development of a small operation for the local market.

In baiting operations, initial trials with the Japanese fixed trap net (teichi-ami) have proven highly successful in catching bait. One trap, fishing continuously at Pangaimotu near Tongatapu, produced 6.5 MT of several species of fish including big-eyed scad (Trachurops crumenophthalmus), spotted herring (Harengula ovalis), round herring (Dussumiera sp.) and mackerel scad (Decapterus sp.). Of these, 53.2% were of suitable size as live bait for skipjack tuna fishing, whereas the larger fish had a ready market among the local residents.

The inshore lagoon and near reef catches consist of a wide assortment of tropical species including jack crevally

(Carangidae), flyingfish (Exocoetidae), Spanish mackerel (Scombridae), barracuda (Sphyraenidae), parrotfish (Scaridae), snapper (Lutjanidae), goatfish (Mullidae), and milkfish (Chanidae). Most fish marketed are small or juveniles of large species, usually 15 to 25 cm in length. Among the main species marketed throughout the year are juvenile emperor (Lethrinus variegatus), rabbitfish (Siganus oramin), and big-eyed scad. Other commonly marketed fishes include unicornfish (Naso unicornis), blue-line snapper (Lutjanus kasmira), triggerfishes (Balistidae), wrasses (Labridae), longtoms (Belonidae), porcupinefish (Diodontidae), stonefishes (Scorpaenidae), and mullet (Mugil cephalus).

Among various other marine animals harvested for consumption are holothurians (bêche-de-mer) of which only the intestines are marketed, large, short-spined sea urchins, which are very popular, and octopus, which are either sold fresh or dried and smoked. Until recently, small quantities of spiny lobsters were also caught and exported, but the company involved has switched to the more profitable inter-island freight business.

In Tonga, the entire catch is consumed domestically. The longline catch, with the exception of a few tons which are sold in Pago Pago during dry-docking or repair stop-overs, is sold in Nuku'alofa by the Government Marketing Authority, which owns and operates the island's only cold storage and ice-making plant. The remainder of the fish catch is sold directly to the consumer by the fishermen. On the island of Tongatapu, it has been necessary to supplement the demand for fish with imports of canned fish.

Tonga has taken steps to collect fish catch data by introducing a statistical collection system. In 1971-76, the catch of marine fish and shellfish varied from 500 to 1,019 MT and averaged 707 MT. On the other hand, the lack of a marketing infrastructure, poor communication between islands and shortage of trained personnel have all hindered the rapid development of the Tongan fisheries. At the present time, dry-docking and ship-repair facilities can handle only small crafts. To help the struggling fishing industry, the Tongan Government has exempted fishing gear and marine equipment from the 33% import tax.

The prospects for developing fishery resources in the Tonga Islands appear to be extremely good because of the extensive shallow-water areas available to fishermen. The fishing grounds are all within cruising range of 30-40 fishing boats ranging in size from 9 to 12 m. In addition, exploratory

handline fishing has shown good potentials for outer-reef resources composed mainly of snappers and groupers. A start has also been made in aquaculture with the establishment of a small pilot project for oyster growing in 1973 in Funga'uta lagoon. The project, funded by FAO/SPIFDA, is now being supervised by a U.S. Peace Corps volunteer.

In Tonga, ciguatera poisoning does not appear to be a serious problem.

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