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1 September 1975

ORIGINAL : ENGLISH

SOUTH PACIFIC COMMISSION

EIGHTH REGIONAL TECHNICAL MEETING ON FISHERIES
(Noumea, New Caledonia, 20 - 24 October, 1975)

COUNTRY REPORT
KINGDOM OF TONGA

Prepared by:

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NUKU'ALOFA

SUMMARY

1. Landings:

An estimated 726 tonnes of fish was landed by local fishermen, and by the Government's fishing vessel, "Ekiaki", which contributed 66.34 tonnes of this total. A further 700-1,000 tonnes of fish will be required to meet local consumption demands for fresh fish.

2. Fishermens' Loans Scheme:

This credit facility for fishermen was established in January 1975 with an initial input of $5,000.00. Thirty six applications for small outboard engines, fishing nets have been approved involving an expenditure of $4,592.00. The scheme is administered by the Fisheries Division, and provides loans at a low interest rate of 3%. All equipment purchased through the scheme, is exempt from import tax, providing very advantageous terms for fishermen.

3. UNDP Marine Resources Survey:

This resource survey got underway in June of this year, with the arrival of the 40' dual purpose vessel "Tropac" and support workshop barge. Both facilities are chartered from the Tropical Pacific Fisheries Research Corporation, registered at Pago Pago, American Samoa. The survey will serve to evaluate the demersal and pelagic resources, at present outwith the catching capability of the local fishermen. Particular emphasis will be placed on the seasonal skipjack (Katsowonus pelamis) and on studies into the availability of suitable live bait.

4. Bivalve cultivation:

The experimental oyster project started in February 1973, with the assistance of the UNDP oyster culturist in Fiji, was continued throughout the year. Poor growth rates were recorded in the Fanga'uta Lagoon area, due to heavy siltation. The rafts were removed to the Pangaimotu Island area,

off Tongatapu, and to the Vava'u group, 150 miles north of Tongatapu. The oysters showed a monthly growth increments varying from a low of 0.77 m.m to a high of 6.6 m.m. The project was severely curtailed by the difficulty in obtaining suitable seed. Two consignments from U.S. and Japan respectively, were lost on route, due to delays resulting from missing airline schedules to Tonga. The inability to obtain suitable mussel seed curtailed plans to assess the suitability of this mollusc to conditions in Tongan waters. The New Zealand Government's complete ban on the exportation of the green-lipped mussel Perna canaliculus has also been discouraging to our efforts to promote the raft suspension culture of this species in Tonga.

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1. Introduction:

It is estimated that there is a shortfall of some 1,000 metric tonnes between the supply and demand for fresh fish for local consumption alone, within the Kingdom. Statistics compiled during the year, 1974, indicated that the total landing of fish, including crustaceans and shellfish, amounted to 726 tonnes valued at approximately $267,148 to local fishermen. 326 tonnes of this total was from the Tongatapu group, including the peripheral islands of 'Eua in the East, and 'Atata in the West. The balance of 400 tonnes was estimated to have been landed and mainly consumed locally in the central and northern island groups of Ha'apai and Vava'u.

The Fishery which is primarily a subsistence one employs 1,813 full and part time fishermen, operating from 596 fishing vessels ranging from 14-35 feet. 174 of these are mechanised by mainly British Seagull outboard engines, and there is now a slow transition to small inboard diesel units, of mainly Japanese manufacture. During the year ending 31st December 1974 Tonga imported tinned fish valued at $339,548.15, the estimated weight of processed fish meat being 560 tons.

2. Developments:

One most important step made during the past year was the establishment of a loans to fishermen scheme; administered by the Fisheries Division. The initial capital $5,000 was transferred from a moribund Agricultural Credit Scheme, and depending on it's success, further additional funds will be made available. During the first six months of the scheme's operation, applications from 116 fishermen were received. 26 applicants had loans approved for the purchase of nets,

engines, and associated fishing equipment. Particular care has been exercised in selecting applicants, as the future of the scheme must, perforce, depend on the ability of the applicants to repay, as the scheme is on a revolving loan basis. All repayments going back into the fund to maintain the capital. Interest on the loan is a modest 3%, and repayments are over an eighteen month period, with an initial three months moratorium. To ensure availability of equipment, these are ordered in bulk through the Government Stores, a Government Agency. No duty is payable, and low merk up margins enables the equipment to be purchased at very advantageous rates.

3. UNDP Skipjack Project:

A UNDP funded Fisheries project to investigate the skipjack tuna and the deep water demersal fishery resources of the Kingdom, was officially approved during the year.

The Project got underway in June, with the arrival of the 41' dual purpose vessel "Tropac" and support barge. Both facilities were chartered from the Tropical Pacific Fisheries Research Corporation registered in Pago Pago, American Samoa. The project will extend over a period of two years, and involve a budgetary expenditure of US$352,000. The project will undertake a complete assessment of the Kingdom's marine fish resources with particular emphasis on the pelagic fish resources, mainly seasonal skipjack tuna. An investigation into the availability of the outside reef deep water demersal species, loosely termed snapper, will also be made. It is hoped that the investigations will culminate in a useful locally based fishery to meet local consumption demands, and the surplus, if any, for the export revenue earning purposes.

4. Bivalve cultivation:

In December 1973, with the assistance of the UNDP Oyster Culturist in Fiji, a small pilot oyster project was initiated in the Fanga'uta Lagoon area of Tongatapu. An initial importation of 4,000 cultchless seed of the species Crassostrea commercialis (Sydney Rock Oyster) was divided between four selected sites, and the results regularly monitored.

For the first six months, December to June 1974 growth rates were poor at three of the sites with a low monthly growth increment of 0.77mm. (Site 1) to a high of 6.6mm. (Site 2) mortality rates ranged from a low of 9% to a high of 20% (Site 3). A further consignment of Crassostrea gigas seed was introduced in September 1974. These, over the following six months, showed only marginally improved growth rates. The poor results generally may be attributed to the turbid conditions in the lagoon and the amount of suspended matter present in the water inhibiting their feeding processes.

In January, 1975 the rafts and seed were moved to an area outside the lagoon in the lea of Pangaimotu Island with higher salinity and clearer water conditions. An immediate improvement in growth was observed, particularly of a batch of Crassostrea gigas on scallop shell cultch.

During February, 1974 a further experimental project was initiated in the Northern Vava'u group, with continuing indications of regular and satisfactory growth rates. It is hoped that this experimental work will eventuate in a small, but useful industry to satisfy local tourist and residential consumer demands.

It must, however, be recognised that one of the main obstacles facing bivalve culturists in the Pacific Island territories is the difficulty in obtaining suitable seed in the absence of natural populations of these species locally. This applies to oysters and mussels. Our experience in losing two consignments of cultchless seed from U.S. and Japan. Both consignments arriving dead, after missing regular airline schedules to Tonga.

The situation regarding the acquisition of suitable tropical mussel seed could not be worse. The New Zealand Government's ban on the exportation of Perna canaliculum seed has affected plans to observe its growth in Tongan waters. Attempts to obtain Mytilus smaragdinus seed from the Philippines has also proved unsuccessful. In view of the nutritional and economic potential of mussel cultivation, this problem of obtaining oyster and mussel seed should be given priority for discussion at this meeting.

5. Training:

Particular attention was given to training suitable Fisheries personnel, and full advantage was taken of training courses overseas, during the past year. One Fishery Assistant is currently undertaking the fisheries diploma course in Fiji, and during the past year, two fishery assistants have successfully completed courses in Japan and U.K. respectively.

The Fisheries Division should have a nucleus of reasonably trained personnel to ensure the continuity of work now in hand, and to ensure the future management of the marine resources in Tonga is in the hands of suitably trained local personnel.

6. Conservation:

An important conservationary measure was initiated by Government during the year, resulting in the establishment of a fisheries protected area in the Fanga'uta Lagoon in Tongatapu. The new legislation gives the Fisheries Division control over fishing activities in this area; protection over mangroves, and control over the issue of noxious effluent into the lagoon itself. The new legislation will ensure that this lagoon (an important nursery and breeding area) will continue to provide protection for a large proportion of the young fish species on which the local subsistence fishery is based. The Government has also agreed in principle to establishment of marine parks and reserves, and definitive legislation for this purpose is now being considered by the Cabinet.

7. Pelagic longlining "Ekiaki":

The Kingdom's pelagic longline vessel "Ekiaki" had an unspectacular year's fishing once again almost entirely due to mechanical breakdown in the refrigeration and propulsion system. Fishing 78 days the vessel landed 148,604 lbs (66.34 tons) of pelagic species. The composition was Albacore tuna 17.5%; Yellow fin tuna 28.40%; big eyed tuna 6.5%; Bill fishes 6.5%; shark and miscellaneous species 33.4%. The catch per hundred hooks was 2.30 including shark.

In May 1975 the vessel sailed for Japan for a complete overhaul of main engine and auxiliary and refrigeration systems. The vessel is now in excellent mechanical condition and hopefully fishing effort this year will be greatly improved. A Japanese Marine Engineer has been recruited through the Japanese Peace Corps. A further refrigeration engineer from the same agency will arrive in October. The expertise will ensure regular maintenance of the vessel's machinery.

8. Trap Net fishing:

A Japanese floating trap net for pelagic, mainly bait fish, species has been donated to the Tongan Government by the Japanese Fisheries Survey Vessel Akitsu Maru No. 20 operated by J.A.M.A.R.C., Japan Marine Fishery Resource Research Centre.

Operations started in February 1974 in the Pangaimotu Island area close to Nuku'alofa. During the eight months February to December 1974, the trap caught 1,833.6lbs (833.45 kilos) round scad (Decapterus sp.), locally termed 'Otule; 234.21lbs round herring (Dussumeridae) locally termed Heli and miscellaneous (Barracuda seapike etc.). Full records of the catch composition has been compiled in a separate index and is available on request. It should perhaps be noted that the round herring (Dussumeridae) was used entirely for Ekiaki's longline bait, and when used almost doubled the daily catch rate. This must be attributed to the freshly caught local bait, and the fact that it probably stays on the hook better than the Japanese saury fish which has been deep frozen for long periods. Two more traps are now on order and this should ensure self-sufficiency in bait supply for Ekiaki's longline fishing.

9. Fish ponds:

The main experimental fish pond in Sopu is approximately ½ acre in size. It was originally stocked with the ubiquitous ciclid Tilapia mossambique which have proliferated and inundated the entire brackish water system in Tonga. A small pig pen was constructed on the pond's periphery and the effluent directed into the pond for fertilising purposes. The small stunted tilapia are fed back to the pigs and are eaten with considerable avidity. The salinity of the pond water varies between 9.8% to 25.2% depending on amount of rainfall and the height of the tide which affects the water level in the pond. Water temperature was recorded as high 94°F to a low of 66°F; PH-measurements averaged 8.5-9.0.

During the early part of 1974 several Chanos chanos fry were stocked in the pond, unfortunately no precise records of the numbers were made, as the fry were taken from the adjoining brackish water area by subordinate fishery staff.

To regulate the water flow and stabilise the salinity, the outlet metal gates controlling the outflow of water from the adjoining area were kept permanently opened. Towards the end of January, many small schools of small Chanos were observed in the pond which seemed to indicate that the adult Chanos had actually spawned in the pond, a most unusual occurrence, if indeed the case, for this species. It will be remembered that a similar occurrence was noted by the Van Pel in his article "Milkfish and Breeding in Lake Ano Ava on Nomuka Island." It is an interesting postulation, albeit not yet supported by scientific fact, that a race of Chanos chanos has adapted to the enclosed condition and particular environment found in Tongan waters. Should this be the case the possibilities for the species elsewhere in the Pacific would be considerable. A further small development in this sphere of Fisheries was the introduction of the mollie Poecilia vittata, a Cuban endemic species, imported from American Samoa. Some sixty of this species were placed in a screened enclosure inside the fish pond at Sopu. Since then they have propagated extensively, despite the lack of artificial aeration. A small hatchery is now being planned. With some question mark over the availability of wild populations of suitable bait fish for the skipjack pole and line fishing investigations, this development has pertinent significance. Under its Bilateral Programme in Tonga, the New Zealand Government has agreed to assist with technical expertise in the construction and management of four 1.5 acre ponds which will be stocked with Chanos chanos and grey mullet Mugil cephalus. The brackish water area at Sopu has been set aside for this purpose.
