

SOUTH PACIFIC COMMISSION

TWENTY-FIRST REGIONAL TECHNICAL MEETING ON FISHERIES  
(Noumea, New Caledonia, 7 - 11 August 1989)

REPORT

Noumea, New Caledonia  
1989  
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## ACRONYMS

ACAIR	Australian Centre for International Agricultural Research
ASEAN	Association of South-East Asian Nations
CAC	ICLARM's Coastal Aquaculture Centre
CCOP/SOPAC	Committee for Co-ordination of Joint Prospecting for Mineral Resources in the South Pacific Offshore Areas
CETC	Community Education Training Centre
CIDA	Canadian International Development Agency
DTF	Diploma in Tropical Fisheries
DSFD	Deep Sea Fisheries Development
DWFNs	Distant Water Fishing Nations
EC	European Communities
FAO	Food and Agriculture Organization
FFA	Forum Fisheries Agency
FHPO	Fish Handling and Processing Officer
ICLARM	International Centre for Living Aquatic Resources Development
ICOD	International Centre for Ocean Development
IFRP	Inshore Fisheries Research Project
IMR	Institute of Marine Resources
IPTP	Indo-Pacific Tuna Development and Management Programme
JICA	Japanese International Co-operation Agency
NMFS	US National Marine Fisheries Service
ORSTOM	Institut français de recherche scientifique
PECC	Pacific Economic Commission Conference
PIMRIS	Pacific Island Marine Resource Information Service
QDPI	Queensland Department of Primary Industries
QFITC	Queensland Fishing Industry Training Council
RFSP	Regional Fisheries Support Programme
RTMF	Regional Technical Meeting on Fisheries
RTTP	Regional Tuna Tagging Programme
SCTB	Standing Committee on Tuna and Billfish
SIG	Special Interest Group
SPAR	South Pacific Albacore Workshop
SPRADP	South Pacific Regional Aquaculture Development Programme

TBAP	Tuna and Billfish Assessment Programme
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USP	University of the South Pacific
WPFCC	Western Pacific Fishery Consultative Committee

**I. AGENDA**

1. Opening address
2. Administrative arrangements
3. Appointment of Chairman and other office bearers
4. Approval of Agenda and timetable
5. Report on Work Programme activities (WP. 1, WP. 4)
  - (i) General review
  - (ii) Coastal Fisheries
    - Deep Sea Fisheries Development Project
    - Fish Handling and Processing Project
    - Regional Fisheries Training Project
    - Inshore Fisheries Research Project
    - Fisheries Information Project, including PIMRIS Interim Progress Report (WP. 10)
  - (iii) Oceanic Fisheries (WP. 1, IP. 1, IP. 2, IP. 3, IP. 4, IP. 9, IP. 11, IP. 12)
    - Fisheries Statistics Project
    - Tuna and Billfish Research Project
    - Regional Tuna Tagging Project
6. Consideration of report of the SPC Standing Committee on Tuna and Billfish (SCTB2) (WP. 7)
7. Report of the Second South Pacific Albacore Workshop (WP. 6, IP. 3, IP. 4, IP. 6)
8. Formal review of feasibility study report for Regional Tuna Purse Seine Test Fishing Project (WP. 2, WP. 3, WP. 8, IP. 7, IP. 17)
9. One-day Workshop - Coastal Tuna Longlining (WP. 12, WP. 14, WP. 15, WP. 16, WP. 17, IP. 13, IP. 15)
10. Opportunities for co-operation in pearl oyster research management and development in Pacific Island States (WP. 13)
11. Report on Western Pacific Fisheries Consultative Committee (WPFCC) activities
  - (i) Report on inaugural meeting - November 1988
  - (ii) WPFCC Tuna Tagging Workshop

12. Post-harvest fisheries training
  - (i) Proposal for study visit of Latin American fish processing institutes (WP. 11)
  - (ii) Training for the catching sector in fish handling procedures for export quality fish (WP. 4)
13. Workshop in Management Strategies for Senior Fisheries Personnel (WP. 9)
14. Regional needs and priorities for training and research in post-harvest technology - a questionnaire survey
15. Report on recent experimental fisheries programmes in New Caledonia
  - (i) Results of trap fishing
  - (ii) Sea mount longlining for *Beryx*
16. NMFS-UH Tropical Fisheries Resource Assessment Assessment Workshop
17. Reports by other organisations (IP. 10, IP. 14, IP. 16)
  - FFA
  - FAO/UNDP
  - ORSTOM
  - SPRADP
  - IMR
  - Others
18. Other business
19. Adoption of Report

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### **III. SUMMARY OF DISCUSSIONS OPENING ADDRESS**

1. The Secretary General, Mr Atanroi Baiteke, formally opened the meeting and welcomed the delegates and many observers from outside agencies.

#### **ADMINISTRATIVE ARRANGEMENTS**

2. The Fisheries Co-ordinator gave a brief outline of administrative procedures for the meeting and noted the problems relating to the question of full funding of attendance of participants as recommended by last year's RTMF. He pointed out that every effort was being made to rectify these problems for next year's meeting. He also apologised to francophone participants that translation services would be severely curtailed this year because of staff shortages, meeting clashes, and other administrative reasons. The Representative of France expressed his extreme dissatisfaction at this situation. The Representative of New Caledonia noted his disappointment that, since most documents had not been translated into French, it would not be possible for his Department to circulate them among interested fishermen and other potential users in New Caledonia, as was normally the case. The Fisheries Co-ordinator assured the francophone participants that all possible steps would be taken to alleviate the situation this year, and to ensure that it was not repeated in subsequent years.

#### **APPOINTMENT OF CHAIRMAN AND OTHER OFFICE-BEARERS**

3. Following the procedure of rotating the chairmanship alphabetically by country, Mr Julian Dashwood of the Cook Islands was appointed Chairman and Mr Peter Sitan of the Federated States of Micronesia was appointed Vice-Chairman and Chairman of the Drafting Committee. Under a new arrangement the Vice-Chairman and the Secretariat prepared the draft report and submitted it to the meeting on the final day for review and adoption. The report follows the chronological sequence of discussions, rather than the agenda sequence.

#### **APPROVAL OF AGENDA AND TIMETABLE**

4. In reviewing the draft agenda, the Chairman noted that some items might need to be considered out of turn in order to make the best use of available time during the week. After receiving the consensus of the meeting that the proposed agenda was acceptable, the Chairman asked the Fisheries Co-ordinator, Mr Barney Smith, to give a summary of the activities of the Fisheries Programme during the last year.

#### **REPORT ON WORK PROGRAMME ACTIVITIES**

##### **(i) General review**

5. The Fisheries Co-ordinator reported that the Programme is nearly up to strength with respect to staffing, with 32 of 35 positions presently filled. The most senior appointment was that of Dr A.D. Lewis to the position of Chief Fisheries Scientist in the Tuna Programme. Two senior scientific positions remain unfilled in the Tuna Programme due to budgetary constraints. It is hoped to recruit three Pacific Island fisheries scientists into the Tuna Tagging Project shortly.

6. The budget for the entire Fisheries Programme is 2.7 million CFP units, of which 350,000 is core funding whilst 2,400,000 is from extra-budgetary sources. The Fisheries Co-ordinator thanked the major funding donors for their contributions. These included the governments or

administrations of Australia, Britain, France, French Polynesia, New Caledonia, New Zealand and the USA, as well as ICOD, the EC, FAO/UNDP, the Commonwealth Secretariat and the Commonwealth Foundation.

7. The Fisheries Co-ordinator emphasised the importance of cooperative projects, such as PIMRIS and several joint training exercises, between SPC and other regional agencies, eg the Forum Fisheries Agency and the University of the South Pacific. He thanked those co-operating agencies which have worked with the Fisheries Programme in the last 12 months. Also thanked were the various Pacific Island countries which have seconded technical support to the Fisheries Programme.

8. Mr Smith reviewed the recommendations of the Twentieth Meeting and the action taken in response to them. These are summarised in WP. 1, Attachment 1.

## **(ii) Coastal Fisheries**

### *Deep Sea Fisheries Development Project*

9. The recently recruited Fisheries Development Officer, Mr Paul Gates, reviewed the activities of the project, noting that the field staff comprised three master fishermen for most of the year.

10. Field assignments took place in six countries during the year, with two still in progress (Tonga -gear development; Kiribati - small scale longlining). Gear development activities are currently priority, but there are outstanding requests, soon to be actioned, from Northern Marianas, Palau and Solomon Islands.

11. Considerable progress has been made in clearing the backlog of country reports. A revised version of the FAD handbook, supplemented with recent research and experience, is in preparation.

12. The project is scheduled for detailed review in the near future. Future direction of the project, in response to the significant developments which have occurred in coastal fisheries in the last five years, will (i) see greater integration with other SPC programmes, (ii) more precise tailoring of assignments to individual country needs and (iii) greater flexibility, with the use of a core staff of master fishermen, combined with the services of short-term consultant master fishermen.

13. Representatives of several countries (Kiribati, Federated States of Micronesia, Tonga, and Wallis and Futuna) expressed their appreciation of the work carried out by the project.

14. The time spent in-country and the associated costs for countries with lengthy assignments were queried by the Representative of Kiribati. The need to produce country assignment reports in timely fashion was noted by the Representative of Wallis and Futuna. It was clarified that the gear development work in Tonga will probably conclude later this year.

### *Fish Handling and Processing Project*

15. Mr Steve Roberts, the Fish Handling and Processing Officer, reviewed activities of the project, noting that it has continued to develop and expand during the year, in response to country requests for assistance. Funding of the project for three years by New Zealand has been completed and the government of the United Kingdom has guaranteed funding for the next three year period.

16. Activities in Tokelau and Tonga were reviewed, as well as advisory visits to several countries. The Project's input to training activities in Papua New Guinea, beche-de-mer processing in Vanuatu, and an initiative on the role of women in small-scale fisheries in the South Pacific were described, as well as planned involvement in a training workshop for women in Papua New Guinea.

17. The Fish Handling and Processing Officer signalled his intent to present a proposal for training in fish handling procedures for the catching sector later in the meeting. Progress with the establishment of a Regional Post-Harvest Fisheries Laboratory at IMR, USP was described. Post-harvest research requirements in individual countries are being addressed by a circulated questionnaire. Delegates were asked to respond to this, by interview at suitable times, during the meeting, with a summary of responses to be presented later in the meeting.

#### *Fisheries Training Project*

18. The project ran a total of twelve courses during the year, including six in-country courses in extension and communication skills. These were briefly reviewed and it was noted that assessment reports are available for all courses.

19. The Fisheries Training Officer sought guidance from the meeting regarding continuation of the Nelson Polytechnic course, which has just completed its tenth year. The practical module of the year's course, held in Tuvalu, incorporated training for 30 local fishermen and required additional tutorial support.

20. The meeting was also asked to consider the future of computer training courses, three of which were conducted during the year (Introductory, Intermediate and Systems), and the refrigeration training course. Four of the latter courses have now been organised, most recently in Papua New Guinea.

21. There was support from numerous countries for the continuation of the Nelson course, and for the continuation of computer training at the intermediate level. A second course could be held in 1990 subject to sufficient interest being expressed. Refrigeration training may still be required for the larger countries.

22. The Representative of Tonga expressed a desire for his country to be associated with future extension training.

23. The possibility of holding another statistics training course, as previously co-ordinated by the TBAP, was raised by the Representative of Solomon Islands. This will be investigated and needs assessed relative to other means of achieving the required training (eg. attachments, in-country training, etc.)

24. Several Representatives expressed interest in opportunities for training in post-harvest handling of fish.

25. The Representatives of French Polynesia and Wallis and Futuna noted their need to have access to training opportunities conducted in French, whilst recognising the difficulties with numbers of participants. The Fisheries Training Officer noted the Project's willingness to comply with this, and outlined recent events with the appointment and subsequent resignation of a francophone Assistant Fisheries Training Officer, and the renewed commitment to fill this post with a francophone in the near future. The good record of francophone participants in the Nelson course over the years was noted.

26. Following the enthusiasm expressed by participating countries for the in-country extension courses, Mr R. Fell (QDPI) provided an outline of these courses, which have involved a total of 84

people, following on from the first stage course in Suva in April 1988.

27. Plans for Stage 3 Extension Development Workshops were outlined. The draft extension manual will be finalised and Stage 2 courses formally reviewed in order to assess the effectiveness of national extension services and recommendations made for further extension training.

28. It was finally noted that it is intended to relocate the Fisheries Training Project to Suva in the near future. This was considered desirable in view of the additional support which could be offered by existing SPC facilities (e.g. CETC, Samabula), and proximity to USP and other training institutions.

#### *Inshore Fisheries Research Project*

29. Mr Garry Preston, the Senior Inshore Fisheries Scientist, proceeded to review the work of the IFRP over the last 12 months. There are four major areas of emphasis: liaison between fisheries departments and organisations, communication of information, assistance in design and implementation of research programmes, and training. Progress has been made in all these areas, although staff shortages have hindered it to some extent.

30. National-level activities by IFRP staff, supported by national staff, consultant specialists, and trainees, consisted of a fishery resource survey at Palmerston atoll in the Cook Islands, a beche-de-mer survey in Fiji and a visit to Micronesia to establish a sampling protocol for ciguatoxicity.

31. Regional-level activities are documented on page 16 of WP. 1. The long postponed analysis of accumulated Deep Sea Fisheries Development Project catch data is proceeding but the results are still in draft form since new data are still being incorporated; this will be finished by year's end. A literature review of reef reseedling as a means of enhancing natural fisheries is in preparation, in co-operation with FAO/SPRADP. Some progress has been made in establishing special interest groups as a means of improving information exchange.

32. Mr. Preston sought some comment on Paragraph 74 of WP. 1 regarding a proposal to improve information production and dissemination (document preparation and drafting by Pacific Island scientists) relating to fishery research and development projects being carried out by member countries. The proposal involves training and supporting fisheries workers in report writing and preparation, to encourage publication of results outside countries.

33. With regard to the Palmerston atoll survey, and acknowledging the work of the IFRP, the Chairman stressed that it is particularly important to document the activities of such projects and therefore fully supported the proposal. This view was endorsed by the Representative of Fiji.

34. A discussion on the increasing merits of remote sensing in marine research was initiated by a comment from the Representative of Solomon Islands. The Representatives of French Polynesia and New Zealand suggested that SPC could act as a facilitator between countries requesting the imagery and the organisations supplying the services. Mr Preston noted the utility of satellite imagery to disciplines other than marine resources, and because of this multi-disciplinary nature questioned the appropriateness of the IFRP playing a major clearing-house role. The Representative of France mentioned that France had already offered to fund an image processing technician for SPC.

35. Answering a question from the Chair, Mr. Preston explained that the actual cost both of acquiring and of processing satellite imagery is high. For smaller areas, or for higher resolution, aerial photographs may be more useful, cheaper and easier to acquire.

36. The Representative of the Federated States of Micronesia extended his appreciation to the IFRP for its assistance in developing a ciguatoxicity sampling protocol in his country.

#### *Fisheries Information Project*

37. Mr Jean-Paul Gaudechoux, the newly-appointed Fisheries Information Officer, proceeded to report on his activities, reminding the meeting that the Fisheries Information Project had been established because of the importance SPC member countries attached to the circulation of fisheries information. His main activity to date has been to reduce the backlog of SPC *Fisheries Newsletters*,

which will be completed by the end of the year. In future the *Newsletters* will be issued on a more timely basis, and will have a greater coverage of both regional news and technological information. As well as generating an outward flow of information, the Fisheries Information Officer will rely heavily on member countries' input for information.

38. The next major task is the establishment of Special Interest Groups (SIGs) which were initiated following the 1988 SPC Workshop on Pacific Inshore Fishery Resources. Responses to a questionnaire on information requirements have been entered into a database and classified in SIGs. The Fisheries Information Officer's role is to manage information exchange within these networks.

39. Mr Ross Thrasher from the University of the South Pacific (USP) presented a short progress report (WP. 10) on the Pacific Island Marine Resource Information System (PIMRIS) which is a joint project between USP, FFA, CCOP/SOPAC, and SPC. His work has consisted so far in setting up the PIMRIS co-ordination unit at USP, and creating the PIMRIS bibliographic database using CDS-ISIS data management software. Mr Thrasher also provided some short-term information management assistance to Tonga and Solomon Islands. In answer to a question by the Representative of Kiribati, Mr Thrasher advised that PIMRIS, within its constraints of budget and manpower, will continue to provide in-country assistance, including training in information management.

40. Responding to the Representative of Tonga, thanking him for his work and suggesting lengthier country visits, Mr Thrasher explained that his strategy will be to make preliminary visits to assess the amount of work expected and then follow up during subsequent visits.

41. The Chairman concluded this presentation by recognising the contribution of the FAO/UNDP Regional Fisheries Support Programme to information dissemination in compiling a variety of bibliographies on aspects of fisheries in the region.

#### **(iii) Oceanic Fisheries**

42. Dr. Tony Lewis, Chief Fisheries Scientist, proceeded to report on the work of the Tuna and Billfish Assessment Programme (TBAP). The main change over the past year has been the fact that the Programme is now split in two discrete sections, the Statistics Project and the Research Project, reflecting the two main types of work being conducted by the TBAP, i.e. collection and analysis of catch statistics and related data, and scientific research on tuna and billfish.

#### *Fisheries Statistics Project*

43. Mr Tim Lawson, Fisheries Statistician, reported on the Fisheries Statistics Project (outlined in WP. 1 pages 19-21). The activities of the project include maintaining the regional tuna fisheries database, preparing the SPC *Regional Tuna Bulletin*, assisting with the development of national

fishery statistics systems and providing statistical support to other SPC projects.

44. The principal type of information in the regional tuna fisheries database is daily catch and effort data provided by SPC member countries and covering the activities of purse seiners, longliners and pole-and-line vessels. Some member countries (Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Palau, Papua New Guinea, Tonga, Tuvalu and Vanuatu) provide logsheets to SPC, which are then processed by the Fisheries Statistics Project, while others (Australia, French Polynesia, New Caledonia, New Zealand, Solomon Islands and the United States) provide data that have already been processed. Other types of data provided to SPC include unloading data (Fiji, Guam, New Caledonia, Northern Mariana Islands and Palau), observer data and length frequency data.

45. At present, most data available from member countries have been incorporated into the database. Data yet to be incorporated include catch and effort data for New Zealand purse seiners and trollers, catch and effort data for American trollers, and unloading statistics from American Samoa, the Federated States of Micronesia and French Polynesia. Authorities from the Federated States of Micronesia, French Polynesia, New Zealand and the United States have indicated that their outstanding data will soon be made available to SPC.

46. The SPC *Regional Tuna Bulletin* has been published on a quarterly basis since the edition for the First Quarter 1988 was distributed in August 1988. There are now 154 addresses on the mailing list, which is still expanding. Several new statistical tables have recently been included in the *Bulletin*, and future editions will be improved with more graphics, more information on historical catch rates and improving mapping.

47. The Fisheries Statistics Project supports in-country databases in the Federated States of Micronesia, Fiji, Guam, the Marshall Islands and Papua New Guinea. Visits to each of these countries were made to install database systems and to provide programming support. In addition, the Fisheries Statistics Project provided support for in-country databases in Fiji, Papua New Guinea, Tonga, Tuvalu, Vanuatu and Western Samoa through participation in the statistics workshop held at USP in February 1989. In-country tuna databases will be installed in the near future in Kiribati (pending an official request) and Solomon Islands (September 1989).

48. In support of other SPC fisheries projects, assistance was provided to the Inshore Fisheries Research Project and the Fisheries Training Programme.

49. The Representatives of Guam, Federated States of Micronesia, Fiji and Solomon Islands all acknowledged the good work carried out by the project.

50. The Representative of Tuvalu expressed his country's concern that implementation of a request for a review of Tuvalu's fisheries statistics programme was still outstanding. The review had been scheduled on two occasions early in 1989, but had been postponed both times due to problems with flights to Funafuti. The Chairman directed the Secretariat to respond to Tuvalu's concern outside the meeting.

#### *Tuna and Billfish Research Project*

51. Dr Lewis presented a review of TBAP Research Project activities and projects as summarised in WP. 1, noting that the major activities continue to be the assessment of interaction between fisheries, monitoring levels of exploitation of stocks, studies on tuna and the environment and observer programmes. The Regional Tuna Tagging Project (RTTP) which will assess interaction between surface and longline fisheries for yellowfin tuna in the western Equatorial Pacific and update earlier assessments of skipjack tuna stocks is close to implementation: vessel tenders close on 29 August with fishing expected to begin in October



following vessel modification. The programme objective is to tag 40,000 tuna, primarily yellowfin tuna, over a two-year period with a year of analysis and follow-up. Preparations for the project, including publicity and tag return arrangements, are well advanced. Of special note is the impending recruitment of three island fisheries scientists to the programme, and the provision for two island observers to be on the vessel at any time. A related national-level tagging project is presently under way in Solomon Islands. It is likely that similar projects will be undertaken in the future in selected countries, under the umbrella of the RTTP.

52. Monitoring and assessment of tuna exploitation levels continues to be a priority activity of the TBAP. It was noted that yellowfin catches, particularly by purse-seine vessels, declined sharply during 1988, possibly associated with oceanographic events. Yellowfin longline catches continued a long-term downward trend. The great increase in South Pacific albacore catches, now over 60,000 mt total, more than half of which is from gillnet catches, was discussed. Albacore research efforts have been substantially increased in response to this and include plans for a tagging project during the 1989-90 season. The Second South Pacific Albacore workshop (SPAR), the 1988/89 Observer Programme, albacore port sampling, production of TBAP country reports and FAD monitoring work were summarised, as were arrangements for a joint study on yellowfin tuna interaction issues with the Far Seas Fisheries Research Laboratory of Japan, to commence in September 1989.

53. The Representative of French Polynesia congratulated the TBAP team under Dr. Lewis for their recent work. This work has proved valuable in discussions with DWFNs (Korea, Taiwan and Japan) desiring to fish in French Polynesia's waters. The Representative of Solomon Islands also thanked SPC for making it possible to begin the Solomon Islands in-country tagging programme.

54. The Representative of the Federated States of Micronesia questioned whether SPC saw any need to undertake any port sampling for the longline operations out of Guam, to complement the forthcoming yellowfin interaction study in the Western Pacific. The Chief Fisheries Scientist assured the representative that the TBAP will study this issue.

55. The Representative of Papua New Guinea queried the extent and coverage of the longline data coming from Japan's Far Seas Fisheries Laboratory for the joint study. The Chief Fisheries Scientist replied that data provided under access agreements is only partially complete, and in addition does not cover high seas areas. The Representative of New Zealand asked if the data from the Japanese Far Seas Fisheries Laboratory would remain in the SPC database after the departure of the visiting Japanese scientist. The expectation is that the data will go back to Japan, but the final decision is not yet made.

56. The Representative of Palau mentioned that tuna fishing activities by private pole-and-line vessels are still going on in Palau. He asked that plenty of advance notice be given before SPC scientists come to Palau, so that full co-operation can be organised for tag recovery. The Chief Fisheries Scientist assured the Representative of Palau that SPC is mindful of the concerns of publicity, bait fishing, and perceived interaction with local fishing activities.

#### *Regional tuna tagging project*

57. The Representative of New Caledonia corrected an error in Information Paper 3 (page 5 para. 17) which mistakenly indicated New Caledonia had long-term plans to develop albacore transshipment facilities in Noumea.

### **REPORT OF THE SECOND SOUTH PACIFIC ALBACORE WORKSHOP**

58. Dr Lewis presented the report on the second SPAR workshop held in Fiji from 14-17 June

1989 (WP. 6). One of the main purposes of the meeting was the development of a 'best estimate' of the historical catch and assessment of the current status of albacore stocks exploited by the South Pacific fishery. The consensus was that there is considerable cause for concern given the magnitude of the recent increase of surface catches of smaller fish, primarily due to drift gill netting. Total catches have doubled over the last two years.

59. Assessment of the stock status is constrained by the severe deficiencies in the data. Management implications were, however, outlined and research priorities identified. It was agreed that SPC will act as a clearing house to receive and distribute albacore fishery data on a five-degree square by month basis. This will greatly improve the present coverage of this listing.

60. The Representative of New Zealand presented some new information acquired since the SPAR meeting. Since the fish caught in surface fisheries are smaller than those harvested by longliners, it has been assumed that several years might elapse before fish impacts of surface fisheries would be seen in the longline fishery. Recent New Zealand observer data indicate that impacts in the longline fishery may appear sooner than expected. The Chief Fisheries Scientist also indicated that computer simulation modelling of the fishery also raised concerns, particularly for the maintenance of longline catches at present levels.

61. The Representative of French Polynesia emphasised the need to study albacore stocks and catches in the South Eastern Pacific because of the expectation of developing nationally-based albacore fishing fleets in the Cook Islands and French Polynesia. The Chief Fisheries Scientist reiterated that all these concerns were addressed by the SPAR group and noted that the SPAR group has grown in stature and has played an important role in the provision of objective scientific opinion in the present situation.

### **Recommendation 1**

In view of the valuable scientific data generated by the South Pacific albacore observer programme and the absence of any alternative sources of these data, the meeting **recommended** the continuation of the observer programme during the 1989-90 season.

### *Tuna Biology/Ecology*

62. Mr Renaud Pianet presented Information Paper 11 on Oceanography and Tuna Fisheries in the Inter-Tropical Western Pacific, which summarised the general oceanographic situation in the area and described attempts to correlate oceanic phenomena with catch rates by various gears for tuna. Many of the analyses, particularly for purse seine catch, remain ambiguous. Data for 1988, during a La Nina period, are awaited with interest.

63. The Representative of New Zealand asked (with reference to the negative correlations in the analysis) whether weaker ocean currents were associated with higher catch rates, and if so, what was the extent of this effect in the South Pacific. Dr Pianet replied that it had been observed in the western Pacific that when ocean currents are strong, rate of catch of fish is lower.

64. Mr A. Le Bouteiller of ORSTOM made a presentation on ENSO (El Nino/Southern Oscillation) events (El Nino, La Nina) and their consequences for nutrient supply, planktonic biomass, and possibly oceanic fish production in the western tropical Pacific ocean (IP. 12).

## **CONSIDERATION OF THE REPORT OF THE SPC STANDING COMMITTEE ON TUNA AND BILLFISH**

65. Dr Meryl Williams, on behalf of the chairman, presented the report of the second meeting of the SPC Standing Committee on Tuna and Billfish (SCTB), held in Suva, Fiji in June as directed by last year's RTMF. After reminding the meeting of the SCTB terms of reference and summarising the report of the meeting, she referred to the action sheet, considering each of the items identified for action by the SCTB. She also briefly referred to the 1988 SCTB action sheet and was pleased to note that most of the activities had been satisfactorily dealt with.

66. The Representatives of Kiribati and Federated States of Micronesia expressed concern that not all distant water fishing nations, particularly Korea, were represented at the SCTB, and requested that all effort should be made to encourage their participation. The Chairman commented that personal efforts had been made to bring the Koreans to the meeting. The Chief Fisheries Scientist, who visited Korea earlier in the year, was requested by the Representative of Fiji to elaborate on Korea's position. He explained that the problem of Korea's participation was an administrative and financial one, but added that they are already playing a more positive role, and continued efforts will be made to bring them to next year's SCTB. The only remaining gaps in the representation of distant water fishing nations are the Republic of Korea and possibly the Soviet Union. The participation of South East Asian fishery nations (Philippines, Indonesia and Malaysia) for the first time was noted with approval, as these countries share tuna stocks with the SPC region.

## **Recommendation 2**

While noting with satisfaction the high level of participation by DWFNS in this year's SCTB, the meeting expressed its disappointment that the Republic of Korea was not represented, and **recommended** that member countries and the SPC Secretariat continue to pursue every avenue to encourage the participation of the Republic of Korea in future meetings of the SCTB.

67. The Representative of Western Samoa requested clarification on the procedure for the meeting to approve the Action Items. The Fisheries Co-ordinator explained that the meeting could give a general endorsement to the Action Sheet if it thought appropriate, or discuss and approve individual action items. The Representatives of Federated States of Micronesia and Guam also questioned the format of presenting the Action Items for deliberation by the Meeting. Guam suggested categorising or prioritising the items so that they can more easily be discussed.

68. The Representative of Western Samoa expressed concern about Action Item 14, and requested an explanation as to the function of the new database, and how this would affect the databases currently implemented by SPC and FFA. He stated that Western Samoa would have reservations about approving this item. The Representative of Kiribati also stated his concern about the extra workload on the Tuna Programme as a consequence of approving Item 14.

69. The Fisheries Co-ordinator explained that the regional tuna database is working as a shared database. The suggested common database in Action Item 14 is a totally different database and will not in any way affect confidentiality of the SPC/FFA regional database. The Fisheries Statistician was asked to elaborate further by the Representative of New Zealand. He explained that the new database will receive aggregate data in an agreed format, not detailed daily log sheet data. In response to the query from the Representative of Kiribati it was clarified that the quantity of information that will need processing will be relatively small and therefore only a small increase in workload is envisaged.

70. The Representative of Australia stressed that the prime factor is the value of the information and not the question of increased workload. The agreement in principle for the establishment of a common database for research purposes represents a major step forward. The Representative of

French Polynesia stated his support for Item 14, indicating that he felt there was no overlap with other databases.

71. The Chairman explained that it has not historically been possible to obtain this data in non-aggregate form. It is in fact a major breakthrough obtaining it in aggregate form. The Chairman suggested the formation of a small group, including Australia, France, New Zealand and Western Samoa, to report back to the Meeting concerning any difficulties countries may still have with Item 14.

72. Most countries noted with satisfaction the good progress made by the SCTB at its second meeting.

73. The RTMF commended the Standing Committee on Tuna and Billfish for the scope of its activities for the coming year. In particular the RTMF took note of the efforts of the SCTB to establish a common regional scientific tuna database. These data will be provided in an aggregated form on a voluntary basis by the fishing nations and will include data not presently available for analysis. These data will supplement and add significantly to the database of daily fishing currently maintained by the SPC.

### **Recommendation 3**

The meeting endorsed the action items identified by SCTB and recognising that the proposed common regional scientific tuna database will considerably improve scientific studies and assessments of regional tuna fisheries, **strongly recommended** that Action Item 14 of the SCTB meeting report, to establish a common regional scientific tuna database, be implemented as soon as possible.

### **Recommendation 4**

In order to further enhance the work of the Standing Committee on Tuna and Billfish in its advisory role to the RTMF, the meeting **recommended** that future reports of the SCTB provide an appropriate set of specific recommendations for consideration by the RTMF and higher bodies. They would be additional to the action items which are undertaken directly by members of the Standing Committee.

## **OPPORTUNITIES FOR CO-OPERATION IN PEARL OYSTER RESEARCH MANAGEMENT AND DEVELOPMENT IN PACIFIC ISLAND STATES**

74. The Chairman, speaking as the Cook Islands Representative, pointed out the opportunities available to Pacific Island States in the development of pearl culture activities. His country has been active in the development of a local pearl-shell farming industry. He offered the assistance of Cook Island pearl culturing experience to other countries of the region and urged others to do the same through the agency of an information clearing house, possibly run by SPC or some other body.

75. The Representatives of Kiribati, Solomon Islands, Palau, Tokelau and Tuvalu, whose countries have taken various steps towards developing pearl industries of their own, all expressed interest in the topic. The SPC Fisheries Co-ordinator and Senior Inshore Fishery Scientist indicated that interest in developing the industry was high at last year's workshop on Inshore Fishery Resources, and a substantial amount of information had been tabled which could be updated and

circulated more widely. French Polynesia was more reserved in its support for the proposal to increase information exchange, since its industry is primarily entrepreneurial in nature, and much culture data of commercial significance is considered proprietary.

76. Australia indicated its willingness to provide information, especially in the areas of marketing and investment, but also stock assessment, culturing and disease control techniques. FAO also indicated its willingness to provide support through the Regional Aquaculture Development Project. FFA is willing to provide information, particularly in the area of marketing. ICLARM is also willing to make available its information services in Manila and Honiara.

77. The meeting agreed that Australia, the Cook Islands, SPC and others should work together to set up an SPC Special Interest Group on oyster industry development topics. The first task will be to gather and distribute all relevant information on work that has been done up to this time. The meeting made the following recommendation.

### **Recommendation 5**

Although recognising the constraints posed by commercial secrecy within the pearling industry, the Meeting noted the region-wide interest in the development of local pearl culture industries, and therefore **recommended** that SPC establish a Special Interest Group on the topic. In establishing the Group, SPC should:

- (i) draw on the responses to the 1988 SIG questionnaire, and circulate the names, organisational affiliation and specialities/interests of those on the register to all member countries and interested organisations;
- (ii) compile an information package based on the discussions and presentations from the 1988 workshop on Inshore Fishery Resources, update it with more recent documentation on pearl culture activities worldwide, and circulate the package to member governments;
- (iii) in cooperation with regional governments and interested agencies (eg FFA, SPRADP, ICLARM), continue to actively acquire and disseminate similar information in future with due consideration given to marketing aspects.

## **POST-HARVEST FISHERIES TRAINING**

### **i) Proposal for study visit of Latin American fish processing institutes**

78. The SPC Fish Handling and Processing Officer introduced a proposal for a study group which would include himself and a small group (perhaps of three Pacific Islanders) to visit Latin America to study alternative fish products and processing techniques, and thereby facilitate the transfer of technology to Pacific Island nations (WP. 11). The proposal originated as a result of a consultation between Pacific Islands nations and South American countries held in Lima, Peru in 1988, which aimed to identify areas of co-operation between the two regions in the field of fisheries development. The Representatives of the Federated States of Micronesia, Fiji, Tonga, Tokelau, and Tuvalu all indicated their support for the proposal. The Federated States of Micronesia was interested in expanding the group of islanders beyond three.

79. Solomons Islands had some reservations as to the usefulness of the exercise to the SPC Fish Handling and Processing Project, and questioned what the specific duties of the Pacific Island participants would be relative to the project. The SPC Fisheries Co-ordinator indicated the

importance of developing a cadre of Islanders trained in post-harvest techniques, and of keeping up with new developments and alternative products. The Representative of Solomons Islands also raised the question of how the study visit would be funded. The chair responded that funding would be extra-budgetary. The Fisheries Co-ordinator indicated that CIDA and ICOD had been approached, and that other agencies might also be interested.

80. The Representative of Western Samoa indicated his support of the proposal, but with reservations. He felt that the development of appropriate techniques and technologies for fresh fish handling in the region is more important than for processed fish since a high quality fresh product is held in higher regard. He thought, nevertheless, that visiting processing plants in Latin America could be beneficial towards this end.

### **Recommendation 6**

The 1988 Conference in Lima, Peru for Technology Transfer between Latin American countries and Pacific Island nations approved a proposal for technology transfer between the two regions, with post-harvest fisheries identified as an important area. The conference subsequently proposed a study visit by SPC's Fish Handling and Processing Officer to Fish Technology Institutes in Pacific Latin American countries. After some discussion, the meeting **recommended** that the study visit should proceed as proposed, and further recommended that SPC identify suitably qualified Pacific Islanders to join the study tour to experience and learn about the activities of these research institutions.

The following guidelines were given to the Secretariat in this regard:

- 1) IMR participation was considered desirable.
- 2) As funds will be limited, the possibility of partial funding by participating countries should be explored as a means for ensuring that as far as possible all interested and suitably qualified candidates can participate in the study

### **ii) Training for the catching sector in fish handling procedures for export quality fish**

81. The meeting then considered a proposal to hold a series of training workshops in fish handling procedures for export quality fish (WP. 4). The Fish Handling and Processing Officer introduced and explained the proposal.

82. There appeared to be some confusion as to the subject matter of the training programme, and some feeling that the subject area was too broad, especially from the Representatives of Kiribati, New Zealand, and the Cook Islands. New Zealand expressed concern that perhaps the course would end up dealing only with a very restricted selection of species and techniques which may not be of interest to many Island States.

83. The Fisheries Training Officer explained the need for upgrading fish handling techniques across the board, but felt that such a topic was too broad. It was thought that by covering fish handling for the export market, specific economic needs or opportunities could be addressed.

84. The Representatives of Fiji, Tonga, Palau, and Vanuatu expressed their support for the workshop. Papua New Guinea felt that in his country internal market needs should be addressed first. Kiribati supported the proposal, but wanted to break the information up so that separate workshops would cover internal and export fish marketing needs respectively. The Representative of the Federated States of Micronesia supported the proposal focused on the

export market.

85. The meeting approved the following recommendation:

### **Recommendation 7**

Recognising the difficulties countries are experiencing in meeting the exacting standards of export quality fish, the meeting **recommended** that SPC co-ordinate a training programme for post-harvest personnel in the fresh fish handling and marketing sector, as outlined in WP. 4. The proposed training will be in two phases: (i) training the instructor through an initial workshop; (ii) training to be given by the trained instructor to the appropriate sector, whether fishermen or market staff.

### **FORMAL REVIEW OF FEASIBILITY STUDY REPORT FOR REGIONAL TUNA PURSE SEINE TEST FISHING PROJECT**

86. This project has already been discussed in previous RTMFs and other gatherings, and it has been approved in principle. The first phase of the project, financed by the Government of France and begun in 1988, assessed countries' needs under the project following extensive consultations with member countries. The Twenty-eighth South Pacific Conference in October 1988 approved the continuation of the project with the Phase II feasibility study. The Representative of Wallis and Futuna gave the background of the project and thanked France for the financial support and SPC and Cofrêpeche for providing technical expertise.

87. The Representative of Fiji reported on the results of this study, outlining the constraints to purse seining which will affect operation in the Central Pacific. Regular strong trade winds preclude the use of traditional Marco power blocks and catch rates are relatively poor in this area. Given these constraints a deck-installed Triplex system is recommended for hauling the net and the vessel should be relatively small but have a large net. To cope with low catch rates, extensive use of FADs will be necessary. Proceeds from catches should be maximised, not only by selling to canneries but also by selling into the fresh fish market where possible, and by promoting the sales of by-catch of marlins, etc.

88. The proposal recommends a vessel of about 40 m to allow for the survey of the large study area and accommodate extra crew such as scientists and observers. The project vessel should try to imitate a commercial operation as far as possible. Operations are proposed to begin around Palekula on Espiritu Santo in Vanuatu. The next area of operations will be Apia (Western Samoa), then Levuka (Fiji) and finally Tonga. FADs will be set mainly in deep (1000-1500 m) water within one to three days' steaming of the base port. Some FADs will be deployed close enough to be utilised by artisanal fishermen.

89. The proposed purse seine venture will require a new SPC project lasting two and a half years. The project will be monitored by a steering committee. A provisional budget of 4.25 million dollars is being scheduled for this project. The Project Officer, Mr Richard Farman, requested the meeting to provide a critical review of the project, as well as guidance on whether and how the Commission should proceed with Phase III (implementation) of the project.

90. Mr Graham Southwick questioned whether purse seining should be introduced into the area at all. He said that purse seine fishing is highly efficient and could be devastating in terms of over-fishing, and asked the meeting to consider whether this technique is appropriate to the region. Mr Southwick used as an example the southern tuna bluefin fishery in South Australia; he blamed purse seining for the demise of this fishery. He stated in Fiji that there are problems with longlines

becoming tangled with FADs that have already been established. These problems will increase as more FADs are deployed.

91. The Representative of Australia commented on Mr Southwick's remarks, particularly his reference to the Australian Southern bluefin tuna. She said that purse seiners were not the only cause of the decline in the fishery, but that parental biomass had declined considerably under the heavy exploitation by Japanese longliners well before Australians began purse-seining operations. Dr Williams also noted that there were important differences in the biology of bluefin tuna and the tuna species found in the tropics, and these had to be considered when making comparisons between fisheries for these different species.

92. The Representative of Western Samoa made some comments on the paper. He reiterated a concern which was stated by Western Samoa at earlier discussions of this project, that a portion of the revenue from the catch should go to the country where the catch was taken. He said that some money coming in from the catch would help maintain support for the project in the respective countries involved. He did not want the marketing of the project's by-catch to compete with catches made by island fishermen. He also suggested that, rather than establishing a project steering committee, the TBAP direct the project.

93. Mr Farman said that funds from catch revenues had been injected to cut budget costs and make it easier to find funding. A steering committee was seen as a source of direction and guidance for the project manager, and would make it easier to cope with any crises as well as maintain the project's momentum.

94. The Representative of French Polynesia supported the injection of funds back into the project and the formation of a steering committee. The Representative of Western Samoa maintained that if fish comes out of a 200 mile EEZ there should be some payment for this, as with a commercial operation. The Representative of New Zealand pointed out that in New Zealand, there have been many cases when foreign vessels have been allowed access to the zone in order for New Zealand to obtain similar information, since otherwise the costs of obtaining the information would be prohibitive. Waiving of license fees can be an important incentive for DWFNs to gather and provide resource survey data, and this philosophy could be adopted by countries particularly in the project.

95. The Representative of Tonga noted that his country had supported the project since its inception, and that in addition to the direct benefits the project would generate, the deployment of FADs by the project vessel would benefit Tonga's artisanal fishermen, but suggested that their location be in the Vava'u group rather than that proposed to prevent interaction with the seamount fishery.

96. The Representative of Papua New Guinea expressed his support for the purse-seine test fishing project, and considered the project an important research activity. The Fisheries Co-ordinator advised that, although initial work would take place only in certain selected countries, the benefits would ultimately be extended further. The project was being financed through regional funds because of the consensus view that it would benefit the region as a whole.

97. The Representative of New Zealand expressed his view that the FAD deployments to be undertaken as part of the project also opened up exciting possibilities for increasing catches in artisanal and semi-industrial fisheries. He also noted the increased possibilities for interactions between fisheries, and the need for in-country research to assess interactions as part of fishery development.

98. Discussion returned to the question of the fate of funds generated by sales of the project vessel's catch. The Chairman expressed his wish that the meeting should try to resolve this issue. The Fisheries Co-ordinator noted that the original reason for using operational revenue to defray



project costs was to reduce the overall sum being requested from potential aid donors (from 5.8 million dollars to 4.2 million) and therefore increase the chances of funding. He reminded participants that when this project was originally proposed by FFA four years ago it was unsuccessful in attracting funding because it was too costly. Altering the budget in such a major way at this stage would mean restructuring the project completely, might reduce the chances of funding success, and would cause further delays in implementing a project that many countries were eager to see get under way as soon as possible.

99. The Representative of American Samoa described a test fishing project in his area in which vessel catches had been used as part payment of the vessel charter fees, and wondered whether a similar arrangement had been considered for the present project. Mr Farman advised that this had been considered but that other contractual arrangements had eventually been favoured. The Fisheries Co-ordinator added that this system had been avoided as it would generate a motivation on the part of the vessel operators to maximise catches, which might be contrary to research interests. The Representative of the Federated States of Micronesia suggested that lack of incentive to generate good catches might be equally undesirable as the vessel operators would have little motivation to perform. Mr Farman added that this had been considered and other performance incentives or penalties discussed, but that these would ultimately be implemented during tender preparation.

100. The Representative of Western Samoa restated his position, and in doing so noted that while he agreed with the New Zealand's argument that granting free fishing access may be a way of paying for research data that would be otherwise hard to acquire, Western Samoa could not afford such agreements. He raised the question of what would happen to the funds generated if the project caught more fish than expected. Finally, he noted that while he was prepared to concede to the majority will of the meeting, he did so with great reluctance and in the knowledge that the catch disposal arrangements would be less than satisfactory for his government.

101. The Representative of French Polynesia stated his government's position that this was a regional project intended to generate information that would be of benefit to all countries, not to produce revenue for individual member governments. The Representative of New Zealand expressed his strong support for the project and hoped that countries would enter into it into a spirit of regional co-operation. This view was endorsed by statements from the Representatives of Palau and the Federated States of Micronesia.

102. The Representative of Western Samoa enquired as to the arrangements for catch disposal during the joint Fiji-Tuvalu seamount exploratory fishing survey funded by JICA three years ago. The Representatives of Tuvalu and Fiji advised that this catch became the property of the governments in whose waters it was taken. The Chairman expressed his doubts as to the relevance of this case, which was a bilateral aid-funded activity, to the present project.

103. The Representative of American Samoa likened the financial dispute to asking SPC to pay a licence fee in order to carry out research which would be of benefit to member countries, and said that he did not consider this to be appropriate. He proposed that operational funds be used to allay project costs as per the original budget, but that in the event that income was higher than expected, the balance should be shared among the countries in whose waters fishing had taken place, on a pro rata basis. The meeting considered the proposal by American Samoa as a future possible solution to the concerns raised by Western Samoa.

104. The Representative of Western Samoa, having noted the other participant's views on this issue and appreciating the need not to unduly delay the implementation of Phase III of the project, then agreed to withdraw his stand on the issue of catch revenue from this project.

## **Recommendation 8**

After reviewing the detailed project definition prepared during Phase II of the Regional Small-Scale Purse Seine Test Fishing Project, the meeting fully endorsed the project as defined and strongly **recommended** that the Secretariat proceed with Phase III as a matter of some urgency and take all necessary action to secure funding to enable timely implementation. The meeting further noted the report concerning the extension of the project activities to other interested countries and recommended that the extension of the benefits to these countries be given full consideration when appropriate.

105. Mr Farman then presented WP. 3, reporting on the project's study meeting, which examined the possibilities of extending Phase I activities to a second sub-region at a later date. All countries consulted (Cook Islands, French Polynesia, Tokelau, Niue, Marshall Islands, and Kiribati) strongly supported Phase II of the project. Micronesian countries have different needs from Polynesian states because of differing environmental and fishery conditions. In Micronesia, equatorial climates and associated calm weather, plus high catch rates, allow traditional Marco-style purse-seining to take place, making the concept of a proximal fishery less appropriate. In Polynesia, conditions are more similar to the first sub-region, but fisheries development activities have traditionally been oriented towards the artisanal fishery sector and project activities that would be of most significance are those that relate to marketing, development of alternative tuna products, and FAD research. In general, the study team felt it would be premature to plan an extension of the project at this early stage in its history, although the possibility should not be ruled out.

106. There are nevertheless some activities that could be carried out as adjuncts to Phase I of the project, especially in Polynesia. These include trials of drum-seining as a potential tuna fishing method, extension of research work using instrumented FADs to track tuna aggregations, and involvement of Polynesian countries in marketing and product development work done during Phase I. For Micronesian countries, provision of information on the relative economic performance of large and small-scale purse-seining operations would be of benefit since many are currently engaged in, or planning to enter, the purse seine fishery.

107. The Representatives of Australia and Kiribati praised the report and concurred with its conclusion that it was too early at this stage to start planning an extension to the project. The Chairman also agreed, but in closing the session emphasised that the suggestions on involving Polynesian countries in marketing and product development activities were appropriate and he hoped that they would be pursued.

### **WORKSHOP ON COASTAL TUNA LONGLINING**

108. The Fisheries Co-ordinator re-introduced SPC Fisheries Development Officer Mr Paul Gates, and turned over the chair to him to conduct the day's workshop on coastal longlining. Mr Gates outlined the workshop content and format, introduced the other speakers, and commenced the presentation. A resume of the workshop, which generated a great deal of interest and discussion, is given at Annex 1 to this report.

### **REPORT ON WESTERN PACIFIC FISHERIES CONSULTATIVE COMMITTEE (WPFCC) ACTIVITIES**

#### **i) Report on Inaugural Meeting - November 1988**

109. The Chairman opened this agenda item by giving background information on the aims of the WPFCC. The Committee originates from initiatives by the Pacific Economic Cooperation

Conference (PECC) Fisheries Task Force to foster co-operation in the area of fisheries between the regions of South America, the South Pacific Islands, and South-east Asia. A number of consultations involving Representatives from countries and fisheries agencies of the three regions have been held since 1984 and led to the convening of two meetings to identify specific areas of potential inter-regional co-operation, between S.E. Asia and the Pacific Islands, and South America and the Pacific Islands, respectively.

110. The meeting between Pacific Island countries and ASEAN member countries was held in Manila in November 1988. This meeting determined that inter-regional collaboration on tuna research was an important area for co-operation between the two regions, since they shared tuna stocks. The meeting led to the establishment of the WPFCC, which is based in Manila and has a permanent Secretariat, responsible to a Chairman who will be a Pacific Island Representative as long as the Committee continues to be based in South-east Asia. The Forum Fisheries Agency has observer status at the WPFCC, but the South Pacific Commission is accorded full membership since it is expected to represent the interests of non-sovereign Pacific Island states who are not eligible to be full members.

111. The Representative of French Polynesia asked about the possibilities of his country participating in the work of the Committee as an observer, since it could not be accorded the full membership reserved for sovereign states. The Fisheries Co-ordinator advised that this would be for the Committee to decide, but that since several Latin American countries had been granted observer status for the inaugural meeting, he would expect observers from the Pacific Islands region to be made equally welcome. He also noted that the Committee had been very cautious about the issue of membership.

112. The Representative of New Zealand requested that the terms of reference of the WPFCC be circulated to participants. This request was endorsed by the Representative of Western Samoa, who felt that without full information on the Committee's role and work it was difficult to judge to what degree the SPC should become involved in the Committee's work. He added that he had no difficulties with SPC participating as an active member of the Committee, but would like to have more information to enable him to consider more fully the institutional arrangements whereby this occurred.

113. The Chairman noted that the terms of reference of the Committee had been circulated among participating countries and would be made available to delegates at this meeting. He reminded participants that WPFCC was in its formative stages and that this was a good time to address the concerns raised by French Polynesia and perhaps other non-sovereign Pacific Island states wishing to participate in the Committee's work. He suggested that the meeting might wish to formulate a recommendation to the effect that the WPFCC consider ways in which this could be achieved at its next meeting, to be held in Papua New Guinea this year or early next year.

114. The Representative of the Federated States of Micronesia advised that his country had participated as an observer in the inaugural WPFCC meeting, and that there had been some confusion as to its exact status. He noted that the Committee was simply an informal grouping of states and bodies interested in promoting fisheries co-operation between the two regions.

115. The Representative of French Polynesia asked the Secretariat to clarify the extent to which it was able to represent the interests of non-sovereign Pacific Island countries at the Committee without their direct authorisation. The Fisheries Co-ordinator advised that the Commission had no wish to make statements or commitments on behalf of its member countries, but rather saw its role as a conduit for information exchange and communication with the Committee. He reiterated the Representative of Western Samoa's view that the Pacific Islands region is already well-served by regional agencies focusing on fisheries, but noted that this was not the case in South-east Asia. The WPFCC is seen as a mechanism whereby inter-regional co-operation can be effectively achieved.

116. In response to further comments from the Representative of Western Samoa, the Fisheries Co-ordinator re-emphasised the informal nature of the Committee and encouraged Pacific Island countries to participate in its work. He advised that, if the motion presently under discussion for the WPFCC to admit observers was accepted, there would be fewer reasons for SPC to retain full member status and it might revert to observer status, as is the case with the FFA.

117. The Representative of the Federated States of Micronesia contested this view and said that, as most co-operation was likely to be at regional or sub-regional level, full membership and participation in the Committee by SPC was to be preferred. The Representative of Kiribati supported this, and noted that Kiribati had so far not participated in any WPFCC activities.

118. The Chairman requested that the Representatives of French Polynesia, the Secretariat, and any other interested delegations, meet outside the conference and draft a recommendation along the lines of the foregoing discussions.

### **Recommendation 9**

After consideration of the report on the inaugural meeting of the Western Pacific Fisheries Consultative Committee, the meeting **recommended** that SPC request WPFCC to include non-sovereign SPC member countries in WPFCC meetings with observer status, in order to give them the opportunity to contribute to the Committee's work and benefit from the activities undertaken.

#### **ii) WPFCC Tuna Tagging Workshop**

119. The first sponsored activity of the WPFCC was a joint conference on tuna tagging, held in Manila early in 1989. Several Pacific Island countries involved in or planning tuna tagging projects participated, as did Representatives of SPC, FFA, ASEAN member countries, and S.E. Asian agencies such as IPTP.

120. The workshop kept a narrow focus on technical issues involved in tuna tagging, and resulted in the drafting of a tuna research plan which aims at elucidating the relationships between tuna stocks and fisheries in the two regions. A *Tuna Research Newsletter* will be inaugurated and circulated in both regions. Co-operative arrangements are in place for Pacific Island scientists to participate in tagging cruises in S.E. Asia, and for ASEAN scientists to participate in Pacific Island tagging activities. Pacific Island Representatives will be invited to the IPTP/ASEAN tuna research meeting to be held in Bali in August this year. Steps have been taken to commence co-operation in the area of fishery data sharing between the two regions, and S.E. Asian fishery statistics will be included in future issues of the *SPC Tuna Bulletin*.

121. The Chairman recalled problems some years ago when the SPC skipjack tagging vessel attempted to tag in Indonesian waters and was arrested as a result. He expected the WPFCC to provide a forum whereby such problems could be avoided in future, and the very necessary co-operation of scientists from the two regions improved. This view was endorsed by the Solomon Islands Representative, who strongly supported the establishment of these co-operative arrangements on tuna research.

122. The Fisheries Co-ordinator made some additional comments regarding the field trip to the fishing and canning centre of General Santos that had been organised as part of the workshop. The visit had enabled Island Representatives to gain a better perspective on the scale of tuna harvesting in the Philippines, especially of juveniles, and its implications for the stocks which the two regions share. He finished his presentation by thanking CIDA, which funded the meeting

through the WPFCC.

### **WORKSHOP IN MANAGEMENT STRATEGIES FOR SENIOR FISHERIES PERSONNEL**

123. Mr Keith Meecham, Director of the FAO Regional Fishery Support Programme in Suva, Fiji, presented WP. 9, a proposal to organise management studies for senior fisheries personnel of the region. Mr Meecham stressed the value of management training, with a course specifically tailored to the needs of Pacific Island fisheries management personnel. In addition to the agenda proposed in WP. 9, he asked the meeting to consider an additional session, possibly held *in camera* so that some topics could be discussed more frankly. He also suggested that there be a session to find and utilise various types of management related information.

124. The Representative of Western Samoa strongly supported the proposal but emphasised that it should be confined to the most senior fisheries personnel. He suggested that invitations should be extended to other senior government officials who have activities related to the work of fisheries. The Representative of Kiribati also supported the proposal, but noted that most senior fisheries personnel in the region have extremely busy schedules, and asked for an indication of when the workshop might be expected to occur. Mr Meecham advised that this would probably not be before May.

125. The Representative of French Polynesia expressed his support for the general concept of management training, and related his own experience as an organiser of this type of training. His approach in the past had been to ask departments to nominate candidates two and a half months before the programme took place, and then during this time ensure that the candidates were fully prepared for the training by having them prepare documents and submissions to be used in the course. In this way the trainees were mentally prepared for the training and had their ideas well-focused on their own specific problems and concerns.

126. The Representative of Niue expressed his full support for the proposal. The Representative of Fiji emphasised that opportunities for fisheries managers to discuss their common problems were rare, and welcomed any attempt to organise such fora. He suggested that a questionnaire should be circulated to the respective countries to assist in formulation of the best possible programme. The Representative of Palau also noted the importance of interchange of ideas at gatherings of fisheries officers, and supported the proposal, as did the Representative of Tonga.

127. The Representative of American Samoa asked whether his country would be eligible to participate in the project, since this was not normally the case with UNDP projects. Mr Meecham advised that as this exercise was likely to be a joint UNDP/ SPC activity, he hoped that it would be possible. The Representative of American Samoa then expressed his support for the proposal, and also requested that report and proposal writing skills be incorporated into the training programme.

128. The Fisheries Co-ordinator drew to the attention of the meeting the relative difficulties of obtaining funding for non-independent states to participate in SPC activities. While there was never any question of non-sovereign states not being eligible for SPC training courses, it was definitely easier to secure extra-budgetary funds to enable participation for sovereign states than for territories. While this was not an issue for discussion during this meeting, it might be appropriate and timely for it to be considered at a higher level with a view to resolving this funding disparity.

129. The Representative of Vanuatu endorsed the proposal. The Representative of Guam also expressed his support and recommended the expansion of the syllabus to include inter-personal

skills and the relationships and roles of different organisations involved in the decision-making process, echoing an earlier comment by the Representative of Western Samoa.

130. Mr Meecham thanked the various Representatives for their expressions of support and advised that the suggestions made would be incorporated into the course programme. He concurred with the Representative of Western Samoa that participant numbers would need to be carefully controlled, although he did see a role for invited speakers and perhaps for non-fisheries participants attending only part of the programme.

131. In view of the strong expressions of support made for this proposal, the meeting made the following recommendation:

### **Recommendation 10**

Understanding the dynamic state of fisheries administration in the region, the meeting appreciated that many senior fishery administrators could benefit from assistance in management techniques. The meeting accordingly **recommended** that a management workshop, consisting of both formal and informal experience-sharing, preceded by action to highlight special needs and problems, should be offered to senior fishery administrators.

### **REGIONAL NEEDS AND PRIORITIES FOR TRAINING AND RESEARCH IN POST-HARVEST TECHNOLOGY - A QUESTIONNAIRE SURVEY**

132. Mr Hugh Walton, of the USP Institute of Marine Resources, presented this item. He recounted the history of a proposal to establish a post-harvest research and training facility serving the region. A questionnaire survey had been conducted among participants at the meeting, acting in their capacities of Representatives of their respective countries, to assess the needs and interests of member countries in this area. He introduced Professor John Clift, of the Victoria University of Wellington, who, while carrying out a review of IMR's training programme, had been largely responsible for compiling the questionnaire and carrying out the survey.

133. In describing the results of the survey, Professor Clift noted that the questionnaire was a means of quantifying ideas and opinions on the proposal, and that it had served as the basis for structured interviews of participants. He summarised the results of the survey by presenting several statistics on country levels of interest in various aspects of post-harvest fishery technology. Among the points raised, Professor Clift noted the following: that there is a high level of interest in post-harvest fisheries development in the region, with 28 post-harvest projects completed or ongoing (19 of which are in research and development), and a further 19 proposed (of which 15 are research-oriented); that countries perceive a strong need for outside assistance and support for post-harvest fisheries activities of all kinds, including those relating to product development, marketing, and quality control; and that, at present, while countries make about equal use of national and regional-level training opportunities, there is a preference for training activities to be carried out in-country. As a general conclusion, he indicated that the survey had indicated high levels of support for the establishment of a regional post-harvest training and research facility.

134. The New Zealand Representative recalled that this need and support had been identified at last year's meeting, and wondered whether the present survey provided any clearer guidance as to how these needs should be met. Specifically, he wondered whether the establishment of a regional centre for post-harvest research and training at IMR was perceived by participants as the best option, given that this appeared to be assumed or suggested by the questionnaire. Mr Walton replied that the concept of a jointly-operated regional centre based at IMR had been discussed between USP and SPC as a possible option, given that neither organisation felt able to establish

such a centre independently, and both felt that this was a realistic approach. He also noted that at least one funding donor had expressed interest in considering financing such a project.

135. The Chairman asked whether the SPC Fish Handling and Processing Officer would be relocated to Suva as an integral part of this proposal, since he felt that this would be detrimental to the integrated functioning of the Commission's Coastal Fisheries Programme as a whole. The Fisheries Co-ordinator agreed and said that this was not envisaged at present, although it would be necessary for the FHPO to spend extended periods of time working in the centre. Professor Clift noted that the survey had indicated the importance of the SPC Fish Handling and Processing Project as an advisory service, and that greatly increased responsibilities of the FHPO in connection with the present proposal could detract from this. Mr Walton added that development of the unit involved establishing additional human resources as well as physical ones to support the proposal.

136. The Representative of New Zealand reiterated his view that the meeting was essentially at the same position as last year. The concept was a good one but there appeared to be no clear direction as to the next step. The Representative of Fiji endorsed the need for a post-harvest facility. The Representative of Western Samoa pointed out that this was a major project with substantial capital implications. There had been reservations about its appropriateness in the past and it needed to be considered very thoroughly before the meeting approved it. The Representative of Tonga expressed his view that a revised proposal was required for the meeting to consider before approval could be given. The Representative of the Federated States of Micronesia agreed that he needed to have a clearer idea of exactly what was being proposed before he could give his support. The Representative of Kiribati said that in Kiribati several development projects had been delayed pending the establishment of this centre, and expressed his disappointment at the time this had taken.

137. At the Fisheries Co-ordinator's request, the FHPO, Mr Steve Roberts, gave a summary report of the discussions held between SPC and USP since last year's meeting, and outlined the progress that had been made in developing the concept. There is a need for training at a variety of levels, including: familiarising DTF and general fisheries students more closely with post-harvest subjects and issues; undergraduate- and postgraduate-level thesis study for a small number of individuals; and short-term courses or training programmes for specific purposes. There is also a need for a facility which can undertake troubleshooting tasks, such as rapid quality assessments or analyses of various types. Finally, a centre where product development trials, such as those described in the previous day's workshop, can take place is required if any progress is to be made in this important area.

138. The unit being proposed would consist of freezer and ice-making facilities, processing equipment such as smokers and driers, and one or two laboratories for use in product development. It is not envisaged to have chemical analysis facilities as these can be organised through the Institute of Natural Resources. The facility is likely to cost roughly US\$250,000 to establish, so there is a substantial commitment to be made. The facility would support country needs at a variety of levels as well as upgrading the teaching resources available to IMR training programmes.

139. Mr Walton apologised for not producing some documentation on the topic but noted that two papers were presented on this issue last year, and that it had been necessary to have the survey results as a precursor to discussions this year. He also noted the difficulties in meeting his teaching obligations in post-harvest subjects at IMR without the basic facilities being discussed.

140. The Representative of Australia noted that the proposal had evolved considerably since last year. Given the new orientation, she felt that further discussion and documentation was required before the proposal could be approved. Several delegates echoed this view, and the Representative of New Zealand suggested that detailed documentation, similar to that presented

for the Purse Seine Test Fishing Project, would be required for an issue this complex. The Representative of French Polynesia noted that many private concerns were involved in product development work, with much greater resources at their disposal, and requested clarification as to the exact aims of the proposed unit.

141. In view of these discussions, the meeting made the following recommendation:

### **Recommendation 11**

After discussing the results of a questionnaire survey on Regional Post-harvest Fisheries Requirements (conducted outside plenary sessions), the meeting **recommended** that a comprehensive report on this subject, to include a detailed project outline for the proposed regional post-harvest fisheries facility, be prepared for presentation to RTMF 22. This document should clearly identify the benefits countries would derive from this project. It was further recognised that given the heavy workload of SPC and IMR officers concerned with this, additional human resources would be required to undertake this in timely fashion.

## **REPORT ON RECENT EXPERIMENTAL FISHERIES PROGRAMMES IN NEW CALEDONIA**

### **i) Results of trap fishing**

142. Mr Aymeric Desurmont, of the New Caledonian Fisheries Service, made a presentation based on IP. 18. The presentation described the results of trial fishing using traps of various forms in a variety of depth and fishing conditions. Some established ideas about fish traps appeared to be incorrect in New Caledonian conditions. In particular, the popular upward-angled Caribbean-style funnel entrances, commonly supposed to be more effective, actually resulted in catch rates fifty per cent lower than those obtained using standard entrances. Gear loss was greatly reduced by using individual buoy lines for traps.

143. Several questions were asked on technical aspects of Mr Desurmont's presentation, in response to which he made the following comments:

- Some predators were encountered in the traps but these did not cause major problems or reductions in catch rates at depths within 100 and 200 m;
- Following SPC bait trapping trials in Niue, some traps have been deployed suspended from FADs, but without success;
- Bait trials have still to be conducted. Emphasis will be on reducing the quantity of bait required for the traps, since bait represents a major investment in this fishery;
- A suggested adverse effect on fish of galvanic currents generated by un-anodised steel traps was not investigated during these trials.

### **ii) Sea mount longlining for *Beryx***

144. Mr Regis Etaix-Bonnin, of the New Caledonian Fisheries Service, described the results of experimental deep-bottom fish longlining on sea mounts in the New Caledonian EEZ. He described the way in which the bottom longlines (2 per day, of 4000 hooks each) were baited (using squid) and set early (3 a.m.) each morning, soaked for 3 hours, hauled using a winch (2



hours) and the catch (80% *Beryx splendens*) processed and brined so as to preserve the colour. Catches are typically 2-2.5 tonnes per day, and, after freezing, are mainly shipped to Japan by the Franco-Japanese firm carrying out the fishing. A small amount is being sold fresh on the local market. It is not yet known how the local market will react to this previously unknown species, and whether it will compete with deep water snappers caught by local fishermen.

145. Mr Mike McCoy of Western Samoa pointed out that seamounts recently discovered in the zones of many Pacific Island countries, and thought to be too deep to support populations of red snappers, may well prove to have stocks of *Beryx* similar to those found in New Caledonia. Hence this experience should be of wide interest, although the cost of investing in the gear may prove prohibitive in some cases.

146. In response to questions from Mr McCoy, Mr Etaix-Bonnin said that he had the impression that demand for this species in Japan was currently high, although he had no quantitative information to support this. He also advised that there was no automatic system to aid in setting the longline, which was all done manually. Mr Bernard Viu, also of the New Caledonian Fisheries Service, added that since the vessel had been operating for only four months, it was difficult to have a good picture of market demand in Japan at present.

#### **NMFS-UH TROPICAL FISHERIES RESOURCE ASSESSMENT WORKSHOP**

147. Dr Jeff Polovina, of the US National Marine Fisheries Service in Honolulu, presented this item. He described a recently-held workshop for Pacific Island scientists in which participants had brought and analysed catch, effort and biological data on deep water snapper and grouper fisheries in their own countries. The workshop involved tutors and participants working interactively to examine the different data sets available. Each participant was able to complete and take home with him a report on the status and exploitation potential of the fishery in his home country, and it is hoped that these will be reviewed and discussed in the countries concerned.

148. Dr Polovina said that the workshop had enabled biomass/ habitat estimates for 18 geographical areas in the Pacific to be made. Based on a variety of different methods, maximum sustainable yields (MSYs) of 10-30 per cent of initial standing stocks were estimated. MSY estimates for Tonga and Fiji were less than present yields, indicating that stocks were going through the process of being fished down and that catch rates could be expected to fall in the future. Length data, thought to be useful for estimating mortality rates, turned out to be less useful than expected because of size-selective fishing.

149. In concluding, Dr Polovina said that a second chapter in deep-water snapper population research was now closed. The first had been the identification of the resource by programmes such as the SPC DSFD Project, and the initial attempts at exploitation and basic data collection on catch rates. The third would probably be the collection of good time-series data over, say, the next five years, which would permit a greater understanding of the response of these populations to exploitation once initial stocks had been fished down to equilibrium levels.

150. In response to questions from the floor, Dr Polovina gave more detail of the difficulties in using length-frequency data for fishing mortality assessments. He said that collection of limited amounts of L/F data were useful to provide basic descriptive information on the population. Using catch-per-unit-of-effort (cpue) data to generate composite L/F data was not practical in these fisheries because of the difficulties in targetting specific depth ranges consistently during the fishing operation. In general, construction of population models using parameters derived from L/F data is dangerous for deep water snapper fisheries. In the specific case of Vanuatu, Dr Polovina considered that diverting effort from the collection of L/F data to collecting more

accurate cpue data may enable more reliable population models to be derived. It may be that in the future, historical L/F data can be used more productively than is possible at present, but the data must be fully representative of the true size structure of the population, and ensuring this is a major problem area in deep water snapper fisheries.

151. Again answering questions, Dr Polovina noted that new studies in Hawaii were focusing on juvenile deep water snappers. Small individuals had recently been captured in sandy-bottom habitats, quite different from the high-relief habitat of the adults, and further study of the distribution and behaviour of these smaller animals should enhance understanding of the population biology of the species as a whole.

152. Several delegates expressed their thanks to NMFS, USAID, and Dr Polovina for hosting the workshop. The Representative of Western Samoa made a special acknowledgement to the NMFS for the continuous assistance provided for its deep sea fishery resource assessment project. In response, Dr Polovina thanked the countries which had sent participants, who had worked long hours to complete the work assigned to them. He concluded by saying that this workshop format had been very successful and hoped a similar analytical approach could be taken to assess the status of other fishery resources in the region.

## **REPORTS BY OTHER ORGANISATIONS**

### **i) Forum Fisheries Agency**

153. Mr Andrew Wright, Research Co-ordinator with the Forum Fisheries Agency, gave a short report on the Agency's activities this year. Staff shortages had caused some disruption to the work programme but these will be resolved shortly. The Fisheries Development Officer continues to act as Co-ordinator of the Ocean Resources Management Programme at the University of the South Pacific. An appointment to that position is expected shortly, after which the Fisheries Development Officer will return to his normal duties in Honiara. New appointments recently made, or to be made, include Finance Officer, Information Officer and Computer Projects Officer.

154. Major activities recently have included involvement in negotiations with DWFNs on regional access issues for tuna resources. Forthcoming activities include a major conference reviewing ten years of FFA's work, to be held in September. The Agency continues to improve its computer services to the region, and is involved in the second phase of a USAID-financed project to provide computer hardware and training to fisheries projects in the region.

### **ii) Institute of Marine Resources, University of the South Pacific**

155. Mr Hugh Walton presented a report on IMR's activities, based on WP. 10. A major recent event has been a review of the training activities of IMR over the past 10 years, the first of its kind. The final report of the review, which was carried out by Professor John Clift, will be presented to the Marine Affairs Co-ordinating Committee.

156. IMR has recently received a new training vessel funded by USAID, while ICOD has provided substantial support, especially in the form of teaching aids. Mr Walton directed his Institute's thanks to both these agencies.

157. The position of Director of IMR has still not been filled, but an appointment is expected to be made soon. A new Research/ Teaching Fellow (funded by ICOD) has been appointed, as well as a Research Technician, and an Information Officer who will co-operate with PIMRIS activities. A French geologist has been seconded to the Institute for a year. The Fisheries Training Officer

position is presently under recruitment since Mr Walton has resigned.

158. The Dravuni Research Station on Kadavu has been refurbished and is expected to be used both by overseas groups and by USP projects this year. New optional programmes now available to fisheries students include evening computer courses, PADI dive certificates, and practical fishing experience. Co-operative training programmes have been carried out with both SPC and FFA, usually with IMR providing teaching facilities and administrative support.

159. Mr Walton referred briefly to the proposal for a post-harvest research and training facility, already discussed under agenda item 12, and restated his opinion that the facility was needed for effective teaching at IMR and that, as a pragmatist, he hoped that the issue would not become over-complicated and protracted in its implementation. Responding to this point, the Representative of Western Samoa commented that while he agreed with the concept that post-harvest support was needed for the region, he was not fully convinced that establishing such a facility at IMR was the best way to meet this need. The Chairman reminded the meeting that this agenda item was meant to provide an opportunity for organisations to report on their work, and that he did not wish to see this issue re-opened for debate.

160. Mr Walton also noted that the widely publicised proposal for IMR's research facility to be relocated in Honiara was entirely subject to the availability of extr-budgetary funds, a timeframe for any relocation being difficult to project until such funding can be sourced.

161. USP is negotiating with the Forum Secretariat to assist in locating a consultant to develop funding proposals to EC under Lome III.

162. The Representative of Palau expressed his appreciation to IMR for accepting three Palauan students this year.

### **iii) ORSTOM**

163. Mr René Grandperrin briefly outlined the areas in which ORSTOM is presently carrying out research. These include:

- In New Caledonia - trochus, beche-de-mer, mangrove crabs, and live bait;
- In French Polynesia - pearl shell, and reef and lagoon fish;
- In Vanuatu - deep-bottom fish, mangrove environments, and FADs.

164. Mr Bertrand Richer de Forges supplemented the ORSTOM presentation by showing a series of slides taken from a small submersible used for research activities by ORSTOM.

165. In response to questions from the floor, Mr Richer de Forges noted that the extent of submarine daylight penetration had surprised the researchers. Although light intensity naturally diminished with depth, it was still detectable by the human eye beyond 500 m, and presumably beyond this by deep water organisms. He noted that rich faunal assemblages were often observed beneath overhangs where light intensity was reduced.

### **iv) ICLARM Coastal Aquaculture Centre**

166. Mr Mark Jervis of CAC spoke to IP. 16. He noted the infrastructural developments that have occurred over the last year. These included housing for resident and visiting scientists, a processing/ product development centre, additional aquaculture tanks and feeding organism production facilities, and laboratory space. An ocean nursery has also been constructed on the shallow reef flat adjacent to the Centre

167. The broodstock of giant clams has been increased and many have spawned several times, often under induction. Significant progress has been made in larval rearing under both intensive and extensive conditions, and good larval survival rates have been achieved with manufactured feed products rather than natural algal foods.

168. Ocean rearing trials have given good results, especially in an innovative cage design which is cheap, as well as being easy to clean and rid of predators. Ocean rearing trials are also being carried out in a total of 13 village-managed culture sites.

169. Juvenile rearing experiments remain problematical, with unpredictable results occurring under apparently identical conditions. The interplay of the effects of pathogens, competitive algae, competition between clams, and other density dependent effects, is not fully understood and much research still needs to be carried out on juvenile rearing. This will be the major thrust of the CAC in the immediate future, along with product development work.

#### **v) FAO/ UNDP Regional fishery support programme**

170. Mr Keith Meecham, Director of the FAO/UNDP RFSP reported that UNDP's New York headquarters have examined the future of the programme and have decided that it should not be extended beyond its planned termination date of 1991 in its present open-ended form. Under present arrangements, the project budget will be reduced by at least US\$800,000 per annum between now and its expiry in 1991. This situation has not arisen due to budgetary considerations, but to a desire on the part of UNDP to establish projects with fixed targets. UNDP is in fact in a financially strong position and is seeking project proposals in the region. It is anticipated that UNDP will continue supporting the programme provided it becomes more target-oriented.

171. This left two options for the meeting: either agree with UNDP's verdict and see the programme terminated in 1991: or, if it be the will of the meeting, endorse the project's continuation, but as a package of target-oriented projects. As a possible aid to discussion, Mr Meecham gave 14 examples of the type of projects UNDP may be willing to consider. These are listed in IP. 20.

172. Several delegates, including those from Kiribati, Guam, Palau, Niue and New Zealand, commended the support and good work of the RFSP and gave a number of examples of successful fishery projects it has promoted. There was general agreement that the RFSP had been an effective agency which had supported much useful work in a variety of ways. The Representative of New Zealand asked Mr Meecham to outline whether current activities could be reformulated in a target-oriented manner. He also enquired which ongoing activities might be threatened by loss of support from RFSP because they could not be reformulated in this way.

173. Mr Meecham advised the ways in which he was presently trying to restructure his project budget to accommodate the expected cuts, in order to maintain support to traditionally popular activities such as short-term training fellowships and advisory services of project staff. Other services, such as consultancies, would be cut back more severely because of their cost.

174. In response to a question from the Representative of Australia, Mr Meecham advised that determining which target-oriented projects might be implemented would be a consultative process between Island countries and FAO offices. He also pointed out that, as well as regional projects, multi-country projects might be considered, in which related but not identical activities could be carried out in selected countries.

175. The Representative of Western Samoa regretted the inflexibility of UNDP in not responding to the expressed wishes of Pacific Island countries. He did not believe, however, that the game

was lost and suggested that Island countries once again take up the case at diplomatic levels, perhaps with more vigour than in the past. He also pointed out that the ministerial-level meeting to be held in conjunction with the FFA tenth anniversary conference might provide an opportune forum to raise this issue at a high level, and that all participants in the present meeting should make sure their political Representatives were fully briefed on this issue for the occasion. The Chairman endorsed Western Samoa's comments in closing the discussion.

176. Prior to the next presentation, the Representative of French Polynesia drew attention to an organisational mistake which had resulted in French summaries of the meeting's recommendations so far not being distributed at the same time as the English version, and expressed his delegation's extreme dissatisfaction at this occurrence. The Fisheries Co-ordinator apologised for the error, which he assured French Polynesia did not reflect different priorities on behalf of the Secretariat in the production of English- and French-language documents.

#### **vi) FAO South Pacific Regional Aquaculture Development Programme**

177. Mr Roberto Foscarini presented a summary of the work of the SPRADP, based on IP. 19. He noted that interest in the culture of tropical marine invertebrates for reef reseedling or reef ranching was growing in the region, and that the SPRADP had sponsored many activities in connection with this broad theme. These included stock surveys, training programmes, study tours, feasibility studies into the establishment of hatcheries and juvenile production facilities, and translation of technical materials from Japanese into English.

178. Future plans include further similar studies. Mr Foscarini noted that the programme was responsive and he would welcome suggestions and recommendations from the meeting as to future work activities. He also emphasised that, although they shared the same office, the SPRADP and RFSP should not be confused with each other as they are separate projects with different sources of funding, life cycles and aims. Several delegations, including those of Tonga, Kiribati, Western Samoa, Fiji, and Tuvalu expressed their thanks to SPRADP for in-country assistance financed so far this year.

179. The Representative of French Polynesia pointed out that a future activity noted in the SPRADP paper was work on pearl shell culture activities. He suggested that SPRADP be requested to actively participate in the Special Interest Group on this topic to be formed under Agenda Item 10. After a comment from the Chairman, who noted that SPRADP was already providing assistance to Cook Islands in this area, Mr Foscarini confirmed that his programme would be ready to co-operate with its member countries and regional bodies in this field.

#### **vii) Australian Centre for International Agricultural Research**

180. The Representative of Australia made a brief statement on behalf of ACIAR. She noted the availability of an ACIAR report on giant clams, based on the proceedings of a giant clam workshop held in Australia in 1988 and a forthcoming workshop on tuna baitfish population biology to be held later in 1989.

#### **viii) International Center for Ocean Development/ Canadian International Development Agency**

181. Mr Phil Saunders, Regional Field Representative of both ICOD and the CIDA-funded 'Canada South Pacific Ocean Development Project' in Suva, gave a summary of the fisheries projects currently supported in the region by these two Canadian agencies. These included several

positions at FFA; PIMRIS; a number of USP initiatives; several training programmes, including the joint SPC/ FFA computer courses, the SPC Extension Training Skills Programme, and SPC Fish Handling and Processing videos; the forthcoming FFA tenth anniversary conference; and several other projects, mostly of a regional nature. Future activities would include support to the SPC Women's Programme and the South Pacific Regional Environment Programme.

182. Several delegations, including those from Palau, the Federated States of Micronesia, Vanuatu, Western Samoa, Papua New Guinea and the Cook Islands, as well as the SPC Fisheries Co-ordinator, extended their thanks to ICOD and CIDA for their support to both bilateral and regional fisheries development activities.

#### **ix) United States Agency for International Development**

183. Mr Elisala Pita made a short statement on behalf of USAID, whose involvement in fisheries over the past four years has been of a gap-filling nature, consisting, mainly of small projects and grants to support ongoing activities in ten Pacific Island countries, regional organisations and universities of the region. During this period, the Agency has undergone a shift in orientation to meet changing fisheries needs in the countries.

184. Over the next five-year period, USAID will focus its development assistance on implementing a new Pacific Islands Marine Resources Development Programme, which will involve developing five specific fisheries projects in five countries of the region. A sixth regional input component will seek to promote wider application of technologies and strategies developed in the five projects. The inputs will indirectly benefit those countries not formally participating in the programme, as well as the regional fisheries agencies such as FFA and SPC.

185. Several delegations, including those from Western Samoa and the Cook Islands, extended their thanks to USAID for its support of national-level fisheries development activities.

### **OTHER BUSINESS**

186. The Representative of New Zealand described the development of a new fishery for jack mackerel in the South Pacific between New Zealand and South America, of about 13,000 tonnes, which might present new development opportunities for French Polynesia and other countries in this part of the region. The Representative of French Polynesia thanked Dr Murray for this welcome news for his country.

### **ADOPTION OF REPORT**

187. The draft report was read and corrected by the meeting. The Representative of Guam moved the report be accepted. The Representative of the United Kingdom seconded the motion.

188. The Representative of Western Samoa expressed his thanks for, and satisfaction with, the work of the representative of Cook Islands in chairing the meeting. He also thanked all the people who had contributed to the meeting and asked for the meeting's forgiveness if he had said anything which had caused disagreement or dissatisfaction.

189. The Fisheries Co-ordinator thanked the office bearers and participants in the meeting for their hard work.

190. The Chairman offered his thanks to the Representatives to the meeting for their participation, the translation staff and their secretary for their efforts, the Vice-Chairman and the drafting committee, the secretarial staff, the printery, technical and travel staff, and all those involved in preparing food and refreshments for the meeting at various times during the week. He then declared the meeting closed.

## IV. SUMMARY OF RECOMMENDATIONS

### REPORT OF THE SECOND SOUTH PACIFIC ALBACORE WORKSHOP

#### Recommendation 1

In view of the valuable scientific data generated by the South Pacific albacore observer programme and the absence of any alternative sources of these data, the meeting **recommended** the continuation of the observer programme during the 1989-90 season.

### CONSIDERATION OF THE REPORT OF THE SPC STANDING COMMITTEE ON TUNA AND BILLFISH

#### Recommendation 2

While noting with satisfaction the high level of participation by DWFNS in this years SCTB, the meeting expressed its disappointment that the Republic of Korea was not represented, and **recommended** that member countries and the SPC Secretariat continue to pursue every avenue to encourage the participation of the Republic of Korea in future meetings of the SCTB.

#### Recommendation 3

The meeting endorsed the action items identified by SCTB and recognising that the proposed common regional scientific tuna database will considerably improve scientific studies and assessments of regional tuna fisheries, **strongly recommended** that Action Item 14 of the SCTB meeting report, to establish a common regional scientific tuna database, be implemented as soon as possible.

#### Recommendation 4

In order to further enhance the work of the Standing Committee on Tuna and Billfish in its advisory role to the RTMF, the meeting **recommended** that future reports of the SCTB provide an appropriate set of specific recommendations for consideration by the RTMF and higher bodies. They would be additional to the action items which are undertaken directly by members of the Standing Committee.

### OPPORTUNITIES FOR CO-OPERATION IN PEARL OYSTER RESEARCH MANAGEMENT AND DEVELOPMENT IN PACIFIC ISLAND STATES

#### Recommendation 5

Although recognising the constraints posed by commercial secrecy within the pearling industry, the Meeting noted the region-wide interest in the development of local pearl culture industries, and therefore **recommended** that SPC establish a Special Interest Group on the topic. In establishing the Group, SPC should:

- (i) draw on the responses to the 1988 SIG questionnaire, and circulate the names, organisational affiliation and specialities/interests of those on the register to all member countries and interested organisations;
- (ii) compile an information package based on the discussions and presentations form



the 1988 workshop on Inshore Fishery Resources, update it with more recent documentation on pearl culture activities worldwide, and circulate the package to member governments;

- (iii) in cooperation with regional governments and interested agencies (eg FFA, SPRADP, ICLARM), continue to actively acquire and disseminate similar information in future with due consideration given to marketing aspects.

## **POST-HARVEST FISHERIES TRAINING**

### **Recommendation 6**

The 1988 Conference in Lima, Peru for Technology Transfer between Latin American countries and Pacific Island nations approved a proposal for technology transfer between the two regions, with post-harvest fisheries identified as an important area. The conference subsequently proposed a study visit by SPC's Fish Handling and Processing Officer to Fish Technology Institutes in Pacific Latin American countries. After some discussion, the meeting **recommended** that the study visit should proceed as proposed, and further recommended that SPC identify suitably qualified Pacific Islanders to join the study tour to experience and learn about the activities of these research institutions.

### **Recommendation 7**

Recognising the difficulties countries are experiencing in meeting the exacting standards of export quality fish the meeting **recommended** that SPC co-ordinate a training programme for post-harvest personnel in the fresh fish handling and marketing sector, as outlined in WP. 4. The proposed training will be in two phases: (i) training the instructor through an initial workshop; (ii) training to be given by the trained instructor to the appropriate sector, whether fishermen or market staff.

## **FORMAL REVIEW OF FEASIBILITY STUDY REPORT FOR REGIONAL TUNA PURSE SEINE TEST FISHING PROJECT**

### **Recommendation 8**

After reviewing the detailed project definition prepared during Phase II of the Regional Small-Scale Purse Seine Test Fishing Project, the meeting fully endorsed the project as defined and strongly **recommended** that the Secretariat proceed with Phase III as a matter of some urgency and take all necessary action to secure funding to enable timely implementation. The meeting further noted the report concerning the extension of the project activities to other interested countries and recommended that the extension of the benefits to these countries be given full consideration when appropriate.

## **REPORT ON WESTERN PACIFIC FISHERIES CONSULTATIVE COMMITTEE (WPFCC) ACTIVITIES)**

### **Recommendation 9**

After consideration on the report of the inaugural meeting of the Western Pacific Fisheries Consultative Committee the meeting **recommended** that SPC request WPFCC to include non-sovereign SPC member countries in WPFCC meetings with observer status, in order to give them the opportunity to contribute to the Committee's work and benefit from the

activities undertaken.

## **WORKSHOP IN MANAGEMENT STRATEGIES FOR SENIOR FISHERIES PERSONNEL**

### **Recommendation 10**

Understanding the dynamic state of fisheries administration in the region, the meeting appreciated that many senior fishery administrators could benefit from assistance in management techniques. The meeting accordingly **recommended** that a management workshop, consisting of both formal and informal experience-sharing, preceded by action to highlight special needs and problems, should be offered to senior fishery administrators.

## **REGIONAL NEEDS AND PRIORITIES FOR TRAINING AND RESEARCH IN POST-HARVEST TECHNOLOGY - A QUESTIONNAIRE SURVEY**

### **Recommendation 11**

After discussing the results of a questionnaire survey on Regional Post-harvest Fisheries Requirements (conducted outside plenary sessions), the meeting **recommended** that a comprehensive report on this subject, to include a detailed project outline for the proposed regional post-harvest fisheries facility, be prepared for presentation to RTMF 22. This document should clearly identify the benefits countries would derive from this project. It was further recognised that given the heavy workload of SPC and IMR officers concerned with this, additional human resources would be required to undertake this in timely fashion.

## V. LIST OF WORKING PAPERS PRESENTED AT THE MEETING

SPC/Fisheries 21/Informal 1

List of participants

- |        |   |
|--------|---|
| WP. 1  | Summary report of the South Pacific Commission 1988/89 activities under the Fisheries Programme                 |
| WP. 2  | Regional Small Scale Tuna Purse Seine Test Fishing Project proposal   |
| WP. 3  | Proposal for a Regional Small Scale Purse Seine Test Fishing Project (Report of Stage Two Study Mission)        |
| WP. 4  | Training for the catching sector in fish handling procedures for export quality fish                            |
| WP. 5  | Country statement - Federated States of Micronesia  |
| WP. 6  | Report on the Second South Pacific Albacore Research Workshop   |
| WP. 7  | Report on the Standing Committee on Tuna and Billfish   |
| WP. 8  | Report of country consultation on proposal for a Regional Small-scale Purse Seine Test Fishing Project          |
| WP. 9  | FAO/UNDP/SPC Workshop on Management Strategies for Senior Fisheries Personnel                                   |
| WP. 10 | Pacific Islands Marine Resources Information System interim progress report August 1989                         |
| WP. 11 | Post-harvest fisheries technology   |
| WP. 12 | Historical patterns of the longline fishery in the Pacific Islands  |
| WP. 13 | Opportunities for Co-operation in pearl oyster research, development and management among Pacific Island States |
| WP. 14 | Marketing alternatives  |
| WP. 15 | Report on the New South Wales Longline Fishery Training/ Observation Attachment                                 |
| WP. 16 | The Hawaii tuna longline fishery - A 10-year history 1979-89  |
| WP. 17 | Alternative products to fresh and canned tuna   |
| WP. 18 | Country statement - Australia   |

WP. 19	Country statement - Vanuatu
WP. 20	Country statement - Tuvalu
WP. 21	Country statement - Solomon Islands
WP. 22	Country statement - Papua New Guinea
WP. 23	Country statement - New Zealand
WP. 24	Country statement - Kingdom of Tonga
WP. 25	Country statement - Guam
WP. 26	Country statement - Fiji
WP. 27	Exposé national - Polynésie française
WP. 28	Exposé national - Nouvelle-Calédonie
WP. 29	Selection of scale in pelagic longline operations:
WP. 30	Vertical longlining - the concept, trials and present state of development
WP. 31	Country statement - Palau
WP. 32	Country statement - Kiribati

#### Information Paper 1

	An investigation of the fishery interactions and population dynamics of skipjack tuna ( <i>Katsuwonus pelamis</i> ) in waters of the Solomon Islands
2	Data Catalogue/Tuna and Billfish Assessment Programme (revised June 1989)
3	South Pacific Albacore Tagging Project
4	Sampling of Japanese gillnetters in Noumea, Jan-Feb 1989
5	Development prospects for fish production in Vanuatu - a geographical approach
6	South Pacific Albacore Observer Programme 1988/89
7	Technical aspects of tuna purse seine operations
8	Experimental trap fishing in Vanuatu
9	<i>Regional Tuna Bulletin</i> , First Quarter 1989
10	Insitute of Marine Resources information - August

- 11 Oceanography and tuna fisheries in the intertropical Western Pacific
- 12 ENSO events and consequences on nutrient planktonic, biomass and production in the Western tropical Pacific Ocean
- 13 Alternative product forms for tuna - a review
- 14 Status of deep bottom fishing around Efate in 1987 and in 1988
- 15 The Japanese tuna markets: a fundamentalist's view
- 16 International Centre for Living Aquatic Resources Management Coastal Aquaculture Centre - status report, August 1989
- 17 A review of small-scale tuna purse-seine operations in Fiji
- 18 Essais de pêche aux casiers profonds en Nouvelle-Calédonie
- 19 SPC/FAO Regional Research Project on Reef Resource Enhancement and Culture
- 20 The future of FAO/UNDP assistance
- 21 Tuvalu fisheries
- 22 Background documents on the Western Pacific Fisheries Consultative Committee

## WORKSHOP ON COASTAL TUNA LONGLINING

1. Mr Gates explained that the workshop was designed to provide an overview of the conditions which make longlining appealing to Pacific island countries; an historical overview of operations and effort by foreign fishing fleets; description of a range of operations from very small-scale through those which employ modern high technology; profile of the Japan market for fresh tuna; and information and ideas on possible and potential marketing alternatives.
2. Conditions among Pacific Island countries have changed dramatically over the past 15 years; political, social, and economic conditions have materialised which encourage Pacific island nations to develop the use of offshore resources: declaration and control of 200 mile Exclusive Economic Zones, intense harvesting of inshore resources, and widespread increases in the consumption of high value fresh tuna.
3. Although circumstances which favor utilisation of pelagic fisheries resources exist, many difficulties must be overcome in order for profitable development to take place. The objective of the workshop was to provide background information and describe a range of possibilities and associated problems, so that Pacific island countries wishing to develop longline fisheries will be aware of the issues that must be considered.
4. Mr Gates then introduced Mr Richard Farman to present a paper which described Distant Water Fishing Nations (DWFNs), historical participation and present trends in tuna longlining in the Pacific region.
5. Mr Farman summarised activities by Japanese, Taiwanese, and to some extent Korean longline fishing operations. He explained early operational aspects which included the target species and final markets of different fleets. Vessels were divided into three sizes: small (under 50 GRT), medium (between 50 and 200 GRT) and large (200 GRT and above). Generally, the size of vessels increased with distance from home-country bases of operations. Different flag vessels targeted different species: the Japanese primarily targeted yellowfin and Taiwanese fishing effort was directed toward albacore tuna, which was sold to canneries.
6. Over the past several years fishing effort and vessel class reflect the increased importance of fresh tuna, or sashimi, markets, and also the importance of bigeye and yellowfin tuna. Mr Farman presented a graph which indicated a sharp rise in numbers of small vessels (under 50 GRT) which primarily fish for sashimi quality tuna. He concluded by pointing out that much of the workshop would focus principally on this small size-class of vessel, and its style of operations.
7. Mr Gates explained that the next few presentations would span the range of operations that would be easiest for Pacific island countries to undertake - from simple, low technology operations which utilised small boats and hand-hauled gear, to much larger vessels equipped with sophisticated technology.
8. Next, SPC Master Fisherman Paxton Wellington, whose Gear Development Sub-Project assignment is on longlining, presented an overview of the range of operations in the New South Wales longline fishery, to which he had undertaken a study tour, and related them to his work and field trials in Kiribati. The objective of his three week attachment to New South Wales had been to learn operational features of the whole range of vessels and then use that knowledge in his attempt to scale down operations to a level that would be adaptable throughout Pacific island countries. Mr Wellington described the range of setting, hauling, and catching and handling practices in the New South Wales' fishery. He described the three types of gear in use and

pointed out the benefits and drawbacks of each. For mainline, kuralon line was bulky and required substantial storage space; monofilament line required very little room, but generally needed to be stowed on hydraulically operated drums which added to the initial investment. Branchlines were of three different make-ups; traditional Japanese style with kuralon and sekiyama, a two piece system which included monofilament line, and a one-piece all-monofilament branchline.

9. Mr Wellington restated that the purpose of this attachment was to use the information for adapting small-scale longlining methods to small vessels for Pacific Island applications and then described his operations in Kiribati. The boat is 27 ft and the longline is kuralon with all monofilament branchlines. In six trips, fishing has produced numerous sharks, 0-3 good-sized yellowfin tuna per trip, and a single small Pacific blue marlin. Using slides to illustrate his talk, he showed that gear needed to fish 150 hooks requires substantial space on the vessel. He has two other crew, and the gear is hand-hauled. He commented that he would like to devise a way to fish more hooks without having the gear take up too much additional space. It would seem difficult to adapt operations of this sort to any smaller size of vessel than the one presently in use. The gear he is using cost between A\$ 3,500 and \$4,000, and difficulties with marketing must be overcome to make this style of venture profitable.

10. The Representative of Solomon Islands asked Mr Wellington's opinion on the number of hooks that could be fished under his operating conditions. The response indicated that the number of hooks could be increased to 200-300, but that other factors had to be considered, such as time and space. Approximately 1.5 hours is required to set the gear and hauling takes longer, 3-5 hours depending on conditions. Additional gear would place a greater overall strain on the line, which could make it impossible to haul the line by hand.

11. The Representative of American Samoa asked for more details on certain operational facets, to which Paxton Wellington replied that soak time was 4-5 hours, and that he had made four sets in the vicinity of the FAD off the western side of Tarawa.

12. The Representative of Solomon Islands requested clarification on the aim of the project. Mr Gates explained that the overall aim is to determine if longlining can be scaled down to a point at which it is adaptable throughout the region. Up to now, the Gear Development Sub-Project in Kiribati had been getting the operation up and running, and learning more about the gear and how it responds under fishing conditions. Once this is understood, modifications can be devised, and the system improved, hopefully to the point where it can make a significant contribution to member countries' fisheries, either at the level of the local market or as a high value export. The main project objective is to adapt the gear to the smallest-scale conditions possible.

13. The Representative of American Samoa asked whether, even with such a small number of hooks, much bait was taken by fish? Mr Wellington explained that on average 7-12 hooks are lost, likely due to hooking sharks, and that many of the baits appear to have been taken or tried, possibly by squid in some cases.

14. The Representative of Solomon Islands raised the issue of operational expenses, the cost of the boat and gear, and whether island fishermen would be able to afford small-scale longlining operations. He enquired if SPC had investigated the economics of a fishery that appeared to require what, for island fishermen, might be a prohibitively large initial outlay of cash. Were any cost comparisons of different types of boats, gears, and operations taken into consideration or planned? Mr Gates responded that some information on that aspect would be obtained during the present project, but that before it can be considered in a detailed and meaningful manner, more information and a greater understanding of the potential for scaling down operations is necessary.

15. The Representative of Palau asked Mr Wellington how many catches of marlin were made, and how much fishing time was spent near FADs. Only a single marlin had been caught. Four of

the six trips were in the vicinity of the FAD, but not enough sets or catches had been made to reach any conclusions.

16. The workshop chairman invited SPC Master Fisherman Mr Paul Mead to present his paper on vertical longlining (WP. 30). Mr Mead addressed his paper by first explaining the background to this method and the reasons it was considered suitable for further development. He then outlined the development of vertical longlining in the countries he had visited in his role of Master Fisherman, and noted the various successes and failures of these early trials. He then described his more recent development work on this method in Tonga, and specifically referred to his attempts to get more gear in the water in a quicker, more effective manner. This is achieved by setting multiple vertical longlines, connected by a surface backbone or mainline. Mr Mead concluded by listing the advantages of this method, the gear costs and the situations where it would be most effective.

17. There were a number of technical questions from delegates, in which response to which Mr Mead provided the following information:

- The maximum number of hooks that can be handled by this size of boat (26 ft) is about 200 hooks;
- Ten hooks per line is a reasonable average.
- With the main lines being only 50 fathoms (90 m) apart, trouble with tangling when handling big fish does not occur with tuna, but does with shark, if there are many about;
- This type of fishing method is appropriate for small-scale Pacific Island fishermen. It has worked well and been proven suitable in several countries, especially American Samoa, the Cook Islands and Niue.

18. Mr Gates then introduced Mr Graham Southwick, a commercial longline fisherman from Fiji, to present his comments on longlining in larger, more commercial circumstances. Mr Southwick said that he would largely deal with the operational and marketing aspects of the industry, with special reference to Fiji conditions.

19. Mr Southwick backgrounded the history of longlining in Fiji. Early Fiji-based longlining was for the PAFCO cannery in Levuka by Japanese longliners. Local fishing boat owners were not interested in this method as this was not economic for them. However, following a crash in skipjack prices, some boat owners started looking for alternative methods. Proof that a longline fishery was possible, and that bigeye tuna were present, was largely established by development work done by Paul Mead working for the DSFD programme of the SPC, and this encouraged Mr Southwick to try this method himself.

20. Early trials by local fishermen were not commercially feasible because the financial returns were poor, but Mr Southwick was sufficiently encouraged to persevere. Following these early ventures, fish prices improved and his first boat was rigged out with commercial monofilament gear, after finding proven equipment and purchasing the best.

21. Mr Southwick emphasised the importance to his method of getting the gear deep. He is fishing in 220-250 fathoms (400-450 m). The fact that most boats are bringing in very similar catches indicates they are now fishing close to optimum efficiency. He explained the boat configuration and operational methods of the existing boats, and described his experimental development of a 10 m high-speed day boat to work close to FADs or seamounts using vertical longlines, a method he thought had great potential. The Representative of Fiji subsequently pointed out that this vessel was an aluminium 'alia' catamaran, purchased from the Fiji Fisheries Division and presently being reconditioned.



22. Mr Southwick outlined the minimum requirements for this type of fishery, emphasising that direct air connections to the export markets (in this case Japan and the USA) were absolutely essential, as was the availability of airline space on these connections. If these conditions did not exist, he emphatically considered that fishing for the Japanese sashimi market would not be possible. He commented on his catch composition, emphasising that the operation could not survive on the sashimi market alone, and that aggressive marketing of the by-catch was essential to make the effort profitable. The by-catch goes to mainland US and Honolulu markets and Mr Southwick explained some of the marketing criteria for these markets.

23. People should be aware that 60-80 per cent of the yellowfin which are caught in Fiji waters are being rejected in the Japanese market despite all the proper care being taken. This is somewhat of a mystery, but a possible explanation is that this particular area has yellowfin which have previously spawned and are arriving in the region in a depleted condition. Fish are presently graded in Fiji before export, but there is still difficulty in identifying low-grade fish which will be uneconomic to send. Presently, if there is any doubt as to the quality of a fish, it is sent to the USA instead of Japan. Even Japanese experts have had difficulty in separating the lesser value fish before export from Fiji.

24. The afternoon session commenced with an address by Mr Jim Cook of Pacific Ocean Producers, who spoke about the Hawaiian longline fishery. The fishery has grown markedly in the last few years. Initially the vessels used the Japanese manual basket type system to set gear with tarred rope. Automatic Japanese gear is also used, but this is much more expensive. In both systems 700-800 hooks per day were set. Around 1978, US longline vessels began using monofilament gear, particularly in the East Coast swordfish fishery.

25. In the East Coast swordfish fishery there was a by-catch of bigeye tuna on the deepest hooks but the boats were really not equipped to catch tuna. Hawaiian boats did not previously use monofilament line because of the lack of appropriate technology. A Japanese line setter was installed on a boat using monofilament in Hawaii in 1986. The boat stopped catching surface pelagics and began to pick up the deeper bigeye tuna. Mr Cook said that the setters were not initially applicable to the tropical Pacific, but that trials on boats and discussions with the manufacturers have led to a monofilament system that is appropriate.

26. Why use monofilament line? Firstly, because one can put more hooks in the water than in the conventional Japanese system. Secondly, less deck space is required for storage of monofilament. Mr Cook's opinion is that the catch per unit of effort (cpue) for monofilament is higher than with the Japanese mainline system. Lastly, the level of skill necessary for setting the line is considerably less with monofilament than with conventional gear. The cost of monofilament and conventional gear is about the same. The cost of a setter and reel is about \$18,000 and the line is about \$13,000. The problem is that people think of monofilament line as disposable. Branchlines which cost about \$1.50 each are often carelessly discarded by unconscientious crew. The cost on trip usage is about the same as conventional gear, though for the same money more hooks are set in the water.

27. There are problems in buying monofilament if one does not have the necessary experience. One should always seek advice on monofilament gear from people experienced in fishing for the species one plans to target. There are many different types. The Japanese make the best monofilament, but prices range from 3\$/lb for Taiwanese line to 7\$/lb for Japanese line. It is sensible to look at what other people are using when deciding what monofilament to buy. Knots in monofilament can reduce the breaking strain by 50 per cent. It is not essential, however, to buy the most expensive mono for successful fishing.

28. The pressures at the core of a monofilament reel used strenuously can reach 70,500 to 90,000 lbs per square inch. The incidence of reel failure is much higher in deep water. There are two

companies in the USA making line setters. The biggest problem with setters is the speed at which the drum spins, so one needs a setter that can control the drum speed. Branch lines are conventionally stored on leader carts or a small drum. Lines can be set at 10-12 knots, and thus the line is coming off at 3-4 knots faster than boat speed. A branch line would be hooked on every nine seconds. This is too fast for conventional leader carts and there needs to be some modifications.

29. Floats also have to be considered for the type of fishing operation that is being carried out. The trade-off for floatlines and branch lines is speed. Long floater and branch lines mean longer hauling times.

30. Mr Cook commented on small scale longlining, particularly extrapolating large scale catches to small gears. He said that small gears would be effective around FADS and where one can actually see schools of fish, and that the operations of Mr Mike McCoy in Western Samoa would be worth following in this respect. Light sticks are useful for tuna and swordfishes in Hawaii but may not be necessary in the more resource-rich South Pacific.

31. In 1987, total Hawaiian longline catch was 3.9 million lbs, and in 1989 is expected to exceed 10 million lbs. This is due to the unusual nature of Hawaii, with very active and innovative markets and a high per capita fish consumption. The by-catch from longlining (ie yellowfin, wahoo and moonfish) is what keeps the fishery profitable.

32. The Representative of French Polynesia asked if there is any way of knowing the average depth of hooks when the line is set. Mr Cook's reply was that the deep hooks in Hawaii are fishing at 100-150 m and that one uses trial and error to set the minimum depth that will catch the desired fish. The Representative of French Polynesia asked whether Hawaiian fishermen target species by depth. Mr Cook said that they did if they were going after particular species, e.g. shallow fishing for surface yellowfin and broadbill swordfish or deep fishing for bigeye.

33. The Representative of Palau asked why light sticks were used for longlines, what type of bait is used and what comments Mr Cook had on bait. Mr Cook replied that they used the light sticks for catching broadbill swordfish. The stick is set 6-8 ft above the hook. Light sticks have also been found to be useful for tuna. They may act to attract bait to the longlines, or the target species themselves. The Hawaiian fishery is influenced by Koreans and they favour the saury because their baits are small and a trip's supply does not take up much space. Mr Cook felt that squid will also become more important but that at present it is rather expensive.

34. The next speaker was the Representative of New Caledonia, who described the small longline fishery in the Territory. A small 20 tonne longline vessel was commissioned in September 1988. The vessel, *Caledonie Toho 3*, was commissioned to supply the Japanese fresh fish market. This boat has only one 20 m<sup>3</sup> hold for storing fish in brine. The length of time at sea is limited to one week, unlike larger conventional longliners. The yields are about 1-2 tonne/day and thus the length of time at sea is necessarily short. The only export route for fish to the Japanese market is the Tuesday night flight to Japan. Of the usual 6 days at sea, 2 days are spent in transit. About 1,000 hooks are put down per day, yielding 1.5 kg/hook, the same as the larger vessels *Caledonie Toho 1* and *Toho 2*. A Franco-Japanese enterprise operates the vessel. The French are responsible for fishing, and the Japanese for marketing.

35. There is not likely to be any new flight scheduled and there is a 10 tonne limit on fish cargo sent from New Caledonia to Japan. The fish are sent to Japan in boxes containing about 70-80 kg of fish. Each fish is wrapped in a bag with 1 kg of ice. Dry ice is also used between the fish to avoid problems with water leaks. If albacore are being sent, 3-4 fish are packed per box; if yellowfin are being sent, 2-3 fish are packed in each box. The boat arrives on Tuesday afternoon and the fish are packed for shipment. Yellowfin are sold gutted, but because some products are made from viscera the albacore is sold ungutted. The company is bringing a new 200 grt vessel

into New Caledonia. At present the venture employs about 80 people, although it does not provide much direct economic benefit to New Caledonia. There has been an uneven response from the Japanese market, probably related to the problems of unloading the fish in Noumea port. If the port infrastructure is improved these difficulties may be resolved.

36. The Representative of French Polynesia emphasised the need to have a market link, and that the fishing operation should be structured around airline schedules and available cargo space. About five tonnes of cargo space are allotted to the catch of *Caledonie Toho 3*. There has not been any problem in meeting this production every week. The Fiji Representative asked about the prices at which the fish is sold on the Japanese market. This is the responsibility of the Japanese half of the company, so figures are not available, but they are known to fluctuate markedly. Freight rates are 250 CFP/kg from New Caledonia to Japan.

37. Hugh Walton of the Institute of Marine Resources (IMR) made a short presentation discussing the continuity between small and large scale longlining. Can those countries without access to sashimi markets use some of the new longlining technology? Sashimi fisheries are being discussed as air-freight-structured fisheries. However, deep frozen tuna (-60°C to -70°C) are acceptable for sashimi, although refrigeration requires maintenance expertise.

38. Mr Walton posed the question of whether there is a role for longline gears in artisanal fishing in the Pacific. He used the example of a 28 ft vessel operating a longline off a FAD 4 miles from Suva that was used by IMR. The IMR looked at whether vertical or horizontal gears were more effective. The results were inconclusive. From a small scale point of view, a horizontal line worked well near a FAD without tangling. Where large gears are prohibitive, small gears set more often, perhaps twice a day, may be a solution. Subsistence fishing means that 1,000 dollars for gear will be a huge investment, so will it produce greater cpue that will justify the expense? Will it be possible to produce a range of value added products in the form of fish products in the South Pacific?

39. Mr Southwick said that ultra-deep freezing of bigeye and yellowfin tunas is not economically viable just yet. He suggested that freezing bigeye might become feasible in the next two years. Mr Southwick was also concerned with the amount of big eye and yellowfin discards from Japanese longliners in the South Pacific.

40. Before introducing the next scheduled speaker, Mr Gates asked Mr Mike McCoy, Fisheries Adviser with the Western Samoan Fisheries Department, to briefly describe the small longline system to be used in Western Samoa, as previously alluded to by Mr. Cook. Mr McCoy told the meeting that trials with this equipment were yet to begin, but that these would take place in the coming year in seamount areas identified in Western Samoa by a 1985 bathymetric survey carried out by the Australian navy. The equipment to be used is small, relatively cheap (under \$3000) and manufactured by a company that Mr McCoy has previously found to make reliable and durable fishing equipment. Mr McCoy told the meeting that a detailed report of the trials should be possible at next year's meeting.

41. The next speaker, Mr Ken Ellis of the Queensland Fishery Industry Training Council, then spoke to WP. 14 and IP. 15 and described the situation with respect to export marketing of longline-caught tunas in Australia. A detailed handbook on tuna marketing in Japan, which was distributed to participants, describes the Japanese market system and appropriate fish handling and grading methods, and can still be considered up-to-date.

42. Mr Ellis referred to Mr Southwick's earlier comments on colour and texture problems and grading inconsistencies in yellowfin sent to Japan, from Fiji. The Australian industry experiences similar problems and the situation warrants investigation.

43. The QFITC is an industry body, not a government agency, and acts on behalf of fishermen.

The Council decided to investigate tuna marketing in Japan to assist the Australian industry. Mr Ellis stated that, as a result of several visits to Japan, he had learned to be very suspicious of published information on marketing in Japan as much misinformation had been circulated, especially by journalists. He stressed the importance of obtaining information directly from market sources, and noted that this could be very difficult unless one had regular repeated contact with individuals in the trade.

44. The first air-freight export trials from Australia to Japan took place in 1982-85, and gave poor results, with mixed responses to the fish and generally poor prices. This led to discouragement of Australian fishermen and bad relationships with the Japanese. QFITC then began to investigate the reasons for the poor market performance and undertook fact-finding missions to Japanese auction markets where the fish had been sent. Direct observation revealed that the handling and marketing information supplied to the Australian industry had been incorrect. In particular, Mr Ellis made the following points:

- Fish are handled very roughly on the auction floor. External appearance of the fish is less important than the appearance of the flesh - especially the colour which is responsible for more than 80 per cent of the variation in auction price;
- Grading of fish, which is ultimately the responsibility of the auctioneer, involves a great deal of mystique and is practically impossible for foreigners to learn;
- Tokyo is the most easily accessible and best market for tuna, and since prices are uniform throughout Japanese markets there is no advantage in trying to sell through smaller, more remote markets;
- It is practically impossible to flood any of the Japanese auction markets with fresh chilled yellowfin on any given day.

45. Mr Ellis stressed the importance of establishing and maintaining market contacts or agents in Japan, and of direct flights. Like earlier speakers, he was of the opinion that direct flights were essential before air-freight export could be considered. He also mentioned the importance of keeping up with changes in the trade, and noted several that have occurred in the past few years (based on surveys carried out in Japan):

- Perception of Australian tuna quality has changed from a rating of second to fourth (last) place in only two years;
- Development of fast foods and supermarket shopping have led to changing patterns of consumption, and these have led to different product forms - such as loins or blocks, rather than whole fish - becoming acceptable by the industry;
- New packaging materials make it easier for exporters to maintain fish colour in good condition during shipping.

46. There is potential to capitalise on regional preferences for different species in Japan by marketing in several locations. Marketing through a large wholesaler allows foreigners to take advantage of local market knowledge. Beef is a direct competitor for tuna in Japan and heavy promotion of beef by Australian exporters will have an adverse effect on tuna exports to Japan from both Australia and the Pacific Islands region.

47. Mr Ellis showed a series of slides illustrating handling and grading of tuna at Osaka market, and once again emphasised the importance of questioning available market information and carrying out original market research. He made several recommendations for tuna exporters or potential exporters, as follows:

- Always use ice slurry to chill fish immediately and rapidly so as to hold off rigor mortis. If this can be done, fish quality can normally be maintained at a high level;
- Consider non-Japanese markets, such as the US West Coast, where opportunities are extensive;
- Always market through a large wholesale agent so as to take advantage of market expertise and contacts.

48. Mr Ellis finished his talk by describing the organisational structure of fish marketing in Japan.

49. Mr Steve Roberts, the SPC Fish Handling and Processing Officer, then made a presentation on alternative tuna products, based on the information documented in WP. 17. He noted the growing interest in alternative (i.e. other than standard canned) tuna products world-wide, largely associated with the increasing perception of seafoods as a healthy food product. This is particularly the case in the USA. Mr Roberts described the various reasons why alternative tuna products are worth the attention of Pacific Island countries. These include:

- Generating higher prices and more local employment from the same raw material;
- Diversification of products to avoid over-reliance on specific markets;
- Producing value-added products with a reasonable shelf life, so as to avoid dependence on air freight links;
- Possibility of processing of tunas in smaller quantities than would be required to support a canning industry;
- Possibility of using medium-grade or undersize fish that will not produce good sashimi prices.

50. Mr Roberts then described the alternative products that might be considered. These included;

- Tuna packed as one of several ingredients in a mixed-product can;
- Tuna packed in retortable pouches;
- Vacuum-packed fresh tuna products;
- Dried and smoked loin-based products such as katsuobushi and arabushi;
- Salted and dried tuna products, including value-added products such as tuna jerky;
- Comminuted products such as tuna sausages and burgers, which may provide a means of utilising a low-grade product.

51. While not having instant answers to the types of products that might be suitable for different situations in the region, Mr Roberts felt that there were many possibilities to be examined. He stressed the importance of market research prior to commencing production. He described his own recent experiments to produce a tuna jerky product, and passed out samples to participants. He emphasised, however, that commercial production of alternative tuna products could only be carried out successfully according to a structured schedule. This would include

research into the characteristics of the local tuna resource that may affect product quality, analyses that may be required for nutritional purposes or as part of import requirements, studies on product shelf life, and experiments to reduce the rate of product degradation. The Representative of Guam informed the meeting that Guam has a tuna jerky plant and he would be glad to provide relevant information to those interested.

52. Following Mr Roberts' talk, Mr Gates opened the floor for discussion and questions to any of the speakers who made presentations during the workshop. There were specific technical questions relating to aspects of the earlier talks from Western Samoa, Palau and the Federated States of Micronesia. The Representatives of Tonga and Fiji expressed their wish to be associated with the programme in future.

53. The workshop closed after several delegates, and the Fisheries Co-ordinator, had thanked the various speakers, all of whose contributions had been interesting and informative.