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TENTH REGIONAL TECHNICAL MEETING ON FISHERIES

(Noumea, New Caledonia, 13 - 17 March 1978)

REPORT

Noumea, New Caledonia  
June 1978

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## I. INTRODUCTION

The South Pacific Commission Regional Technical Meeting on Fisheries provides the only opportunity for Chief Fisheries Officers throughout the region to meet each year. Given the growing interest in problems connected with the exploitation of marine resources, this Tenth Regional Technical Meeting seemed likely to attract a large number of participants and observers and, in fact, did so, since it brought together representatives of twelve countries and territories in the area, as well as twenty observers from thirteen countries outside the region and various organizations.

In accordance with the wishes expressed by certain countries and territories, four seminars were organized for the purpose of informing participants of methods used to identify stocks of highly migratory species and to settle certain issues of a regional nature. A long session of film and slide projections lent extra interest to the proceedings. The Expert Committee on Tropical Skipjack, convened jointly with the Meeting, allowed all participants to join in its discussions, which are of considerable importance for every country and territory in the region.

The meeting was officially opened by Mr Legand, Director of ORSTOM in Noumea.

Mr. W. Wilkinson, Chief Fisheries Officer in Tonga, was unanimously elected Chairman of the Meeting, and the Vice-Chairmanship was conferred upon Mr. Paul Callaghan of the University of Guam.

A drafting committee was elected to serve the Meeting. It was composed of Mr. A. Chapman, Chief of Marine Resources in the Trust Territory of the Pacific Islands, Mr. D. Gibson, Acting Principal Fisheries Officer in the Solomon Islands and Mr. R. Stone, Chief Fisheries Officer in Fiji.

All the above-mentioned are to be commended for their efficiency and invaluable contribution towards the successful outcome of the Meeting.

II. AGENDA

1. Opening address by Mr. Legand, Director of ORSTOM Center, New Caledonia.
2. Appointment of Chairman and other office bearers.
3. Approval of agenda and timetable.
4. Country statements
5. Expert Committee on Tropical Skipjack (including progress report on the Skipjack Survey and Assessment Programme): full day, 14 March.
6. Other SPC activities in fisheries
  - 6.1 Outer Reef Artisanal Fisheries Project - Final Report
  - 6.2 Lobster Project - Final Report
  - 6.3 Turtle Project - Final Report
  - 6.4 Fisheries Adviser - Annual Report
  - 6.5 Work Programme (1978-1979).
7. Report by UNDP Regional Fisheries Coordinator.
8. Seminar Sessions
  - 8.1 Law of the Sea and the Regional Fisheries Agency
  - 8.2 Stock identification using biochemical genetics
  - 8.3 Albacore
  - 8.4 Aquaculture.
9. Other matters.
10. Adoption of Report.

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IV. SUMMARIES OF COUNTRY STATEMENTS

FIJI

1. During 1977 the Government-owned Ika Corporation provided 1711 tonnes of tuna to the local cannery at Levuka. The Corporation chartered four vessels of 190,250, 80 and 59 gross tonnes from Hokoku Marine Products of Japan. Government has chartered the local fisheries research vessel to the Corporation and the Corporation has purchased a second-hand 114 gross tonne vessel from Japan.
2. A total of 245,814 cartons of local tuna was processed and canned and 305.2 tonnes of fish meal produced by the Pacific Fishing Company during 1977.
3. The Fiji Can Company was opened in 1977 producing 702 cans for Pacific Fishing Company.
4. In 1977, 846 commercial fishing vessels were registered in Fiji. To provide adequate support facilities to the fishery, Government installed two new ice plants in the main fishing centres and gear stores have been opened selling duty free fishing gear to commercial fishermen.
5. The Fisheries Division processing unit processed 3.85 tonnes of salted mullet and 9.16 tonnes of Bêche-de-Mer in island areas which are low in agriculture potential.
6. 850 tonnes of fish was sold through the Municipal markets, 166.7 tonnes were sold by the National Marketing and Authority, an estimated 650 tonnes through hotels, butchers and supermarkets. A remarkable 1,448 tonnes of aquatic non-fish products were sold at municipal markets.
7. Projects initiated or continued during the year included: polyculture of milkfish; rabbit-fish and prawns; progress at the Naduruloulu Grass Carp Station; surveys to establish total annual fish production, baitfish stocks, and the potential of deep-water dropline fishing for snappers; performance indicators on tuna catch statistics.
8. The Fisheries fleet operations were severely hampered by major repair works, and this hindered assessment of the Spanish mackerel stocks. Despite the absence of a Training Officer a satisfactory training programme was maintained.

FRENCH POLYNESIA

9. Total fish production is only 60% of the demand. Development must enable this deficit to be filled, and also produce for export. This can be achieved in two ways: by the private sector and by the co-operative sector. The first progresses slowly but the second has made much progress over the last 3 years.

10. The skipjack project always makes up the most important part in fisheries activities. The vessel Tainui continues resource evaluation of natural baits and the refining of fishing techniques. In 1977 it was at sea 182 days; 105 days of fishing caught 43 tonnes of tuna, using 1,700 buckets of bait. Stocks of natural bait were poor, and hopes are placed on the raising of mollies and milkfish. About 12 trials with each species gave encouraging results. A skipjack tagging cruise on behalf of the Inter-American Tropical Tuna Commission was made to the Marquesas in September and October, and 401 tuna and skipjack were tagged.
  11. The problem of spat-catching of Pinctada margaritifera for pearl culture has been overcome; 110,000 spat were produced on Takapoto atoll in 1977. The CNEXO is also working on laboratory production of spat. Production by 7 Companies and 5 Co-operatives is developing rapidly.
  12. Oyster culture of the local species Crassostrea glomerata in Les Iles sous le Vent produced 4 tonnes in 1977. It is slow growing and not very attractive to the consumer. First trials with the Japanese oyster C. gigas will allow the establishment of a demonstration farm in 1978. Spat are laboratory reared by CNEXO.
  13. In aquaculture the technique for raising the shrimp Machrobrachium rosenbergii is now complete and will be available to the public in 1977. In 3-4 years it is anticipated annual production will be about 100 tonnes in order to satisfy local demand. The raising of marine shrimps is still experimental but gives encouraging results with several penaeid species.
- GILBERT ISLANDS
14. An approximate landing of 900 tons of fish was calculated for this year.
  15. The establishment of a fishing industry is high on the priority list. It was advanced in November 1977 by the arrival of the Kyoryo-Mar, provided by the Japanese Government for a special survey. Trials with Chanos chanos as live bait for skipjack were encouraging. Ten local fishermen have been learning methods on board.
  16. A Fisheries Training Officer from the United Kingdom and two graduates from the Fisheries Diploma Course at the South Pacific University have joined the Fisheries Division. The Division hopes to have a vessel by the end of the year, and approval for the Fisheries Complex by the middle of the year.
  17. The survey of fish in the Tarawa Lagoon is now complete and a report is to be published.
  18. The bait fish project is progressing very well, facilities have expanded and extra staff engaged. The brine shrimp project on Christmas Island has been taken over by the Fisheries Division. A consumer and statistical survey was completed in 1977, and has proved very valuable.

GUAM

19. Guam's population of 115,000 is composed of diverse ethnic backgrounds consuming a variety of fish and seafood products. The current value of retail fish and seafood consumption on Guam is estimated to be more than \$6 million per annum, the vast majority of which is imported.

20. Government efforts are currently aimed at import substitution through encouraging small-scale local fishing and aquaculture efforts. Experiments will begin this year on "iba-shibi" fishing for large tunas. Both eel and shrimp culture projects are currently under way, and a fishermen's co-operative has been started in conjunction with a new centrally located public market area.

21. With respect to large-scale commercial fishing Guam is trying to improve its position as a transshipment point for frozen tuna entering United States markets. Fishing vessels of foreign flag may tranship tuna to U.S. buyers via the port of Guam. In this regard plans for improving dock facilities, providing improved freezer storage capacity, and possible canning construction are being considered.

NEW CALEDONIA

22. Since the last Conference new work in fisheries and aquaculture have been as follows:

(a) Offshore fishing

Funds have been obtained to begin an aerial spotting project in 1978 using infra-red techniques to evaluate tuna stocks in the economic zone. The co-ordination of the operation is under the control of ORSTOM.

(b) Lagoon fishing

Regulations have been implemented for the protection of turtles: total ban on commercialisation (meat and shell), no taking of eggs, no fishing during the breeding season.

Concerning the plan to establish an aid fund and to develop the interior and the islands, two ship-building yards for fishing boats have been established, at Noumea and the Isle of Pines. These small wooden boats (5-9 metres), fitted with inboard diesels or outboard motors, are sold at a low price mainly to Melanesian fishermen; 30 have already been delivered, about 100 are in the process of being built.

There is at least a strong export demand for trochus shells (about 1,000 tonnes were exported to Europe in 1977).

(c) Aquaculture

The aquaculture station has continued its work on shrimps (fresh water and marine). It depends on two hardy species (Peneus monodon and P. stylirostris) one having a good growth rate during the warm season, the other during the cold season. It is planned to establish an experimental farm to make an evaluation of the economic viability of the project.

NEW HEBRIDES

23. Fisheries development in the New Hebrides follows these lines:

(a) Continuation of the activities of the South Pacific Fishing Company (Japanese) at Palekula on the island of Santo. With its fleet of 50 long-liners it has great economic importance for the archipelago.

(b) Establishment of a fishing school in Tanna (Tanna Fishing Co-operative). The S.P.C. will help the Polynesian Master Fisherman carry out this development project in deep fishing.

(c) Establishment next of an aquaculture centre on Vaté (marine and fresh-water shrimps). The SPC took charge of the education of 2 New Hebrides students at CNEOX.

(d) The approaching arrival of a Fisheries Adviser to the archipelago on the staff of the UNDP. He will be attached to the new Ministry of Natural Resources.

(e) The autonomous government of the New Hebrides asked France and the United Kingdom to study the establishment of the 12 mile zone and the 200 mile exclusive economic zone.

NIUE

24. Niue (population 4,000) is a roughly elliptical island of 100 sq. miles surrounded by a 30 yd. fringing reef with depths of 100 fathoms within 300 yds. of the shore all round. Intermittent currents run north to south up to 3 knots, with several current convergence areas off the various headlands.

25. The local fishery consists of several one-man canoes and approximately 30 aluminium dinghies powered by small outboard motors. The main local catch consists of tuna and wahoo, with some hand-lining for demersal species.

26. In 1976 Niue imported \$50,000 of fish products.

27. Following a request to New Zealand from the Niue Government, a bilateral aid scheme was set up consisting of a 28 foot G.R.P. "Karitane" boat, one fisherman and a range of suitable fishing gear.

28. In July 1977 fishing commenced. Four local fishermen are being trained in various fishing techniques and the practical details of boat-handling maintenance, chartwork, coastal navigation, basic meteorology and safety procedures.

29. Methods used to date include: trolling, floating and bottom gill-netting and long-lining, hand-lining, dahn-lining and various bait capture methods.

30. It is envisaged that at the end of the first year's operations the project will be fully localised and a fishing pattern established.

31. All fish caught are marketed directly to the public by the Fisheries Section at less than half the local retail rate with an understandably enthusiastic response from the local population.

#### PAPUA NEW GUNIEA

32. The Papua New Guinea Tuna fishery experienced its worst year on record with 24,000 tonnes being caught. This was buffered somewhat by high skipjack prices during most of 1977. The tuna bait fish catch of approximately 1,800 tonnes was considerably better than previous years. The Gulf of Papua trawl fishery produced 900 tonnes and 50 tonnes of prawn and crayfish tails respectively. The Daru based reef fishery yielded 25 tonnes of crayfish tails.

33. Research findings necessitated the introduction of some restrictions on catch and area of operation by the trawl fishery whilst the crayfish migration occurred. Stolephorid anchovy were held in pens for periods of up to two weeks with minimal mortality.

34. "Sol pis", the product of the Sepik river fish salting project based mainly on tilapia fillets, found increasing acceptance in the Highlands. Approximately 30 tonnes of fish were processed in 1977.

35. Several proposals for shoreside tuna freezing and processing facilities were received by the Government. Final stages of negotiation for the establishment of tuna processing facility in Manus have been reached.

36. The issuing of Baiting Permits for the restricted baiting areas will in future be based on the degree of shore processing carried out by the applicant company.

37. Village-level fishing is being encouraged by the introduction of ice-making facilities and associated markets. A fishing project has been established in West New Britain based on freezer barge buying fish and fishing from various coastal villages for subsequent delivery to Lae and Rabaul. The barge will arrive in early 1978.

38. The pilot project aimed at establishing a village-based fishery for freshwater crayfish (Cherax albertisi) will be upgraded following the granting of K 93,000 by the United Nations. The grant will be used to purchase a freezer boat and provide a Project Manager.

### SOLOMON ISLANDS

39. Before 1971, Fisheries in the Solomon Islands was mainly in the subsistence sector and the only commercial exploitation taking place was in the traditional Pacific Island marine products - Bêche-de-Mer, trochus, turtle shell, etc. This small industry was useful in as much as it generated the much needed cash into the rural economy. Although useful, it was not substantial enough in resources to provide Government with revenue when the eventual day of independence arrived.

40. From that year full scale commercial surveys were undertaken to tap the resources of tuna known to inhabit the waters of the Solomon Islands. In 1973 a joint venture agreement was signed between Taiyo Fishery Company of Japan and the Solomon Islands Government to harvest the resources that the survey results confirmed. This industry has continued to flourish until at the time of writing there are two freezer stations, two Arabusi smoke factories and one cannery. A further freezer station is planned for construction during the year.

41. To supplement the catch of the joint venture company, a newly formed company came into existence during the year. The company, National Fisheries Developments Ltd., is to build ten skipjack vessels and operate them on their completion. The project is funded by an A.D.B. loan with N.Z. technical assistance.

42. In 1976 the industry was again the largest single production unit (by sector) in the country, exports were worth approximately \$A10 million. (\$9.5 million in skipjack and the balance by traditional products).

43. During the year advances were made in the internal fish marketing structure with freezers and ice plants being commissioned in Honiara and districts. This development will continue to have high priority with the Division.

### TOKELAU

44. Fishing was never done commercially. In the past fishing was done on a commercial basis under the supervision of the elders. The elders had an elaborate body of lore which the younger fishermen had to learn before they were allowed to fish for skipjack. Until recently the young fishermen have deviated from this and now fishing is mostly done on an individual basis.

45. Certainly the lack in scientific personnel to implement the recommendations made by experts is a problem. Hopefully the South Pacific Commission could assist us in this aspect as a first step.

### TONGA

46. Estimated fish landings for the year were 1,300 tonnes, half the estimated local demand.



47. Exploratory hand-reel fishing in the outer reef gave catch rates comparable with similar fisheries elsewhere. A standing stock of 6,000 tonnes was calculated, with a potential yield of 2,000 tonnes. This resource is not fully exploited, but some progress was made this year with new boats.

48. Two vessels carried out exploratory fishing for skipjack around the northern Vava'u Group and produced satisfactory results. Complementary bait fishing trials were successful.

49. Trial consignments of Mytilus viridis and Crassostrea belcheri were successfully sited in the Kingdom. The Japanese Pearl Oyster Company continued their project and are confident a small pearl industry can be based in Vava'u.

50. The cultivation of mollies for tuna live bait continued; breeding capacity was increased, and two field trials carried out.

51. The Fishermen's Loan Scheme was taken over by the Tonga Development Bank and has now lent \$25,796 since its inception.

52. The new long-liner Tavake and the Ekiaki both had a successful fishing year.

53. The Fishery Division now has a staff of 100. The Fishery Extension Centre in Vava'u is almost complete. A fishing boat harbour, market and cold store are to be constructed at Nuku'alofa, also a Mariculture Research Centre. These developments are funded from various aid sources, such as: Japan, Australia, New Zealand and the E.E.C. Economic Development Fund.

#### TRUST TERRITORY OF THE PACIFIC ISLANDS

54. Many people expect the development of marine resources to support general economic development which is currently funded by grants from the United States Government. The basis for economic self-sufficiency could be achieved if a substantial portion of the 100,000 tonnes of tunas taken annually in the area was harvested locally.

55. The Marine Resources Development Programme tries to balance economic, technical and social development for the benefit of the area. The major effort is currently going into development of the tuna resources. At present the only commercial scale fishery is at Palau, where the boats are manned by foreigners. A one year programme is being initiated to investigate pole-and-line skipjack fishing and bait resources. Small pilot operations are under way in Truk and Ponape. Long range plans are for a processing complex in Truk. The possibility of using purse seine technology is also being investigated.

56. A nine-member Micronesian Maritime Authority has been established to administer the extended fisheries zone coming into effect on 1 July 1979.

57. The Palau mariculture centre is concentrating on Macrobrachium shrimp production, siganid culture and tuna bait fish culture. A modest programme is planned to investigate the resources of the outer islands. Boat building yards are now in operation in the Marshalls, and Truk, and are developing in Ponape and Yap.

58. The Fishing Authorities will be reorganized next year to allow a broader approach to development.

59. Although we can call on the resources of the U.S. Government, we have not been able to develop the programmes at the rate desired. A lot of information on fishing methods, fish biology, training methods, marketing, etc. is needed to develop properly the fishery resources of isolated areas.

#### WESTERN SAMOA

60. At the end of 1977 there were 270 motorised fishing boats in operation. The increase of 110 over the previous year ensured that there was no shortage of fish at the Apia Fish Market. The market was opened on 4 August 1977. Fishermen pack their fish in ice in 44 gallon drums which are collected by truck 3 times a week for transport to the market. 74,767 lbs were sold in the period up to 31 December 1977.

61. Trials, using Mexican mollies as live bait, were made in preparation for the arrival of a Japanese pole-and-line vessel in March 1978. Work is in hand to extend the mollie ponds in connection with this.

62. The turtle hatchery at Aleipata continued to operate, but not many eggs were collected.

63. A suitable site for ponds for Machrobrachium prawn culture was investigated.

64. Experimental fishing with long lines, drift nets, and deep midwater lining were carried out with fair success. Deep water potting for crustaceans using the French research vessel Coriolis were unsuccessful, but further trials with the Japanese vessel are planned.

V. SKIPJACK AND OTHER TUNA FISHERIES

A. Progress report by Skipjack Programme Coordinator

65. The SPC Skipjack Programme Coordinator summarized the past results and future expectations of the Skipjack Survey and Assessment Programme. He expressed gratitude to the six nations which funded the project. Note was made of the exceptionally large number of tagged tuna released during the first four months of the Programme and the Coordinator expressed his appreciation of the work and conscientious efforts of all the staff members of the Programme. The Meeting moved a vote of thanks to Dr. Kearney and the SPC for their efforts in initiating this important project and congratulated them on its success to date.

B. Reports on National Activities Associated with Skipjack Tuna

66. The FAO/UNDP programme on milkfish in the Gilbert Islands was discussed and satisfaction was again expressed at the encouraging progress being made in rearing this fish as bait fish. It was noted that good catches of both skipjack tuna and yellowfin tuna had been made from a vessel made available by the Japan International Co-operation Agency (JICA). Progress in the production of cheap local feeds for the milkfish was outlined.

67. The American Samoa mollie project was discussed and interest shown in the recent trials utilizing the Pacific Tuna Development Foundation chartered vessel "J-Ann". The final report of the trials with the "J-Ann" in American Samoa and Fiji will be reviewed with interest.

68. The report on the Papua New Guinea Skipjack fishery was reviewed and it was noted that 1977 was reported to be a poor fishing year; this was partly attributed to the good feeding conditions for tuna resulting from the large quantity of offshore anchovy (Stolephorus buccaneeri) available as food in the water. The 59 gross tonne wooden vessel was still the prominent vessel in the fishery, but it was noted that efforts were being made to increase the mobility of the fleet by promoting the introduction of larger vessels capable of extended range fishing.

C. International Activities

69. The SPC Skipjack Programme Coordinator summarized skipjack research activities in the Indo-Pacific area and explained the purpose of the IPFC (Indo-Pacific Fisheries Council) Working Party of Experts on Central and Western Pacific Skipjack in the Western Pacific. It was agreed that the meeting of skipjack experts of both the SPC and IPFC should, if possible, be held at the same time so that there is no duplication of effort.

70. It was pointed out that now that the SPC had developed considerable expertise in skipjack research some of the countries bordering the SPC region had requested assistance to help in developing their own skipjack research and it was recommended:

Recommendation No.1

The Meeting recommended that when possible, and when in the best interests of countries and territories for which the South Pacific Commission works, the South Pacific Commission should provide advice and assistance with problems relating to skipjack research to countries outside the South Pacific Commission area.

71. Discussions were held on tagging projects within the SPC area and SPC Skipjack Programme Coordinator emphasised that SPC would be happy to provide tags and applicators to any countries that wish to undertake tagging.

C. Stock Identification Using Biochemical Methods

72. A Working Paper presented by the Consultant from the Australian National University, Dr. Richardson, outlined in detail the technique of electrophoresis of blood and tissue samples for determining the genetic structure of populations. The genetic information presently available for skipjack tuna was presented and critically assessed. The urgent need for extension of this work to include further genetic studies parallel to the SPC tagging programme using a range of new genetic polymorphism was stressed.

Recommendation No.2

The Meeting recommended that as a matter of urgency the South Pacific Commission should make every attempt to obtain funding for blood and tissue analyses to complement the existing skipjack programme.

E. Expert Committee on Tropical Skipjack

73. The Skipjack Programme Coordinator reviewed the previous meetings of the Expert Committee on Tropical Skipjack and explained the reasons for incorporating its present meeting into the Tenth Regional Technical Meeting on Fisheries. He also pointed out that since the Skipjack Programme had become operational, the Expert Committee had increased responsibility under its original terms of reference as defined by the Sixth Regional Technical Meeting on Fisheries.

Recommendation No.3

Recognising the great interest of all countries and territories in skipjack and skipjack fisheries and the value of having the meeting of the Expert Committee on Tropical Skipjack during the Tenth Regional Technical Meeting on Fisheries, the Meeting recommended that the Expert Committee on Tropical Skipjack should have a regular session together with the annual Technical Meeting on Fisheries and should be available for special meeting during the year if required to assist with any specific problems which might be encountered by the Skipjack Survey and Assessment Programme.

F. General Considerations

74. The Consultant from the Inter-American Tropical Tuna Commission, Mr. W.L. Klawe, reported that he is presently contracted to the South Pacific Commission to visit Korea, Formosa and Japan to obtain from their respective Fisheries Agencies statistics on tuna and billfish catches in the South Pacific.

75. He further reported that the USSR is presently building a fleet of fifty long-line fishing vessels and a mothership. To strengthen their tuna catching capabilities they are also building ten 2,000 ton purse seiners and ten 3,000 ton purse seiners. All the vessels are programmed to commence fishing operations by 1981.

76. Catch rates of long-line vessels operating in the Indian Ocean have improved significantly with the introduction of gear modified to fish in depths of between 250 and 550 metres.

77. Various participants discussed long-line catch rates, with particular regard to albacore. It was noted that catch rates of this species have been improving over the last two seasons.

78. A representative of the Chamber of Commerce of French Polynesia gave a report on the problems affecting the tuna long-line fleet based in Tahiti. The fleet based there has decreased from 73 operational vessels in 1973 to 17 vessels this year. Catch rates have been declining over the years although in 1977, as reported by other countries, an increase in catch rates has been reported.

G. Commercial Observers

79. The Meeting agreed that it was of great value to discussions on all topics to have commercial observers at the Meeting and made the following recommendation.

Recommendation No.4

The Meeting recommended that invitations be extended to interested fishing industry representatives and Chambers of Commerce officials to attend future meetings as observers.

VI. SPC ACTIVITIES IN FISHERIES OTHER THAN SKIPJACK

80. The SPC Fisheries Adviser presented a summary report of his activities, the status of SPC Fisheries Projects other than the Skipjack Programme, the SPC Work Programme on Marine Resources in 1978 and a proposed Work Programme for SPC in Marine Resources through 1981. This report provided a focus for discussion on a variety of subjects related to SPC activities in fisheries.

A. Outer Reef Artisanal Fisheries Project

81. As recommended at the Ninth Regional Technical Meeting on Fisheries, the Outer Reef Artisanal Fisheries Project was terminated in December 1977. The results of the Project's activities in Funafuti (Tuvalu) and Gizo (Solomons) were presented. Discussions centred on the need for the collection from survey activities and new fisheries of data which will allow for planned development. Concern was also expressed that without proper data new outer reef fisheries might exceed the ability of bottom fish resources to support them. Considering the interest in outer reef bottom fishing, the Meeting made the following recommendation.

Recommendation No.5

Considering the interest in the development of deep bottom fisheries there is an urgent need for the collection of biological data for the assessment of these stocks. The Meeting strongly recommended that funds should be sought in order to set up a data collection and applied research programme.

82. The progress of the FAO/Danida Village Fisheries Project in Western Samoa was reported as one approach to small-scale fisheries development. The success of the programme is due to good boat designs, an effective loan programme, and government support in training, marketing and repairs. The success of the outboard powered catamarans indicates that there are situations when a diesel-engined boat is at a disadvantage. The project is now making aluminium catamarans which have advantages over the current plywood models.

83. Niue reported on recent trials with bottom long-lines, and bottom gill nets as an alternative to hand-line fishing of steep outer reef slopes. Results were encouraging enough to warrant further tests. There was considerable discussion on fishing techniques which would be suitable for steep outer reef slopes and reefs or sea mounts between 80 and 150 fathoms below the surface.

B. Inshore Fisheries Development Project

(i) Lobster Sub-Project

84. The Lobster Sub-Project was terminated in 1977 following the recommendation of the Ninth Regional Technical Meeting on Fisheries. The results of project activities were summarised. The management implications of project results were discussed.

(ii) Turtle Sub-Project

85. The Turtle Sub-Project was terminated during 1977 following the recommendation of the Ninth Regional Technical Meeting on Fisheries. The results of the Hawksbill project at USP (University of the South Pacific) were summarised. The results of the Green Turtle Project in the Cook Islands were not available due to communications problems.

86. The value of turtle culture projects in general, be they capital-intensive like the reportedly unsuccessful Mariculture Limited operations in the Grand Cayman Islands, or labour-intensive like the project on an island in Torres Straits, was seriously questioned in the report by the Observer from the Capricornia Institute of Advanced Education, Dr. Kowarsky, on the latter operations. In an isolated area the problems associated with the culture of animals in an aquatic medium, slow growth rate and poor food conversion made turtle culture a poor choice for productive employment.

(iii) Bêche-de-Mer Sub-Project

87. SPC is providing fellowships for suitable candidates in training programmes conducted by the Fisheries Division of Fiji and the Solomon Islands.

C. Other Operations

88. At the request of the SPC an ORSTOM (Office de Recherche Scientifique et Technique Outre-Mer) research vessel conducted some trial fishing activities on sea mounts near the New Hebrides. The discussion centred on the potential value of sea mounts to pelagic and demersal fisheries. In Papua New Guinea, one company moors a raft on a sea mount to attract skipjack schools. While there is some interest in exploring sea mounts for demersal species during the off season for skipjack, there was some doubt whether industrial fisheries similar to those of the Japanese and Soviets on the Emperor sea mount could be developed.

89. The recommendations of the Ninth Regional Technical Meeting on fisheries were reviewed. Of the 15 recommendations 9 have been satisfactorily executed, 4 have been post-poned and work on 2 recommendations is in progress.

90. Interest in the quick dissemination of information relative to fisheries development was re-emphasized. The representative from ICLARM (International Center for Living Aquatic Resources Management) reported on the efforts of that organization to improve the dissemination of information required by fisheries scientists and those responsible for fisheries development.

VII. MARICULTURE

91. The representative from CNEXO (Centre National pour l'Exploitation des Océans) reported on the extensive mariculture programme in French Polynesia and New Caledonia. A variety of animals have been screened for culture potential. While no projects are ready yet for the investment by the private sector, the culture of marine shrimps, fresh water prawns and tuna bait fish has promise. While development of technology is slow, sophisticated and expensive, the end result will be projects which will operate profitably in the Pacific.

92. While the culture of Eucheuma spp, appears to have some potential in the Gilbert Islands, many delegates expressed concern about large-scale investment in this type of culture because of the competition from the Philippines, the problems associated with initial trials in the region, small number of potential buyers, and the suitability of this type of activity in Pacific societies.

93. The ICLARM Representative outlined co-operative programmes on integrated aquaculture/agriculture systems which the organization will undertake in 1978.

94. New Zealand reported on its modest shell fish hatchery programme and its support of the green mussel culture industry. Tonga reported on plans for a new mariculture centre, and the Trust Territory of the Pacific Islands reported on the current status of its fresh-water prawn, siganid and bait fish culture programmes.

#### VIII. REPORT BY UNDP REGIONAL FISHERIES COORDINATOR

95. The FAO/UNDP Regional Fisheries Coordinator, Mr. H. Sperling, presented a report outlining the activities of UNDP country projects in the South Pacific. The report was in three parts, one, projects completed during the year, secondly, on-going and approved projects and thirdly proposed and future projects.

96. Projects were completed in Fiji, Solomon Islands, Tokelau and Tonga. Operational projects are taking place in Fiji, Gilbert Islands, Solomon Islands, Tonga, Tuvalu, and Western Samoa. In addition to projects, the Coordinator reported that UNDP had funded a consultative visit to Western Samoa by a bait fish culture expert.

97. UNDP have also expressed an interest and willingness to provide support for the proposed Regional Fisheries Agency but the exact form of this support has not yet been determined.

#### IX. FISHERIES STATISTICS

98. The FAO Consultant on Fisheries Statistics reported on his progress in establishing fisheries statistics programmes in the Cook Islands, Gilbert Islands, Tonga, Tuvalu and Western Samoa. The observer from the University of Papua New Guinea, Dr. Munro, suggested a method for analysis of fisheries statistics and the size of the reef area available which might provide a usable estimate of the potential productivity of reef habitats.



X. LAW OF THE SEA AND THE REGIONAL FISHERIES AGENCY

99. The technical aspects of implementing 200-mile Exclusive Economic Zones were discussed. The Meeting was of the opinion that the initiative for the specification of the responsibilities and functions of the proposed South Pacific Regional Fisheries Agency has been pre-empted by higher levels of government. After careful consideration of the proposed Workshop on the Implications of 200-mile Exclusive Economic Zones for South Pacific countries, the following recommendation was made.

Recommendation No.6

The Meeting recommended that the proposed Workshop on the Implications of 200-mile Exclusive Economic Zones for South Pacific Countries be deferred until the establishment of the interim regional fisheries agency and the appointment of its Director-Designate. As soon as practicable after this time, the South Pacific Commission should liaise with the Director-Designate to set the timing and participation level for this workshop and to draw up a provisional agenda for circulation. Comments to be solicited by correspondence.

100. The Meeting expressed a strong interest in the collection of information required by countries and territories in the SPC region for negotiations concerning foreign fishing in 200-mile Exclusive Economic Zones in the period before the South Pacific Regional Fisheries Agency becomes operational. The SPC consultancy by Mr. W. Klawe to collect more accurate information on the catches by foreign fishing fleets in the waters of SPC countries and territories was cited as an example of one type of information required.

101. The need for basic information on the relative value of fish taken by foreign fleets in the waters of member states, and the general economics of these fisheries was identified. The Meeting made the following recommendations.

Recommendation No.7

The Meeting recommended that the South Pacific Commission should, after liaison with officials in the South Pacific Bureau for Economic Co-operation, seek to obtain the services of a suitable expert on a short-term consultancy basis to investigate the general economics of foreign fishing operations in the region of the SPC. This would provide basic information on the cost of harvesting the resources of Exclusive Economic Zones relative to the market value of the catch, thereby providing a more realistic basis for current and future negotiations with foreign fishing nations seeking access to these resources. The conclusions of the expert will not commit SPC but will merely provide basic information to the countries and territories in the SPC region.

Recommendation No.8

In view of the relevance of this information to the proposed Workshop on the Implications of 200-mile Exclusive Economic Zones for South Pacific Countries, the Meeting recommended that a portion of the funds budgeted for this Workshop be directed towards this important project, thereby ensuring its early implementation.

XI. OTHER MATTERS

102. Due to the schedule of the SPC Planning and Evaluation Committee, it was decided that future Regional Technical Meetings on Fisheries should be held in October or November. This will necessitate a postponement of the next meeting until October 1979.

103. The Observer from the University of the South Pacific, Dr. Uday Raj, reviewed the background of the Institute of Marine Resources recently established at the University. The Tropical Fisheries Diploma course will now be operated through this Institute. Priority areas for immediate research, from EEC support, have been identified by the governments of Fiji, Tonga and Western Samoa. In the area of living resources these priorities relate to tuna baitfish, mangroves and the surrounding shallow-water ecosystems, outer-reef fisheries biology, fisheries gear technology and collection of traditional data on the marine environment.

104. Additional studies relate to the dredging of coral sands, coral rocks and rubble and associated pollution in the marine environment. The information collection and dissemination programme stimulated considerable discussion.

105. The Chairman offered the Meeting's congratulations to Dr. Uday Raj on his recent appointment as Director of the Institute of Marine Resources.

106. Dr. R.G. Poulter, the Observer from the Tropical Products Institute, a scientific unit of the United Kingdom Ministry of Overseas Development, reviewed the activities of his Institute in post-harvest fish technology in the region.

XII. SUMMARY OF RECOMMENDATIONS

SKIPJACK AND OTHER TUNA FISHERIES

Progress Report by Skipjack Programme Coordinator

Recommendation No.1

The Meeting recommended that when possible, and when in the best interests of countries and territories for which the South Pacific Commission works, the South Pacific Commission should provide advice and assistance with problems relating to skipjack research to countries outside the South Pacific Commission area.

Stock identification using Biochemical Methods

Recommendation No.2

The Meeting recommended that as a matter of urgency the South Pacific Commission should make every attempt to obtain funding for blood and tissue analyses to complement the existing skipjack programme.

Expert Committee on Tropical Skipjack

Recommendation No.3

Recognising the great interest of all countries and territories in skipjack and skipjack fisheries and the value of having the meeting of the Expert Committee on Tropical Skipjack during the Tenth Regional Technical Meeting on Fisheries, the Meeting recommended that the Expert Committee on Tropical Skipjack should have a regular session together with the annual Technical Meeting on Fisheries and should be available for special meeting during the year if required to assist with any specific problems which might be encountered by the Skipjack Survey and Assessment Programme.

Commercial Observers

Recommendation No.4

The Meeting recommended that invitations be extended to interested fishing industry representatives and Chambers of Commerce officials to attend future meetings as observers.

SPC ACTIVITIES IN FISHERIES OTHER THAN SKIPJACK

Outer Reef Artisanal Fisheries Project

Recommendation No.5

Considering the interest in the development of deep bottom fisheries there is an urgent need for the collection of biological data for the assessment of these stocks. The Meeting strongly recommended that funds should be sought in order to set up a data collection and applied research programme.

Law of the Sea and the Regional Fisheries Agency

Recommendation No.6

The Meeting recommended that the proposed Workshop on the Implications of 200-mile Exclusive Economic Zones for South Pacific Countries be deferred until the establishment of the interim regional fisheries agency and the appointment of its Director-Designate. As soon as practicable after this time, the South Pacific Commission should liaise with the Director-Designate to set the timing and participation level for this Workshop and to draw up a provisional agenda for circulation. Comments to be solicited by correspondence.

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In view of the relevance of this information to the proposed Workshop on the Implications of 200-mile Exclusive Economic Zones for South Pacific Countries, the Meeting recommended that a portion of the funds budgeted for this Workshop be directed towards this important project, thereby ensuring its early implementation.

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ANNEXLIST OF DOCUMENTS PRESENTED AT THE MEETING

- SPC/Fisheries 10/WP.1 - Country Statement - Kingdom of Tonga  
by W.A. Wilkinson, Fisheries Officer,  
Department of Agriculture, Nuku'alofa,  
Kingdom of Tonga.
- WP.2 - Country Statement - Solomon Islands - 1977  
by D.H. Gibson, Chief Fisheries Officer (Ag.)  
Ministry of Natural Resources, Honiara,  
Solomon Islands.
- WP.3 - Country Statement - Gilbert Islands
- WP.4 - Progress Report on the SPC Fish Poisoning  
Project, prepared by the Secretariat.
- WP.5 - The FAO/Danida Village Fisheries Development  
Project in Western Samoa by O. Gulbrandsen,  
FAO Fisheries Adviser, and A. Overa, FAO  
Naval Architect.
- WP.6 - Skipjack Tuna Stock Identification by  
B.J. Richardson, Department of Population  
Biology, Research School of Biological  
Sciences, Australian National University,  
Canberra, Australia.
- WP.7 - Country Statement - Fisheries Development in  
Western Samoa by Alfonso L. Philipp, Chief  
Fisheries Officer, Department of Economic  
Development, P.O. Box 206, Apia, Western Samoa.
- WP.8 - Country Statement - Papua New Guinea
- WP.9 - Papua New Guinea Tuna and Baitfish Fishery  
1977 by M.A. Wilson and R.Y. Lindholm,  
Fisheries Biologists, Kanudi Fisheries Research  
Station, Post Office Box 2417, Konedobu,  
Papua New Guinea.
- WP.10 - SPC Activities in Fisheries Other Than Skipjack  
by R. Grandperrin, Fisheries Adviser, South  
Pacific Commission.

- SPC/Fisheries 10/WP.11 - Report on Turtle Culture Trials in Torres Strait February - July 1976, by John Kowarsky, Department of Biology, Capricornia Institute of Advanced Education, M.S.76, Rockhampton, Q. 4700, Australia.
- WP.12 - A Method for the Estimation of Potential Fish Productivity of Western Pacific Reefs and Lagoons, by J.L. Munro, Biology Department, University of Papua New Guinea, University P.O., Papua New Guinea
- WP.13 - Exposé Nationale de la Polynesie-française par M.Y. Brosse, Adjoint au Chef du Service de la Pêches, Service de la Pêche, Papeete, Polynésie française.
- WP.14 - Country Statement - Fiji.
- WP.15 - Progress Report on the South Pacific Regional Fisheries Organization, Paper submitted by the South Pacific Bureau for Economic Co-operation, (SPEC), Suva, Fiji.
- WP.16 - Exposé Nationale de la New Caledonia
- WP.17 - An Interim Report on the Successful use of Cultivated Milkfish (Chanos chanos) as live bait for Pole-and-Line Tuna Fishing in the Gilbert Islands, by V. Gopalakrishnan, Project Manager, FAO/UNDP Project, Tarawa, Gilbert Islands.
- WP.18 - Exposé Nationale de la New Hebrides par Reverend Father G. Leymang, Minister of Social Services, Government of the New Hebrides, Vila, (Nouvelles-Hébrides).
- WP.19 - Fisheries in Tokelau, by Semi Uili, C/- the Official Secretary, Office for Tokelau Affairs, P.O. Box 865, Tokelau.
- WP.20 - Country Statement - Territory of Guam, by Paul Callaghan, Government of Guam, Agana, Guam.

- SPC/Fisheries 10/WP.21 - Country Statement - Trust Territory of the Pacific Islands, by Alan Chapman, Chief of Marine Resources, High Commissioner's Office, Saipan, Mariana Islands. 96950
- WP.22 - American Samoa Baitfish Project, by Paul Pedro, Office of Marine Resources, Government of American Samoa, Pago Pago, American Samoa. 96799
- WP.23 - FAO Regional Project TF-RAS/53/(AUL) Improvement in Fishery Statistics in the Pacific Region, (October 1977 to March 1978), by C.D. Grant, FAO Consultant in Fishery Statistics.
- WP.24 - Country Statement - Niue, by Nick Dryden, Fisheries Adviser, Agriculture Department, Niue.
- WP.25 - Report by UNDP Regional Fisheries Co-ordinator, by Harry Sperling Jr., Regional Fisheries Co-ordinator, (South Pacific), FAO/UNDP Private Mail Bag, Suva, Fiji.
- Summary Report of the Billfish Stock Assessment Workshop Pacific Resources, Honolulu Laboratory, Southwest Fisheries Center, Honolulu, Hawaii, 5-14 December 1977, by R.S. Shomura (Editor), Southwest Fisheries Center, National Marine Fisheries Service, NOAA, Honolulu, Hawaii. 96812, February 1978.
- Historical trends in catch, fishing effort and catch per unit effort in the Hawaiian Fishery for skipjack tuna, Katsuwonus pelamis, 1948-76, by R.A. Skillman and F.V. Riggs, Southwest Fisheries Center, National Marine Fisheries Service, NOAA, Honolulu, Hawaii 96812. (prepared for Indo-Pacific Fishery Commission. Eighteenth Session and Symposium, Manila, Philippines, 8-17 March 1978).
- Consideration of Workshop on the Law of the Sea in the Southwest Pacific, by ICLARM.
- Report of construction of first Aluminium catamaran built by the FAO/Danida Village Fisheries Project in Western Samoa, by A. Overa, FAO Naval Architect, and O. Gulbrandsen, FAO Senior Fishery Adviser.

- Recent trends in catch, fishing effort and catch per unit effort for the South Pacific Albacore fishery based in American Samoa, 1954-1976, by R.A. Skillman, Southwest Fisheries Center, National Marine Fisheries Service, NOAA, Honolulu, Hawaii 96812.
  
  - Descriptive statistics on the size composition of Skipjack tuna, Katsuwonus pelamis, landed in the Hawaiian pole-and-line fishery, 1946-77, by R.A. Skillman and F.V. Riggs, Southwest Fisheries Center, National Marine Fisheries Service, NOAA, Honolulu, Hawaii 96812 (prepared for Indo-Pacific Fishery Commission. Eighteenth Session and Symposium, Manila, Philippines, 8-17 March 1978).
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