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SIXTH TECHNICAL MEETING ON FISHERIES
(23-27 July 1973)

FISHERIES DEVELOPMENT IN TONGA

by

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ABSTRACT

Census statistics indicate that by 1980, the population of the Kingdom of Tonga will have increased from the present 87,000 to a formidable 120,000. The pressure on land suitable for cultivation must, inevitably, increase. Agriculture at present, is the mainstay of Tonga's economy, and is developed on a mainly subsistence basis. It is unlikely, therefore, to be developed to an extent when it can fully provide for the long-term nutritional and economic needs of the nation. The Kingdom must look to other means to provide the diversification from the present dependance on one local industry. It would seem manifest that this can be done by the development of an organised and modern fishing industry.

So far as Tonga's Fisheries Development is concerned, there are three objectives which have been identified and these are again summarised. :

- (1) The improvement of the existing Fishery as far as this is possible, by providing cheap ice and instruction in its use throughout the distribution chain. This would help to eliminate wastage, and would encourage Fishermen to fish more intensively, than at present, in the knowledge that their catch in excess of daily needs, could still be sold in a marketable condition. Establish an effective collecting service, using suitable transport from the Ha'apai and Vava'u groups of Islands, this could be organised on a co-operative basis. Improve the acquisition of fishing equipment, which at present is difficult to obtain and expensive through the traditional retail channels. Create hygienic covered marketing facilities to bring the handling of fish up to the level of other foodstuffs.
 - (2) Establish the capability for local fishermen to extend their fishing activities to a new resource outside the reefs, and in the near coastal areas. This would involve the introduction of larger suitably mechanised fishing boats, and techniques, new to Tongan Fishermen, to exploit the deep water demersal species, and migratory shoals of pelagic species, which occur in seasonal abundance in Tongan waters. Both resources are relatively under-exploited at present.
 - (3) Investigate the possibility of negotiating with overseas countries, with a view to establishing a deep-sea long-line Tuna base. This could provide the essential economic diversification which the Kingdom needs; it would create local business opportunities in the provision of servicing facilities for a large ocean going fishing fleet; provide essential revenue, and create opportunities for employment, and generally stimulate the local economy.
 - (4) The introduction of effective and enforceable legislation to rationally control and safeguard the valuable Marine resources of the Kingdom.
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INTRODUCTION

The Kingdom of Tonga consists of some 150 Islands in three main groups, with a total land mass of 257 square miles, supporting a population in the region of 87,000. There is an annual growth rate of around 4%.

The seat of Government and Administration is in Nuku'alofa in Tongatapu, which is the most densely populated island holding 61% of the Kingdom's population. Tonga's primary industry is subsistence agriculture, and there is an export trade in copra, bananas, and other fruits.

At present, the Kingdom is faced with the serious problems of finding sufficient animal protein food for an increasing population in a restricted land mass.

BACKGROUND TO FISHERIES

Several attempts have already been made to develop the Fisheries of Tonga with varying degrees of success.

In 1958, the Government purchased the 47 foot fishing vessel "Alaimoana" from New Zealand, and the pelagic deep-sea long-line technique was introduced, under the instruction of a Japanese Master Fisherman. This proved successful enough to justify the purchase of a new and larger vessel from Japan. This vessel named the "Teiko" was unfortunately lost with all hands, including the Government Fishery Officer on her maiden fishing trip in November, 1961.

In 1964 a north sea 'Pocket' trawler type vessel was purchased from the United Kingdom, and named the "Pakeina". This vessel was unfortunately, not designed or suitable for deep-sea long-lining, and was unsuccessful. It was withdrawn from service and is now used as a cargo vessel in the inter-Island service. The present Government owned fishing vessel was purchased second-hand from Japan in 1971, and named "Ekiaki". This vessel is a typical Japanese long-liner 90 feet in length with a refrigerated capacity of 50 tons. The "Ekiaki" is manned by a Tongan Master and crew, with Tongan Trainee Fishermen, and a Japanese Master Fisherman. Fishing a daily average of 220 'baskets' i.e. 1,100 hooks, the "Ekiaki" maintains a catch rate of approximately one ton per day. The catch comprises, in order of abundance, Yellow-fin, Tuna, Big eye, Albacore, Bill fishes, and miscellaneous pelagic species.

This is sold partly to the American Tuna base at Pago Pago in American Samoa, and partly at the Government market at Nuku'alofa for local consumption. There is very considerable demand of "Ekiaki's" catch, and long queues of potential buyers quickly form to buy.

LOCAL FISHERY

Tonga's fisheries are fundamentally under-developed. With the exception of the Government's own fishing vessel "Ekiaki", and a locally based Australian Company which specialise in the processing of spiny-lobster. There is no organised local fishery in Tonga. Fishing is carried out on a subsistence basis centered on the rapidly declining lagoon and near reef resources.

The fishing 'fleet' consists of local outrigger canoes, sailing skiffs, and outboard powered dinghies.

The basic gear used are fixed traps and fish fences, hand lines, gill and surround nets. Some trolling is carried out by sailing vessels for pelagic species, and good seasonal catches are made of the little Tuna (Muthynnus affinis) and the skipjack (Katsuwonus pelamis).

The inshore lagoon and near reef catch consists of a miscellaneous collection of coral and tropical species. Also collected in large quantities for local consumption are Molethuriana, Clams, mainly Tridacna, various bivalves, and cochinoderms. Unfortunately, no systematic collection of fishery statistics has been maintained, albeit, a good knowledge of the existing situation is an essential requisite to the formulation of realistic proposals for change.

An approximation of the fish production would indicate this is in the region of 500 tons annually.

SPINY LOBSTER FISHERY

Australian interests, Fathom Fisheries (Tonga) Limited, have established a small export trade based on the tropical crawfish or spiny lobster. This company operates a ferro-cement freezer barge, which is towed to the fishing areas. Local fishermen are employed to dive and collect the catch. These are de-tailed and deep frozen on the barge, for final enshipment to Fiji, and the American Pacific Territories. Catching methods are by diving, using face masks, spearing, and catching by hand at night using kerosene pressure lanterns.

Traps have been tried but with lack of success. This is not unusual as tropical crawfish are known to show a marked disinclination to enter traps. Notwithstanding, this merits further investigation, as does the need to experiment with other catching methods such as bottom set entangling nets, trammel nets, different types of traps, and the investigation of new fishing grounds.

At present there is no regulatory restrictions on the catching of spiny lobster in Tonga, and in fact until some catch and effort figures are available, any such restrictions could be of little benefit.

Three main species of spiny lobster occur in Tongan waters. These are, in order of abundance, Panulirus penicillatus, P. longipes, P. versicolor. In addition to processing crawfish, Fathom Fisheries also purchases whole fresh fish from some of the Islands in the northern group, which is carried to Nuku'alofa in ice boxes for marketing. This is a very useful service in an area where no other outlets exists.

FISHERY PRIORITIES

The Government of the Kingdom of Tonga is faced with three basic priorities in relation to its fisheries.

- (a) The immediate need to find an assured source of protein for a rapidly growing population, and to reduce the necessity to import expensive tinned foodstuffs from overseas.
- (b) The need to diversify the countries economy away from its present dependance on Agriculture, based on a new industry in which local people can participate without loss of their native traditions and culture.
- (d) To improve employment prospects for a proportion of the Kingdom's school leavers, and for the currently unemployed.

So far as fish for human consumption is concerned, there are two basic aspects which have to be considered.

Firstly, to what extent can the existing Fisheries be intensified and diversified, to provide for the nutritional needs of the people.

The present fishery can be improved by providing cheap ice to eliminate wastage by providing insulated holding depots, and by improving the transport system of fish from the northern groups. By introducing mechanized fishing boats, where these can be most usefully and economically utilised; by improving the fishing equipment at present in use. Secondly, to establish the capability of Tongan fishermen to exploit the coastal demersal and pelagic fish resources. That this resource exists, is indicated by reports from Japanese fishery survey vessels which showed that bottom feeding species, mainly Lutjanidae, can be caught in commercial quantities. This resource is not exploited at present, as the fishermen do not have suitable mechanised vessels, nor

are they familiar with the deep water vertical long-line techniques. This requires mechanical reels for fast retrieving of line, knowledge and understanding of echo-sounding machines, and interpretation of bottom recordings. A further possible development exists in exploiting the shoals of skipjack and the little tuna, which occur in seasonal abundance in close proximity to the many Tongan islands. Again, techniques new to Tongan fishermen will require to be introduced.

This transition from traditional norms should not be difficult - Tongans are good natural seamen and fishermen, willing and quick to learn.

AQUACULTURE

The Kingdom of Tonga has good areas of brackish and fresh water, which could be more usefully utilised than at present.

Nomuka Island in the Ha'apai group, holds a salt water lake of some 400 acres, where the milk fish (Chanos chanos forskal) are known to grow and breed. This is an unusual feature, as milk fish do not normally breed in an enclosed environment. It is also of some academic interest that the salinity of this lake fluctuates considerably, and at times is reported higher in the lake, than in the sea itself, though there is no visible outlet.

On Vava'u Island, there is a fresh water lake of some 840 acres. This lake has a resident population of tilapia sp. and milk fish. Both species are exploited for local consumption. The main island of Tongatapu holds a large salt water lagoon named Fanga'uta. This lagoon supports a good seasonal fishery for mullet, and is an excellent spawning ground for this, and other local fish species. This area, with its mangrove periphery is in need of conservation. Recent reclamation of land, and the destruction of mangroves, has made serious in-roads into the lagoon's productivity. Strict effective and enforceable legislation is urgently required to ensure its future protection.

FOREIGN FISHING BASE POSSIBILITIES

The South West Pacific Ocean, including Tongan waters, is considered profitable enough for four foreign fishing nations - Japan, South Korea, Soviet Union and Taiwan - to send their fishing fleets to the area. It is estimated that 1,600,000 metric tons of pelagic species are harvested annually, mainly for export to Japan and the United States.

With the exception of the Soviet Union, the fishing vessels operate from bases situated in five of the Pacific Territories.

These bases are of considerable importance to the economy of the countries concerned. This economic contribution can be at many levels; providing local servicing facilities, provision of food, fuel, water, employment of local labour, ashore and afloat. Revenue to the territories concerned, can also accrue from export levies, company tax etc.

Business activity generated by a modern complex fishing industry can be considerable, and be of value to the local economy.

The Kingdom of Tonga, would in her present economic circumstances, be well advised to seriously consider the benefits.
