

**SOUTH PACIFIC COMMISSION**

**TWENTY FIFTH REGIONAL TECHNICAL MEETING ON FISHERIES**  
(Noumea, New Caledonia, 14–18 March 1994)

**COUNTRY STATEMENT**

**COOK ISLANDS**

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This report summarizes fisheries research and training carried out by the Ministry of Marine Resources since 1991.

**A. FISHERIES RESEARCH WORK PROGRAMMES**

Although hindered by financial constraints, the Research Division was able to implement part of a 5 year Research plan in 1993.

**1. Mullet**

The survey of mullet fry in Rarotonga began in September 1991. The 2 species of mullet; crenimugil crenilabis and chaenomugil leuciscus mullet were collected, measured and weighed in order to determine whether population numbers supported farming. Results of the survey showed that fry numbers could support farming. However fish farming pond construction was seen as being too costly and so alternative farming methods were recommended.

**2. Milkfish**

Research on milkfish (chanos chanos) fry also began in September 1991. Sampling was carried out at 2 sites in Rarotonga. The results of the survey showed that Rarotonga does not produce an adequate population of fry to support farming.

Following the success of the milkfish project in Mitiaro, a number of other islands have made requests for the carrying out of milkfish farming feasibility studies.

**3. Trochus**

A survey of Rarotonga stock was carried out in March 1993 to determine the population, density, length frequency composition, distribution and growth of trochus. Findings showed that the introduced population of 2,200 trochus in 1983, had grown dramatically to 154,700 animals. A monitoring programme has been proposed.

As part of the South Pacific Commission trochus case study, a survey of Aitutaki stock was carried out in June and July 1993. The donation of spot satellite imagery maps of Aitutaki by the Polynesian Remote Sensing Facility in Tahiti proved invaluable.

The results estimated an overall density of 253 trochus/hectare (117,784 individuals) with 22.6% of the stock in the fishable size range (8-11cm). The stock shows greater numbers of trochus in sub fishing size ranges (5-7cm) than larger animals, suggesting heavy pressure on fishable size ranges. No harvest is

recommended until a further survey is carried out in February 1994.

The inclusion of parallel transects in the survey proved a failure. The counts showed a negative binomial distribution just as pronounced as those obtained by laying perpendicular transects. Even though the parallel transects were laid in the zone of maximum abundance, a clumped distribution of trochus was still strongly evident, suggesting that an increase in transect size or transect number will be needed to increase precision. The parallel transects were also hard to complete as the transect rope was laid across the tidal surge, making setting and recovery of the line difficult.

#### **4. Giant Clam**

Research in giant clam in Aitutaki continued to be hampered by the lack of water and electricity to the Hatchery. However, grow out work continued.

In June a survey of tridacna maxima stock was carried out following concerns expressed by the Aitutaki Island Council of declining stock population. The results showed that population numbers have declined since 1987 due to overfishing. Management recommendations included a ban on harvesting for 3 years, the introduction of a legal harvesting size of 12cm, the introduction of reserves, seasonal closures, a ban on export, a ban on the sale to the domestic market, and a ban on SCUBA diving for stock. The management guidelines were presented to the Island Council for consideration.

#### **5. Black Pearl Oysters**

The Research Division's work on black pearl oysters in 1993 focussed upon the Penrhyn project. The work carried out included an ecological baseline study, stock assessment, and the setting up of monitoring sites to check fishing pressure. The ecological baseline study involved the collection of water samples and the carrying out of water current studies. Research staff set up pearl farms for local farmers. Seeding of farms was carried out in November 1993. Monitoring of farms continues.

#### **6. Freshwater Prawn**

A pilot study in the farming of freshwater prawn (macrobrachium rosenbergii) obtained from Tahiti ended with a harvest in May 1993.

An economic analysis carried out showed an estimated annual revenue of a farm to be \$NZ 17,000. However the analysis showed an operating cost of feed and labour alone to be \$NZ 48,000 and \$NZ 10,400 respectively. Therefore, unless a cheaper means of food and labour could be obtained, the farming of freshwater prawn in the Cook Islands does not appear to be economically feasible.

## 7. Mud Crabs and Bonefish

Studies of mud crabs (Scylla serrata) and bonefish (Albula spp.) were carried out in Aitutaki as the basis for Resource Profiles. Observation, mark recapture and line transects were the assessment methods used. The Profiles provide information on life cycles, exploitation, and management.

### B. DATA COMPILATION AND ANALYSIS

The analysis of data on aquarium fishing was carried out of catch and effort data from 1989 to 1992. Results showed that the total harvest of all species pooled, and of one species in particular (the flame angel) were close to maximum sustainable yield. Close monitoring is required, and the possible setting of quotas has been suggested.

During October 1993, a seafood survey was conducted with forms distributed to all seafood retailers and restaurants in Rarotonga. The results showed that during the survey period, the supply of seafood did not meet the demand. Most seafood outlets, particularly retailers preferred locally supplied products to be pre-packed and ready for sale. A common comment made by retailers was that they would be prepared to use more locally caught fish but that prices were too high. Hotels and restaurants would be happy to pay an extra 50 cents per kilogram if fish were bled, gutted and iced.

Data forms concerning seafood consumption have been distributed to Mangaia, Aitutaki, Palmerston and Pukapuka. Staff are analyzing the information received to date.

In order to carry out a cost/benefit analysis of FAD fishing, and compile information on fishing catch and effort, data forms have been created and distributed to fishermen on Rarotonga.

### C. TRAINING

The provision of training and education in marine resources management and development is a priority area. With the increasing interest in the marine sector, the Ministry has provided information and talks to schools, fishermen and the general public.

Practical workshops have been provided in post harvest fish handling, deep sea bottom fishing, vertical longlining and trolling, and gear technology.

In 1992, the Cook Islands spent almost \$NZ 1,160,000.00 on the search and rescue of fishermen lost at sea. As a result, the issue of "safety at sea" held prominence in 1993. Workshops on safety techniques were held which led to the establishment of a Fishermens' Safety Committee. The Committee provided a proposal to Government for a revolving fund to enable the purchase of

basic safety gear (estimated cost \$NZ 1,300.00 per fisherman). In addition, the Marine Board compiled a list of Boat Safety Rules applicable to all boats proceeding beyond the reef of the Cook Islands.

Funding of the workshops was provided by the Hanns Seidel Foundation and the South Pacific Commission.

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