

tries almost any edible fish would be considered "marketable".

Shrimp are plentiful off the coast of Guyana, on South America's Caribbean shore, and about 200 trawlers operate out of the port capital, Georgetown. Every year the fleet throws away 200,000 tonnes of "by-catch" fish. Or they used to until 1973, when the government obtained a "gentleman's agreement" from the trawler operators to bring in at least one tonne of by-catch fish per trip. Simultaneously the government banned all imports of fish, thus ensuring a ready local market for the by-catch, and incidentally saving a good deal of foreign exchange.

For one man that action was another step in a long campaign. In the 1950s Guyanese fisheries expert W.H.L. 'Bert' Allsopp had witnessed the waste first-hand aboard shrimp trawlers in the Gulf of Mexico. When he first raised the issue, he says, "it was considered too intractable a problem" either for nations or the FAO.

But for Allsopp, who knew something about the hunger in his own country, "the waste of food was too catastrophic to be ignored." So he began a campaign in Guyana to popularize the under-utilized species. By the early 1970s Allsopp had left FAO to head the fisheries research program at Canada's then newly-formed International Development Research Centre (IDRC). One of the first research proposals he handled came from Guyana.

Allsopp still felt strongly that the waste of fish from the shrimp trawling operation was altogether unacceptable. "This was a research program to show what could be done," he says, "to prove the point by using the by-catch fish as a source of food to replace supplies which are no longer available because of the country's ban on all fish products imports. The main objective was to provide food fish immediately and once it was clear that these products could be made and used then other aspects of the entire problem may be progressively attacked."

With IDRC assistance a pilot fish processing plant was established, to be run by the state-owned Guyana Food Processors Corporation under its director Fred Peterkin. The plant began producing traditional favourites such as saltfish and smoked fish, as well as producing new products such as fish sausages, pickled fish, even fish jam. By 1978 the trawlers were asked to double their quota of by-catch, and by 1980 the pilot plant was processing over 20 tonnes of fish each month, as well as supplying fresh and frozen fish for the local markets.

One particularly important product developed on the project is minced fish, made in a flesh-and-bone separator from the smaller or less-known fish. Dried and salted and sealed in plastic bags, this product has been shown to last four months without refrigeration, making it ideal for shipping to the remote interior communities. Recipes for using the minced fish are handed

out at cooking demonstrations at rural fairs.

Allsopp has proved his point, but he is still not satisfied. IDRC support is due to end in December, and wants to ensure that the promising beginning made in Guyana doesn't end there. "It is important to see the things get to an operational stage instead of just maintaining a nice little pilot project," he says.

In September, Allsopp and Peterkin were in Washington to tell the by-catch story at an Inter-American Development Bank (IDB) round table on the use of non-traditional fishery products. They also showed a 13-minute film produced by IDRC on the Guyana project. The IDB subsequently approved a (U.S.) million loan for new shrimp boats, of a type that will be better able to handle the by-catch, and improved shore plant facilities.

A great deal more is needed in order to really begin tapping this huge food resource, says Peterkin. The boats off Guyana are bringing in the equivalent of two days' by-catch on each three-week trip. If the existing boats could be equipped with deck storage tanks, and a refrigerated collector ship assigned to the fleet, the amount of fish landed could be increased several times over. Ultimately, though, the solution is to design the trawlers, but that is for the future.

In the meantime there is an urgent need for more information about the fish species. "There have been very few surveys looking at both fish and shrimp," says Allsopp. "We need data analysis to show the variations in the catch. It's a big job, and it's not easy because every trawler captain fishes in his own little place and wants to keep his catch a secret. And there are many other aspects to be investigated."

But finally things are moving. Similar research is underway in India and Thailand. Britain, Denmark, the European Economic Community, and the Commonwealth Secretariat have all indicated an interest. As early as in January Fred Peterkin of Georgetown was in Canada to present his project to the Canadian Conference for Fisheries Research, and for discussions with the Canadian International Development Agency. In the U.S., a seminar is being planned by the Massachusetts Institute of Technology. "It is an opportunity for concrete action," says Allsopp. "The challenge of the future should be met by groups such as these, because it will be in the '80s what oil was in the '70s."

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