PAPUA NEW GUINEA'S DOMESTIC TUNA FISHERY DURING 1979, 1980 AND 1981

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INTRODUCTION

The tuna resources found within Papua New Guinea's 200 mile Declared Fisheries Zone represent an important and potentially extremely valuable resource. According to statistics, about 5% of the total world production of skipjack tuna *(Katsuwonas pelamis)* was caught within Papua New Guinea's Declared Fisheries Zone during 1971-1979. Tuna were caught by a domestic fishery and by a distant water fishery. The domestic fishery used pole-and-line boats based in Papua New Guinea (see HARVEST Volume 5, No.2, pp. 109-118) and closed in late 1981.

Aspects of the distant water fishery are dealt with in a separate article in this issue of HARVEST.

THE DOMESTIC POLE-AND-LINE TUNA FISHERY

By 1979, only two of the four companies which had been fishing for tuna in Papua New Guinea in 1972 still remained: Starkist (PNG) Pty Ltd., who based their operations in Ysabel Passage, New Ireland Province, and New Britain Fishing Industries (NBFI) who were based at Cape Lambert, East New Britain Province. The importance of large quantities of good qual-

Fishing for tuna using the pole-and-line method

ity bait has been discussed in previous HARVEST articles (Volume 6, No.3, pp. 109-123) and this is the reason tuna fisheries were based at these two places.

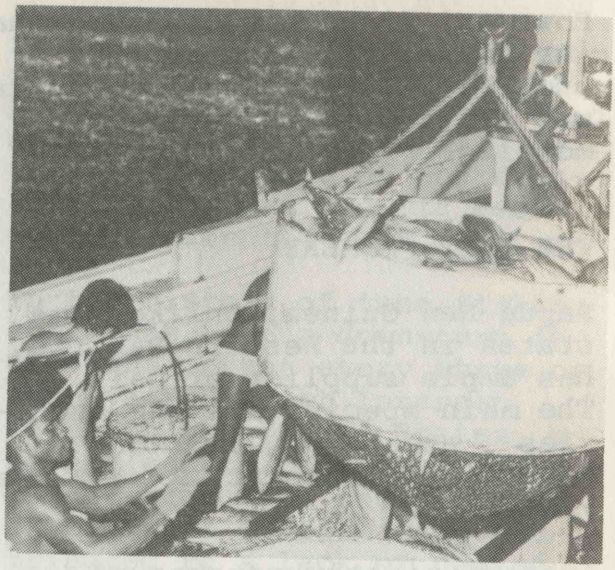
There have been attempts to establish shore bases (including a cannery). However, since the fishery was started, anchored motherships have been used. These vessels were moored close to the baiting grounds so that catcher boats could unload their catch at the end of each day, before taking on fresh bait the same night. The catch, once brined (salted) and frozen on the motherships, was transferred to carrier vessels. These transported the tuna to overseas markets, mainly the United States.

One fishing unit consisted of 10 to 12 catcher-boats and one mothership. The four units which operated in 1981 were each valued at between K5.7 and K7.1 million.

The highest catch taken by the domestic fishery was 48,000 tonnes in 1978. In 1979, the catch dropped to 26,944 tonnes when 41 boats took an average of 3.3 tonnes per fishing day. In 1980, 43 boats took 3.6 tonnes per fishing day for a total catch of 34,099 tonnes. In 1981, 40 boats landed 24,029 tonnes (3.3 tonnes per fishing day). Such fluctuations appear to be typical of skipjack fisheries throughout the Pacific but are more pronounced at higher latitudes.

For the period reviewed here (1979 to 1981), skipjack tuna accounted for an average of 88% of each year's domestic catch, yellowfin tuna *(Thunnus albacares)* 11% and other species of tuna, 0.2%.

Individual boats within the fishery had very different



Transferring a catch of tuna from the catcher boat to the mothership.

catches, despite the fact that all boats had access to the same or similar fishing grounds. From catch data, it seems that the performance of company-owned boats was not as good as skipper-owned boats. At least 50% of Papua New Guinea's domestic fleet operated at a loss during the review period.

During 1981, operating costs for the 23 domestic boats ranged between K500,000 and K514,000. As the average tuna price was K557 per tonne during 1981, boats needed to land between 890 and 920 tonnes to cover operating costs. 76% of boats took less than 890 tonnes during 1981.

FISH AGGREGATING DEVICES

Fish Aggregating Devices were introduced by NBFI during 1981. Fifty-six such rafts were anchored in depths of up to 2000 m. Tuna schools tend to aggregate beneath these rafts to feed on the small fish which accumulate under them.

Although NBFI lost many rafts due to bad weather, the rafts proved useful as there were always some tuna around them.

However, fishermen observed that the biting response of tuna under a Fish Aggregating Device was limited to the early morning.

THE BAIT-FISHERY

Papua New Guinea, unlike some states in the Western Pacific, has ample supplies of bait. The main species are the anchovies *Stolephorus heterolobus* and *S. devisi* and a sprat, *Spratelloides gracilis*.

Average nightly catches of baitfish per catcher boat for 1979 to 1981 were as follows:

1979 - 174 kg (total per year, 1424 tonnes)

1980 - 167 kg (total per year, 1703 tonnes)

1981 - 175 kg (total per year, 1473 tonnes)

Bait tends to be used more effectively in good fishing years, when less bait is required to take a given quantity of tuna.

Taking in a catch of baitfish

The bait-fishery was an effective management tool with which to control the tuna fishery. By regulating the bait-fishery, through the control of access to baiting grounds, it was possible to indirectly regulate the tuna fishery. Also, fishing effort within the tuna fishery could be distributed more evenly over the fishing area.

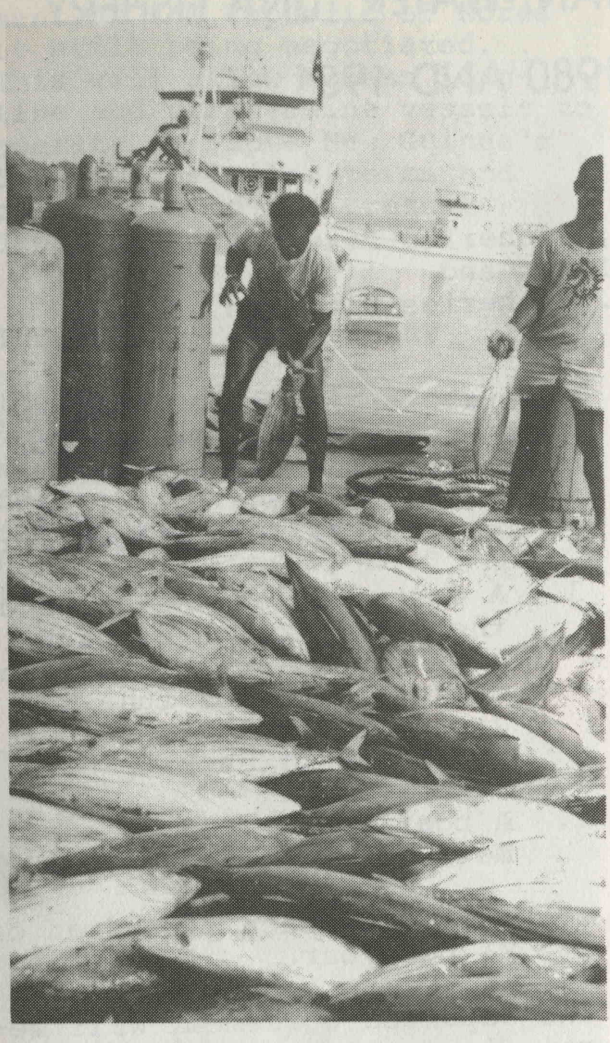
ECONOMIC CONSIDERATIONS

During 1979 to 1981, an average of 1257 Papua New Guineans were employed in the domestic tuna fishery; 81% of whom were employed on catcher boats, 15% on motherships and 4% in shore-side activities. Papua New Guineans occupied 63% of available positions in the fishery between 1979 and 1981. An average of 730 foreigners were employed each year, 86% of whom were employed on catcher-boats.

From 1979 to 1981, the domestic tuna fishery ranked sixth as an export earner for Papua New Guinea. It was valued at an average of K20.2 million for each year. This represented 74% of the value of Papua New Guinea's fisheries exports over the period, 3% of the total value of exports, and 2% of the Gross Domestic Products.

The United States has traditionally been the largest market for Papua New Guinea's tuna, followed by Japan. This is because skipjack, and the smaller yellowfin tuna, are most suitable for canning. The major market for canning is the United States. Between 1979 and 1981, 87% of Papua New Guinea's catch was exported to the United States, while 11% went to Japan.

The main source of revenue for the Papua New Guinea Government



Unloading tuna onto the wharf

from the domestic tuna fishery was a 5% export tax on unprocessed tuna. Taxation payments between 1979 and 1981 averaged K1.0 million annually while a 2½% baitfish royalty, paid annually to the traditional owners of the baitfish grounds, averaged K440,000.

Indirect benefits flowing through linked industries were substantial, especially in the urban centres servicing the fishing fleets. Annual expenditure by NBFI and Starkist in Rabaul amounted to between K8.5 and K10.7 million and this is where the closure of the fishery in 1981 has had its most obvious effect.

In the history of tuna fishing there has been a down-turn in the tuna market every three or four years. High interest rates in the United States, a severe economic recession and competition from poultry and other types of fish have contributed to a lack of demand for tuna, whilst production by the tuna fishery world-wide has increased. In the current situation it has not been possible for either NBFI or Starkist to maintain operations in Papua New Guinea. (See the article by D.J. Doulman in HARVEST Volume 8, No. 3, pp. 110-116, for a full explanation of the closure.)

FUTURE OUTLOOK

With the ready availability of tuna on the world market, processors no longer need to maintain their own fleets, and it is therefore unlikely that Starkist or NBFI will recommence pole and line tuna fishing in Papua New Guinea. It is likely that future domestic fishing which will probably use purse-seining as well as pole-and-lining, will involve National and Provincial Governments, Okinawan fishermen and a European or United States partner in a joint venture arrangement. It is probable that part of the domestic catch would then be processed in Papua New Guinea, mainly for export.