

operators who dominate the paua, rock lobster and some inshore fisheries are mostly members of the Federation of Commercial Fishermen.

**O**VER-FISHING in the late 1970s and early 1980s placed the inshore fishery under stress. Too many fishers were chasing a diminishing number of fish. Major inshore fisheries such as trevally, tarakihi, snapper and rock lobster were particularly in trouble.

The 1963 de-licensing of the fishing industry and limited management controls were the main causes of this over-fishing. Anyone could get a licence to go fishing and there was no limit on the amounts that could be caught. Sustainability was not a consideration.

To deal with this problem, MAF and sectors of the industry promoted the introduction of a quota management system for major New Zealand fish stocks. Deepwater species such as orange roughy, hoki, oreos, squid and hake had been managed by individual quotas since 1983.

In 1986 the 26 major commercial species were placed under the quota system, and since then paua, rock lobster, squid and some jack mackerel fisheries have been added.

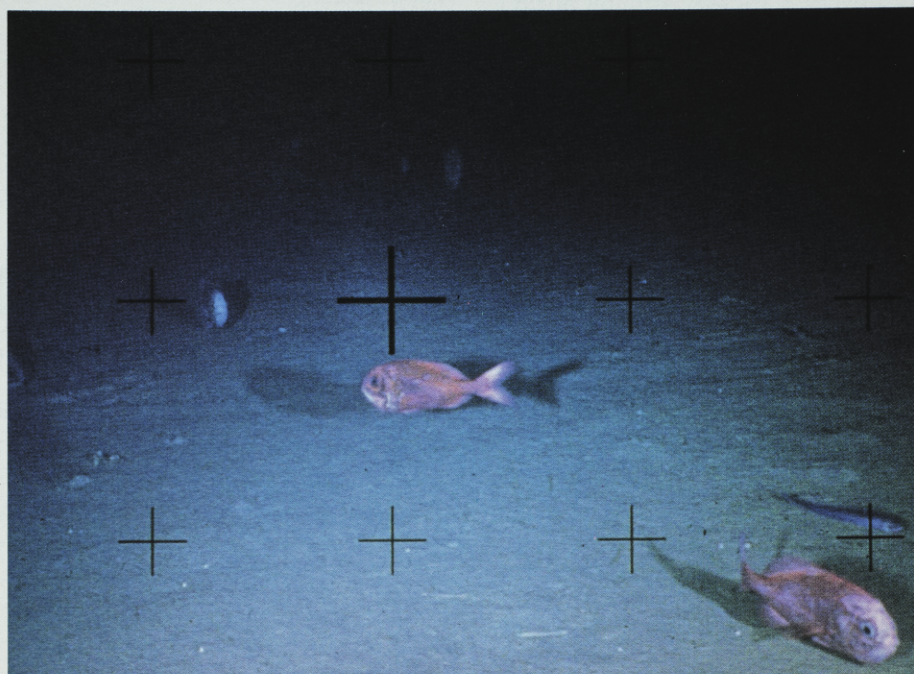
The system originally allocated fishers a tradeable commercial property right which guaranteed them access to a set tonnage of the Total Allowable Catch (TAC) for each fishery or fish stock. This fixed tonnage could not be reduced without the government buying back quota from fishers at the current value of traded quota.

In introducing the quota system the government enforced major reductions in fishing effort in the inshore fishery. The snapper and school shark catches, for example, were reduced by a third nationally and rig (another shark) was reduced by two-thirds.

Fisheries researchers advised against a fixed tonnage quota system because of the uncertainties in catch levels caused by inadequate information and the natural fluctuation of fish stocks. Another cause for concern was that the government in tight financial times would not have the resources to buy back quota. The system created an incentive to overfish, as fishers would benefit financially from any TAC reductions caused by overfishing. Reductions in the TAC would increase the monetary value of a quota.

Treasury and some MAF economists had argued that fisheries researchers were too conservative and that fish stocks were more likely to increase than decrease. So the potential revenue gain from tendering

## Orange roughy – older than your grandmother



ALISTAIR MACDIARMID

*Orange roughy at 1,000 metres on the floor of the Ritchie Bank off Hawke Bay. With a water pressure many times that near the surface it is impossible to reach this depth with conventional diving equipment. The picture was taken with a robot-operated camera.*

**O**RANGE ROUGHY being eaten around the world today could have been spawned when the Treaty of Waitangi was signed. They are a very slow-growing fish living at great depths (700 to 1,500 metres) and feeding on deepwater prawns, squid and other fish. Research in Australia indicates the oldest fish could be well over 150 years old. It is one of the world's deepest fisheries.

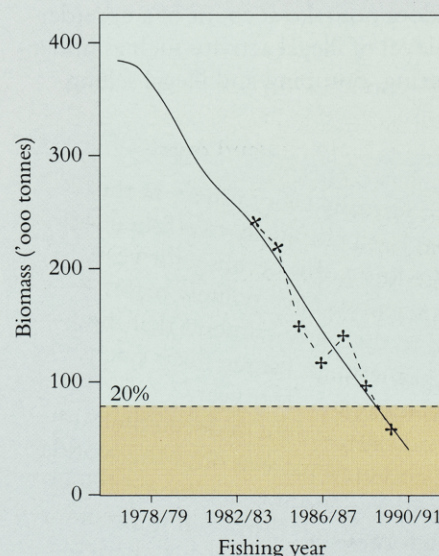
Concern over the sustainability of the orange roughy fishery has been expressed since about 1986 but reductions in the TAC have been extremely slow. The current exploitation of orange roughy stocks on the Chatham Rise (the main roughy fishery in New Zealand waters) can only be described as mining. Only one of the five known stocks has a TAC set at the long-term sustainable level. In addition, no consideration has been made of the effects on natural predators of orange roughy such as sperm whales.

The government has reduced the TAC from 34,000 tonnes in 1988 to 24,000 tonnes in 1990 and maintained it at that level for 1991-92. Yet, over that period MAF scientists were saying that this was not sustainable and were recommending catches at less than a third of this level.

In 1992 MAF scientists again reviewed the evidence and concluded that to have a greater than

even chance of rebuilding the stock in the 1992-93 fishing year the TAC would have to be set at "no more than 6,100 tonnes".

Again we wait to see whether the Minister of Fisheries will finally take on the industry and reduce the TAC to a sustainable level or will ignore the evidence and continue to allow the mining of this fish.



FRANCIS & ROBERTSON 1991, FARD 91/3

*Decline in the Chatham Rise orange roughy population since fishing started in the late 1970s based on model (solid line) and trawl survey results (dotted line). The horizontal line represents 20 percent of the virgin biomass (or total pre-fishing population) of the stock. This is considered the absolute minimum of safety by fisheries scientists yet the roughy are now well below this level.*