

SOUTH PACIFIC COMMISSION

SIXTEENTH REGIONAL TECHNICAL MEETING ON FISHERIES

(Noumea, New Caledonia, 13-17 August 1984)

COUNTRY STATEMENT - AUSTRALIA

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1. INTRODUCTION

The Australian fishing industry is based largely on inshore and shelf fisheries and most income comes from the taking of crustaceans and molluscs. To date, finfish have generally been caught in areas over the continental shelf close to capital cities and centres of population, particularly in waters off south eastern Australia.

Recent developments, many stemming from the declaration of the 200 mile fishing zone and successful exploratory surveys off the east coast, are extending the areas of fishing activity by Australians, both into areas adjacent to present grounds and into comparatively new regions never before fished by Australians on a commercial basis.

When making an assessment of Australian fisheries, it is necessary to bear in mind the low productivity of our waters. Although the Australian fish fauna is very diverse (about 2,500 species) our fishery resource base is not large by world standards as the waters adjacent to Australia are relatively poor in nutrients, and thus do not support large populations of photosynthesizing organisms. Upwellings are sporadic and only occur in restricted areas around Australia so that coastal waters and adjacent oceanic waters are not particularly productive.

2. SUMMARY

Total landings by the Australian fishing fleet increased in 1982/83, the last year for which aggregate figures are available. Although landings of prawns fell these were more than offset by increased landings of tuna, rock lobsters and scallops. Domestic landings of finfish were slightly below the previous year. During 1983/84 tuna production was reduced partly as a result of the introduction of a regime of catch quotas and size limits.

There was some moderation in the rate of increase in costs during 1983. However, the advantage of this was more than offset by weak market conditions. Some major fisheries, notably abalone, faced marketing difficulties and overseas market prices for rock lobsters and abalone declined. The market for prawns and fresh and frozen finfish improved from the depressed 1982 level.

The introduction of new, and revision of existing management arrangements for a number of Australian fisheries are currently under consideration.

During 1983 fisheries agreements were re-negotiated between the Australian Government, the Governments of Japan and Korea and with Taiwanese commercial fishing interests. Two joint venture fishing agreements were approved, one in the northern gillnet fishery and the other in the squid fishery in south coastal waters.

3. PRODUCTION

(a) Fleet

In 1983/84 approximately 13,000 boats were licensed to fish commercially, however, only about 4,500 were licensed to operate beyond three miles from the coast. Boat numbers have not increased markedly in recent years but fishing effort has risen significantly due to the upgrading of the fleet.

(b) Landings

Total landings by Australian vessels in 1982/83 were estimated at 168,580 tonnes liveweight, valued at \$440m. This is an increase of 6% both in volume and 8% in value compared with 1981/82. Production of crustaceans and fish fell by 7% and 5% in volume but this was more than offset by an increase of 52% in the volume of molluscs.

(c) Utilisation

During the year ending June 1982, 89% of marine produce caught by commercial fishermen was used in fresh and frozen form; 7% was canned, 2% was cured and 2% reduced to meal. More recent figures are not available.

(d) Imports

The value of Australia's imports of marine produce in the year ending June 1983 was a record \$225m, an increase of 2% over the previous twelve months. Exports were valued at \$364m, an increase of 14%.

(e) Exports

Australia's main exports in 1982/83 were frozen prawns (13,754 tonnes valued at \$159m), frozen rock lobsters (6,601 tonnes valued at \$106m), abalone (3,588 tonnes valued at \$40m) and scallops (2,843 tonnes valued at \$21m). Nearly all prawns and whole rock lobsters and 40% of the abalone exports went to Japan. The United States took nearly all the rock lobster tails; Hong Kong took a third of the abalone exports and France took approximately one third of the scallops exported.

A significant and recent development has been the preparation of southern bluefin tuna for the Japanese sashimi market. This has occurred because of the recent success of New Zealand fishermen. Pole fishing and purse seining techniques used in Australia have presented problems in achieving premium quality standards, however, Japanese buyers have maintained interest and an improvement of handling practices will be pursued. A small group of New South Wales fishermen using longlining gear have been able to maintain very high quality standards and fish is air freighted to the chilled sashimi market.

4. MANAGEMENT

(a) General

Management plans are currently being revised or developed for Australia's main fisheries, partly to conserve stocks and partly to reduce economic problems in the industry because of over capitalisation. The industry has taken a major role in the development of these management policies.

Fisheries for which management plans are being introduced include the northern and east coast prawn fisheries, the south eastern trawl fishery, the southern bluefin tuna fishery, the Bass Strait scallop fishery and the Torres Strait fisheries for tropical rock lobster, prawns, pearl shell and mackerel. An important element in these management plans are provisions to contain and reduce catching capacity by such means as voluntary license buy-back which is being introduced for the northern prawn fishery. In addition, management plans are being developed for fisheries in the Great Barrier Reef region and for turtle and dugong fisheries which are exploited by indigenous people.

(b) Torres Strait Treaty

Work is still proceeding on preparation for ratification of the Torres Strait Treaty which Australia and Papua New Guinea signed on 18 December 1978. This document represents a unique border agreement between independent sovereign nations in that it establishes a Protected Zone (PZ) within which both nations have rights and obligations, rather than a single border line. Within the PZ are lines dividing the areas of primary fisheries and seabed jurisdiction between the two nations.

The Treaty also is unique in that it protects the rights of traditional inhabitants of the PZ and adjacent areas by recognising and preserving the existing pattern of traditional activities. The Treaty also requires both countries to manage commercial fisheries for optimum utilization of the resource, subject to protection of traditional fisheries, and to promote economic development in the Torres Strait area. In practice, this means favouring management options which allow the greatest opportunity for traditional inhabitants to participate in a fishery eg. line fishing for mackerel over gillnetting, and diving for lobsters over trawling for lobsters.

To fulfill Australia's obligations a research programme has been set up to support management programmes. This programme includes:

- .. a study on the extent and nature of traditional fishing by traditional inhabitants;
- .. studies on the biology of commercially exploited species such as tropical rock lobster, prawns and mackerel;
- .. a study on the effects of trawling on non-target species.

(c) Turtles and Dugongs

Turtles and dugongs are protected species in Australian waters, but their exploitation is allowed under certain conditions by aboriginals and Torres Strait islanders. Commonwealth and State government funded research has identified population problems in both species which can be directly attributed to the level of take by indigenous inhabitants, and mainly because of the use of modern technology such as power dinghies.

The Commonwealth and Queensland fisheries authorities are working together to produce a joint plan for turtle and dugong conservation and management. Extensive consultation is taking place with researchers, representatives of traditional fishermen and government officials. It is recognised that management must be developed in close consultation with the traditional hunters, both to utilize their very extensive knowledge of the species involved and to ensure community understanding and support for management measures.

(d) Great Barrier Reef Marine Park

The Great Barrier Reef region covers an area of almost 350,000 square kilometres off the NE coast of Australia. 98.5% of this area has now been declared Marine Park, bringing it under the auspices of the Great Barrier Reef Marine Park Act.

The Great Barrier Reef Marine Park Authority is responsible for administering the Act, and its stated goal is to provide for the "protection, wise use, appreciation and enjoyment of the Great Barrier Reef in perpetuity through the development of the Marine Park".

In response to ever increasing human use of the reef, mechanisms for monitoring and regulating activity in the region have been developed, which include regulations on fishing, mineral exploration and recovery, boating and shipping, tourist operations, operation of ports and harbours and the discharge of wastes from fixed installations and vessels.

The region contains fishing grounds of major significance to the Queensland fishing industry. Prawns are the main catch but significant fisheries exist on mackerel, reef fish, estuarine and inshore fish, lobsters, scallops and an increasing amount of tuna. Turtles and dugongs are fished by indigenous communities for subsistence and ceremonial purposes. Fisheries authorities are closely involved in developing management policy for the Marine Park to ensure the continued productivity of fish stocks and that interests of the fishing industry are considered, along with conservation, tourism and other interests.

(e) Southern Bluefin Tuna

Interim management arrangements for the domestic southern bluefin tuna fishery came into effect from 1 October 1983 pending the development of a long-term management regime for that global fishery. Annual quotas of 15,000 tonnes for the eastern sector (incorporating a 5,000 tonne purse seine quota) and 4,000 tonnes for the western sector were established.

Size limits of 54cm and 70cm were introduced for the western and eastern sectors respectively. Restraints previously applied on the extent of purse seining activities were maintained. A poor New South Wales season (about 900 tonnes) and an early finish to the main South Australian activity will probably result in an eastern sector catch of about 11,000 tonnes. The western sector catch will probably finish close to the 4,000 tonne quota by the end of the season on 30 September 1984.

CSIRO has continued to refine and upgrade its analyses of the biological state of the Southern Bluefin Tuna stock and its productive capacity. In particular, the implications of different fishing patterns by the Australian surface fishery and the Japanese and New Zealand Fisheries are being assessed, in view of an agreed management objective of stabilizing parental biomass at the 1980 level.

5. FOREIGN FISHING

(a) Tuna

Officials and scientists from Japan, New Zealand and Australia met in Australia during May/June 1984 to examine the condition of southern bluefin tuna stocks and to discuss the need for, and the form of, international management. The conclusions of the preceeding meeting (Japan 1983) were reaffirmed and scientists indicated that the urgency of their recommendations was increased by some recent changes in segments of the stock. Officials from Australia, Japan and New Zealand reaffirmed the desire of their respective Governments to work towards management measures for the fishery which would effectively sustain the spawning stock at a satisfactory level.

Further meetings of the three countries on the question of stock condition and international management arrangements for SBT will be scheduled as necessary.

The Australia/Japan Subsidiary Agreement on tuna longline fishing was re-negotiated and the new Agreement came into force on 1 November 1983 for a period of twelve months. The Agreement, substantially unchanged from that negotiated for 1982/83, provides for an increase in access fees from \$1.44m to \$2.275m. The maximum number of longline vessels to fish in the AFZ is limited to 290 and pre-existing permanent and/or seasonal closures off Western Australia, South Australia, Victoria, New South Wales (slightly increased area) and Queensland have also been maintained.

(b) Gill-Netting and Pair-Trawling

An Agreement with the Australian agents for commercial fishing interests in Taiwan to cover the operations of gillnetters and pair-trawlers in waters off the north and north-west coast of Australia, was re-negotiated to operate from 1 August 1984 for a further 12 month period.

Quotas were set at 5,000 tonnes for the gillnetters and 27,500 tonnes for the pair-trawl fleet, the latter representing an increase of 7,500 tonnes over 1983/84 while the former was unchanged.

During 1983 the Australian Government approved two joint fishing ventures with commercial interests of

Taiwan and an Australian company involving operations in the northern gillnet fishery and the southern squid fishery. The company is required to replace foreign fishing vessels by Australian owned vessels in each year of the joint venture arrangement (three years), to purchase produce from independent Australian fishermen, to make maximum use of shore based facilities where feasible and to spend an agreed minimum amount on Australian goods and services. The squid agreement requires the joint venture company to offer for sale, a proportion of its total catch to Australian processors at concessional prices.

The CSIRO and Australian fisheries authorities are at present involved in an investigation of northern pelagic fish and shark stocks. It is expected by the completion of the programme that in excess of 8,000 sharks, tuna and mackerel will have been tagged. Black Tip sharks (Carcharinus limbatus and C. sorrah) dominate the fishery. Recent tag returns indicate that shark travel widely and quickly within the region.

(c) Australian Fishing Zone Information System (AFZIS)

Foreign vessels are required to report their position every 2 days and their catch every 6 days as well as complete comprehensive logbooks. Radio reports are used for "real time" monitoring of fisheries and the logs for more comprehensive analysis. Catch and effort data, as well as gear and vessel data, have been collected for the longline, squid jigging, demersal trawl and gillnet fisheries.

Australian vessels in the southern tuna fishery and the northern prawn fishery are required to complete logbooks. Other Australian fisheries will probably be required to provide logbook returns in the near future.

Australia maintains a team of 9 full-time observers who board foreign fishing vessels (FFVs) to assist masters in the completion of log books, to monitor and assess the accuracy of data supplied by the FFV and to obtain biological samples and additional information.

Off north and north-west Australia observers work from a vessel which serves as a platform for operations. In other parts of the AFZ observers board FFVs from Royal Australian Naval (RAN) surveillance or fisheries vessels. Coverage is around 2% in north and about 11% in the south.

Observers function only to collect biological and fisheries data; they are not associated with enforcement. This division of responsibility is believed to be important.

6. COMMONWEALTH FINANCING OF FISHERIES RESEARCH

Grants totalling \$3,089,839 for 1983/84 were allocated from the Fishing Industry Research Trust Account (FIRTA) for a range of research projects, including biological and scientific research, gear technology, exploratory fishing, education and extension, and seafood handling and marketing. Research into the tropical disease, ciguatera, received funding support.

Exploratory surveys, funded from the Fisheries Development Trust Account, were undertaken during the 1983/84 financial year. Major projects include exploratory deep water trawling to 1000 metres for orange roughy and assessment of the commercial potential of handline and pole fishing for yellowfin tuna off northern Queensland. Some special allocations have been made to employ consultants to participate in some key meetings addressing States on trawl fish, abalone and shark stocks.

7. ASPECTS OF PARTICULAR INTEREST TO THE PACIFIC

(a) El Nino

A conference was held in Canberra in July 1983 on the El Nino - A Southern Oscillation phenomenon. It was organised by the Australian Marine Sciences and Technologies Advisory Committee in association with the National Committees for Oceanic and Atmospheric Sciences. It provided an opportunity for a review of the state of knowledge on the interrelation of events such as the El Nino phenomenon and oceanographic and climatic factors which may be associated with their occurrence. Enquiries about details of papers presented and the report of the conference should be directed to Mr Christopher Ansted, Department of Science and Technology, Benjamin Offices, Belconnen, ACT 2616.

(b) Mariculture

Mariculture in Australia is led by the culture of oysters, Crossostrea commercialis (the Sydney rock oyster) and a recent addition the Pacific Oyster, C. gigas. Total rock oyster production in 1982/83 was around 10,000 tonnes (12.6 million dozen). Cultivators of Sydney rock oysters in New South Wales and southern Queensland accounted for 95% of the total production; the remainder was Pacific oysters produced in Tasmania.

In New South Wales, spat naturally set on sticks are grown in the intertidal zone of estuaries. Methods of deepwater culture are being developed to enable deeper areas to be utilized. Tasmanian production is of hatchery produced (cultchless) spat in the intertidal zone. Deepwater culture is also gaining popularity.

Cultivation of the southern variety of the European blue mussel Mytilu edulis planulatus is developing in lagoon areas in New South Wales, Victoria and Tasmania. Production is currently very low (estimated 300 tonnes) but much higher production is expected, particularly in Port Phillip Bay, Victoria.

Pearl oysters (predominantly Pinctada maxima) are cultured in Northern Australia near Darwin, around Broome in Western Australia, and in Torres Strait. Cultured pearls to the value of \$13.5m were exported from Australia in 1983. Almost 80% of production comes from Western Australia. Immature pearl shell (chicken shell) is gathered by divers working from luggers, generally working in less than 12 fathoms. Live shell is transferred to pearl farms where it is rested, operated on to insert the pearl nucleus, then grown for 2-3 years before the pearls are harvested. A major problem is mortality of shell and this has been investigated under FIRTA grant. A significant cause of mortality is a cold-shock induced Vibrio infection. Changes in handling of live shell has significantly reduced mortality in some cases.

Current mariculture research funded by FIRTA in Australia covers the following:

<u>SPECIES</u>	<u>INSTITUTION</u>
- Barramundi	Sea Hatcheries, Gordonvale Queensland
- Sydney rock oysters	NSW State Fisheries
- Pacific oysters	Tasmanian Fisheries Development Authority
- Pearl oysters	WA Department of Fisheries and Wildlife
- Nutrition	NSW State Fisheries
- Abalone	Tasmanian Fisheries Development Authority
- Mussels (marketing)	Victorian Department of Conservation, Forests and Lands
- Scallops	University of Tasmania, Tasmanian Fisheries Development Authority (TFDA), Shellfish Culture Pty Ltd.

A joint programme between the James Cook University at Townsville on research into the culture of giant clams, is discussed below.

Use of Fish Aggregation Devices (FADs) in Australia

Since the beginning of 1984, 4 FADs have been deployed off the NSW coast. Two were subsequently lost and replaced. Attractors are made from netting which is cut into a flag shape and suspended from the mooring line 10 m below a surface buoy. The two FADs moored off Sydney are in 140 m of water and are attracting schools of baitfish and small numbers of kingfish (Seriola lalandi). Large schools of skipjack, yellowfin tuna and dolphin fish have also been observed when water temperatures have exceeded 20°C.

Two FADs set on a seamount about 90 nm off Cairns, North Queensland, in approximately 45 m of water have remained in position for two years. The design of these is similar to the early Western Australian type with plastic strands threaded through the lay of the synthetic mooring rope. Species taken around these FADs include yellowfin, bigeye and skipjack tunas, dolphin fish and rainbow runner Elegatis bipinnulatus. Deterioration of the plastic strands at the surface has been observed and is probably due to the action of ultraviolet light.

8. INTERNATIONAL DEVELOPMENT ASSISTANCE

(a) Australian Development Assistance Bureau (ADAB).

Through its aid program, Australia has provided \$150,000 p.a. support for the SPC Tuna and Billfish Programme since its inception three years ago, and similarly supported the earlier SPC Skipjack Tagging and Survey Programme. During 1981/82 Australia also provided funding for the SPC Fish Aggregation Devices Study. Assistance has also been provided to the UNDP Pacific Regional Programme for projects such as the FFA Workshop on National Tuna Fishing Operations and the SPC Artisanal Fishing Training Module.

Australia also provided the Forum Fisheries Agency with one-third of its regular budgetary funds and has supplemented these with project-linked extra-budgetary finance.

(b) Australian Centre for International Agricultural Research (ACIAR).

The Australian Centre for International Agricultural Research (ACIAR), a statutory authority established in 1982 by the Australian Government, commissions Australian research institutions to carry out high priority agricultural and fisheries research on a partnership basis with the individual South Pacific countries. ACIAR does not conduct research itself. Research projects with time frames usually of two or three years can be carried out in either the South Pacific country or Australia or a combination of the two. Currently, ACIAR supports research in the culture of giant clams belonging to Tridacna species in Fiji and Papua New Guinea with James Cook University as the Australian partner. ACIAR can only support bilateral projects, but, it encourages linkages to international research centres, such as ICLARM. Another project under consideration is that of establishing the life cycle and recruitment systems of the Coconut Crab, Burgis latro, again with the view of protecting and enriching the natural population of the crab in many islands of the South Pacific. It is important that the project is identified as a high research priority for the countries of the South Pacific before ACIAR will consider supporting the project.

ACIAR is an organisation that looks forward to further involvement in fisheries research in the South Pacific.

(c) International Centre for Living Aquatic Resources Management (ICLARM)

ICLARM ^{has} ~~is to~~ establish a presence in the developing marine science centre in Townsville and Australia welcomes this initiative. ICLARM is an independent centre of scientific research and expertise which has built up an excellent reputation for the high quality of its output, both as a research body and as a centre for information dissemination. Australia is confident that ICLARM will continue to make a significant contribution to tropical fisheries research and its presence in the Pacific will also boost research in that region.

9. TRAINING IN PRACTICAL FISHERIES

The Australian Maritime College

The Australian Maritime College was established to provide maritime, engineering and fisheries training for the whole of Australia. First students were enrolled in 1980.

The College is in a unique position to provide maritime education and training in all aspects of a fisherman's job, at all levels, and is geared to provide that training at any location in the South Pacific region. The importance of Australia's tropical fisheries means that existing courses stress tropical aspects of training. Courses in gear technology also extend into low technology fishing methods which are appropriate for isolated areas and developing countries.

The College currently offers certificate courses at all levels from coastal and inshore fishing vessels up to master of foreign-going ships. Training courses have been offered in centres as far afield as Darwin in the Northern Territory, Cairns in Queensland, and Geraldton in the north of Western Australia.

Information on courses offered are available in the College Prospectus. These courses have all been developed to meet the needs of the Australian industry. However, students from the South Pacific region as well as South East Asia are already enrolled on both the Diploma and the Graduate Diploma, and are deriving benefit from these courses. The College would welcome an initiative that would lead to the provision of courses, on or off campus, designed specifically for the needs of the South Pacific region. These could range from courses of similar duration to those previously discussed to short courses, from one semester down to one or two weeks, covering particular areas of interest. Two staff members of the School of Fisheries have significant experience in the South Pacific.

By means of Australia's aid programme, the facilities and expertise of the Australian Maritime College can be made available throughout the South Pacific region.

Further Information

This paper provides a brief list of Australian fisheries activities. Any reader interested in further details, on any aspect, is welcome to contact the organizations mentioned or the Fisheries Division, Department of Primary Industry, Canberra, ACT 2600, Attention: Mr A.C. Byrne.