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SOUTH PACIFIC COMMISSION

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

**SUMMARY REPORT OF THE SOUTH PACIFIC COMMISSION 1988/89 ACTIVITIES  
UNDER THE FISHERIES WORK PROGRAMME**  
(Paper prepared by the Secretariat)

**INTRODUCTION**

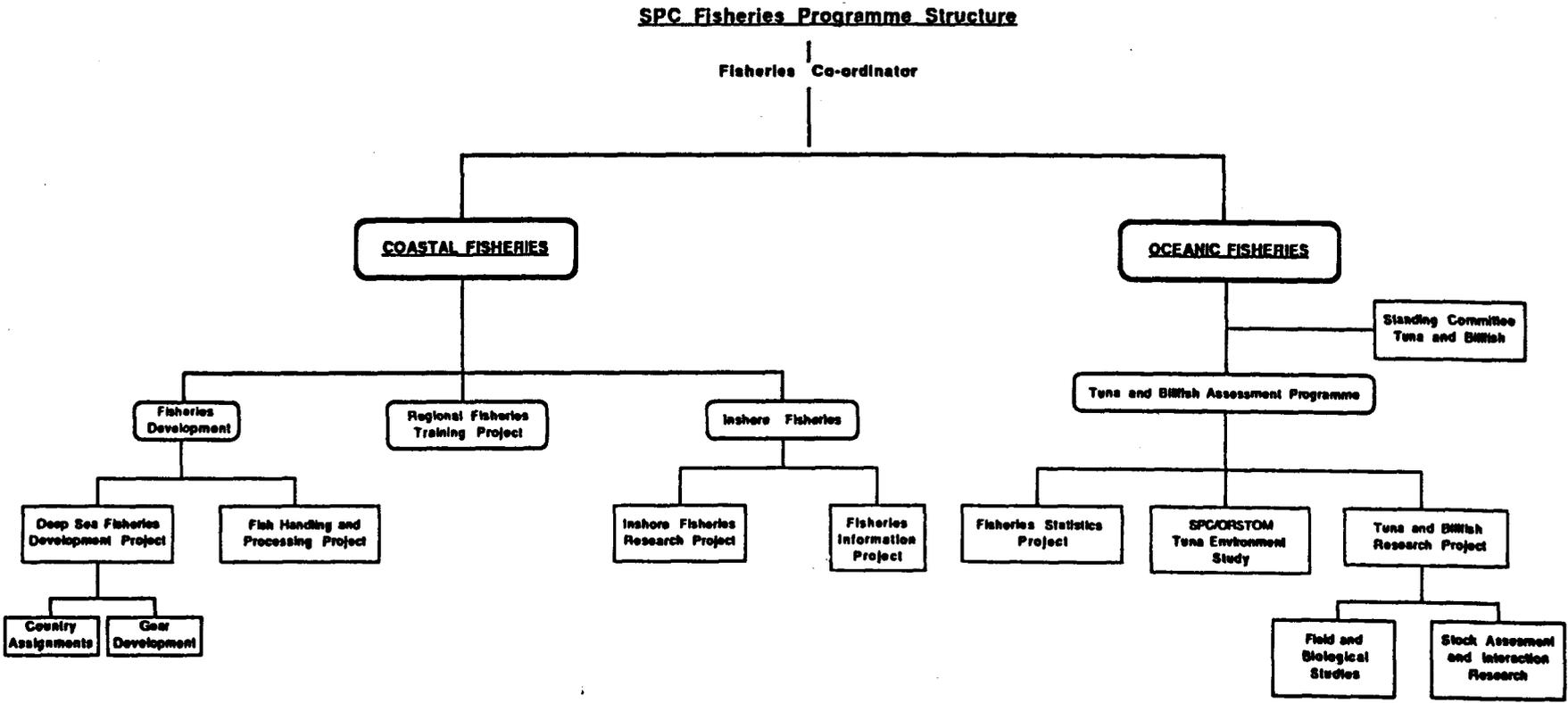
1. This paper briefly outlines the fisheries activities carried out by the South Pacific Commission throughout the region, from August 1988 through June 1989, and is presented to facilitate discussion when the Fisheries Work Programme is reported in detail under Agenda Item.5.

2. Secretariat action taken in response to the eighteen recommendations passed by the Twentieth RTMF is briefly reported in Attachment 1.

3. The SPC Fisheries Programme is comprised of seven principal projects (listed below) covering two broad areas of activity - coastal fisheries and oceanic fisheries (Figure 1). The accomplishments and undertakings of each project during the past twelve months are reported under the individual project headings which follow.

- Regional Fisheries Training Project
- Fish Handling and Processing Project
- Deep Sea Fisheries Development Project
- Inshore Fisheries Research Project
- Fisheries Information Project
- Tuna and Billfish Assessment Programme
  - \* Tuna and Billfish Research Project
  - \* Fisheries Statistics Project

Figure 1. SPC Fisheries Organisation Chart



## **I COASTAL FISHERIES PROGRAMME**

4. The Coastal Fisheries work programme includes five related projects whose collective aims are to assist with development of small to medium-scale locally-based fisheries through programmes of 1) formal and informal training; 2) technical assistance in a range of post-harvest areas; and 3) research and advice on aspects of resource management; and information services.

### **1 ) REGIONAL FISHERIES TRAINING PROJECT (RFTP)**

#### **General**

5. Following the recommendations of previous technical meetings and in direct response to country requests, the training project has developed and run a wide variety of training courses over the last twelve months, with several important initiatives now in progress or in the late planning stages. Where possible the courses were conducted in-country rather than regionally or extra-regionally (eg six national extension skills courses). In line with established guidelines, RFTP has focussed on areas of training need not currently being addressed by other regional institutions, with every effort made to work in close cooperation with these bodies where practicable. As a result, relationships with several institutions in the region have been considerably strengthened during the year.

6. While the development and conduct of formal training courses remains the mainstay of project activities, increasing efforts are being directed towards advisory services, and the production of more training aids and supporting literature.

#### **Completed Activities**

#### ***SPC/FFA 3 Week Introductory and 3 Week Intermediate Micro Computer Courses.***

7. In collaboration with the Forum Fisheries Agency (FFA) and using the facilities of the University of the South Pacific (USP) a three week introductory course to micro computers was run from 9th to 27th January followed by a three week intermediate course was run from 3 to 21 July. These courses proved successful in bringing a large number of fisheries staff to a uniform and productive level of competency in a relative short period of time. Sixteen fisheries officers attended each course, both of which were supervised and taught by the acting director of the USP Computer Center, Mr G Bahlman, with tutorial assistance from USP and SPC computer staff. The Institute of Marine Resources provided on-site administrative help for both activities. It was gratifying that the collaborative efforts of the various organisations proceeded very smoothly with relatively few lapses in communication.

8. Both courses were funded by the International Center for Ocean Development (ICOD) with individual scholarships being provided for Tokelau and Northern Marianas by the Regional Fisheries Support Programme of UNDP and by SPC respectively.

### ***Fisheries Systems Workshop***

9. Recognizing that some countries have an urgent need for assistance in further developing their fisheries databases, the 1988 RTMF recommended that arrangements to run a computer systems workshop proceed as soon as possible. In response a four week workshop was run from 1 to 24 February 1989 for six participants with well developed computer skills to assist them with the design or further development of database systems tailored to the specific requirements of their individual departments and countries. The quick implementation of this recommendation was made possible by a very prompt response from ICOD to the funding request.

10. The course was based at the Computer Center of the USP supervised by Mr G.Sutherland, a consultant from Canada, who also acted as tutor and computer programmer for the four weeks. For the middle two weeks of the course he was joined by Mr L. Allinson of FFA and Mr T. Lawson of SPC during which period the participants were split into groups for intensive tuition and individual assistance with the development of their computer systems.

11. The operation of the two micro computer courses and the systems workshop has largely addressed the immediate needs of countries for this type of training. There should be no further need for regional training at beginner level as this is now available in most countries. However if sufficient interest is expressed, it is possible a second Intermediate Course could be organized. Advanced training and system development is needed by a relatively small number of individuals at this point in time and this can be effectively addressed through attachments to SPC or FFA or through country visits by computer personnel from either organisation. If at a later date there is sufficient demand for another systems workshop, this could be arranged.

### ***Six In-country Courses in Extension and Communication Skills***

12. The improvement of national fisheries extension services through the enhancement of individual staff skills in extension and communication has been the major undertaking of the RFTP over the last two years. This comprehensive training programme seeks to raise the overall competency of fisheries extension officers throughout the region and to give each country the capabilities to train its own staff in these subjects.

13. The first stage was run in Suva in April 1988. This initial four week course gave the 19 participants both personal extension skills and the ability to pass these on by improving their teaching abilities, and through direct involvement in a collaborative class effort to develop a set of course materials which could be used when running their own in-country courses. The course was conducted by three facilitators from the Queensland Department of Primary Industries (Messrs J. Hirsch, R. Fell, B. Pollock) under the direction of the Fisheries Training Officer, with additional tutorial assistance provided by FAO/UNDP (Mr K. Meecham).

14. Stage 1 course participants, (with the help of one of the original QDPI course facilitators) have since run their own in-country courses:

Fiji	July 1988
Tuvalu for Kiribati, and Cooks	August 1988
PNG, Kavieng	December 1989
PNG Port Moresby	January 1989
FSM	January 1989
Kiribati	May 1989

15. Additional courses are planned for Vanuatu in August 1989 and in French Polynesia before the end of this year. This entire programme was generously funded by ICOD with FAO/UNDP funding the first in-country course in Fiji.

16. Over 100 extension and training personnel have now received training through this exercise. Reports from the in-country courses invariably remark on the enthusiasm of participants. In order to maintain the impetus of this programme at the national level, to reinforce the skills of the country facilitators, and to examine ways of building improved national extension networks a further workshop is now being planned and will be run early in 1990. (see Extension Development Workshop, paragraph 23.)

#### ***SPC/Nelson Polytechnic Pacific Island Fisheries Officers Course.***

17. The tenth SPC/Nelson course was held from 6th February to the 14th of July 1989. As with previous courses the first 18 weeks were run at the School of Fishing in Nelson, New Zealand where the participants studied a comprehensive range of subjects relevant to the practical work of a fisheries extension officer in the Pacific Islands. This was followed by five weeks of practical fishing experience in Tuvalu.

18. At the request of the Tuvalu Fisheries Division, the scope of the practical fishing module was expanded to include training for local fisheries staff (the 24 crew of the 6 new fishing boats provided under Japanese aid) in various subjects related to the operation of the small boats. The Institute of Marine Resources kindly provided the services of its navigation tutor/boat skipper, Mr J.Mawalagi to assist with the extra work in running this expanded course. The other tutors in the course were Mr P.Cusack from SPC, Mr M.Wells from the School of Fishing, Nelson, and Mr S.Petaia from the Tuvalu Fisheries Division.

19. We would like to thank the Tuvalu Fisheries Division and the people of Funafuti for the support given to this course which largely contributed to its effective implementation. Funding for this course was given by the Government of New Zealand, the Commonwealth Foundation, the Commonwealth Secretariat, FAO/UNDP, and the SPC.

#### ***Training Course Reports***

20. Course reports are written for all SPC training courses and circulated to participating countries and to the organisations concerned. These are available on request for any interested country or training institution.

## **Planned Courses**

### ***Papua New Guinea - Refrigeration Training Course.***

21. In response to a request from PNG and in collaboration with the Department of Fisheries and Marine Resources (DFMR) of PNG, SPC is assisting in the organisation of a second Refrigeration Training Course for this country. The course will be run at the National Fisheries College (NFC) at Kavieng from 28th of August 1989 to the 15th of December 1989, and will follow a similar format to the previous FAO/UNDP - SPC Refrigeration courses. The principal tutor/course supervisor is Mr K.Hosie of Nelson who has for the last six years taught the refrigeration section of the SPC/Nelson course. Two participants from the Solomon Islands Fisheries Division will also attend.

22. The course is funded primarily through a bilateral aid grant from the Government of New Zealand, with the principal tutor provided by the FAO/UNDP, and the participants from Solomon Islands funded by the Commonwealth Secretariat.

### ***Extension Development Workshop.***

23. This workshop will be the third step in the series of extension training activities reported earlier. The aim of this workshop is to further develop the communication and teaching skills of the initial participants and to advise them on how to best achieve effective extension development training in their own countries. The workshop is planned to be an intensive high pressure exercise over seven continuous working days with scheduled evening sessions, and will cover the following areas:

1. Review the Stage 2 Extension courses and discuss their strengths and weaknesses.
2. Using the experiences of the stage 2 courses, the QDPI facilitators will identify areas where individual participants require assistance in improving their performance and will design exercises which will enable the workshop to address this need.
3. Each workshop participant, or where there is more than one participant then each country group, will prepare a review of their department's extension services, how these are structured, how they operate, how they are staffed, and staff numbers. This review will also detail how they intend to execute their own training programmes over the next few years, analyze the problems they anticipate and how these will be addressed. These reviews will be presented and discussed by the workshop with the intention of developing sub regional networks for mutual support and to creating assistance channels from within these networks or from external sources such as SPC or QDPI etc.
4. The second draft of the extension manual which was written by the participants to the first course and a set of questions regarding its usefulness, format and contents will be sent to everyone who is attending the workshop. Drawing on the combined experience of the participants the workshop will decide in what format etc the manual will be published.
5. The workshop will make recommendations on the future development of this programme of extension training.

### ***Workshop in Management Strategies for Senior Fisheries Personnel***

24. In collaboration with The Regional Fisheries Support Programme of FAO/UNDP and drawing on information and expressions of interest generated by a preliminary questionnaire circulated by FAO/UNDP, a firm proposal for a two week workshop which would address some of the administrative and management problems faced by newly incumbent Chief Fisheries Officers or their immediate assistants has been prepared. This proposal is outlined in Working Paper.9 and will be discussed under agenda item.13.

### ***Training in Fish Handling Techniques.***

25. Both the Regional Fisheries Training Project and the Fish Handling and Processing Project have received country requests for assistance in organizing training in fish handling procedures for the catching sector, the principal area of concern being the need to improve fish handling standards to a level where the fish would be suitable for export. As this is not a highly technical area it is considered that the best way of addressing this would be to have at least one person in each country who has the ability to act as a trainer and adviser to the fishermen. Working Paper.4. outlines a proposed two stage training programme which adopts the approach previously taken in extension training i.e.a core course for trainers is run either regionally or sub regionally, after which the participants then run their own in country courses with the assistance of previously developed teaching material, possibly with the assistance of a core tutor. This will be discussed under agenda item 15.

### **Other Training Matters**

#### ***Assistant Fisheries Training Officer.***

26. The position of Assistant Fisheries Training Officer was filled by Mr B.Fao, who had previously worked as an extension agent with the Service Territorial de la Marine marchande et des Pêches maritimes of New Caledonia. Unfortunately Mr Fao resigned mid April 1989. A replacement is now being sought and some of the outstanding tasks are being undertaken through short term consultancies.

#### ***Training Directory***

27. A funding proposal for staffing and finances to upgrade the draft directory of training opportunities for Pacific Island Fisheries personnel and to print a final edition is being considered and should this prove successful, the document should be available early in 1990.

### **Follow up Training and Evaluation**

28. The 1988 RTMF suggested that more effort be put into following up the progress of participants to SPC courses with a view to establishing their need for assistance in further developing the skills learnt during their training. Greater emphasis has been given to this during country visits by the Training Officer, and contact with all ex-participants of SPC courses attempted by correspondence with a total 213 letters sent from which 89 replies have thus far been received. It is anticipated that the information gained from this exercise will be of considerable value in planning future follow-up activities and in soliciting block funding for this purpose.

## **2 ) FISH HANDLING AND PROCESSING PROJECT (FHPP)**

### **General**

29. The activities of the Fish Handling and Processing Project (FHPP) has continued to develop and expand during the year. A range of in-country assignments and training workshops have successfully been completed, and the first two videos in the series of post-harvest fisheries training videos are finished. Regional initiatives for the Regional Post-harvest Fisheries Laboratory continues to develop, while programmes promoting and supporting greater involvement of women in handling and marketing initiatives are evolving. Since February this year the FHPP has been funded by the U.K. Government, this follows a three year period of funding by the New Zealand Government.

### **Advisory Services**

30. The following country assignments were undertaken by the Fish Handling and Processing Officer (FHPO) in response to specific Government requests.

#### ***Tokelau***

31. The Office of Tokelau Affairs requested assistance and advice on the establishment of refrigeration facilities and the introduction of improved curing techniques for fish. A visit was made in September 1988 to Fakaofu, Nukunonu and Atafu, the three atolls comprising Tokelau, and a report submitted outlining a trial project for one of the three atoll communities. Facilities recommended for the trial included a small ice-maker, insulated store, and a central site for women fish processors to use as a shared fish curing facility. A training programme for a supervisor, fishermen and women processors was also recommended. The pilot project will be used to evaluate the appropriate nature of the recommended facilities and the desirability of establishing similar projects in the other two atolls of Tokelau. The Office for Tokelau Affairs have identified funds for the capital equipment, with SPC requested to supply the technical personnel. It is hoped to implement this Project at the beginning of 1990.

#### ***Tonga***

32. The Fisheries Division sought advice on the fresh and frozen fish marketing chain within the country. Tonga's three main fishing centres of Nuku'alofa, Ha'apai, and Vava'u were visited in September and recommendations made for improving fresh and frozen fish quality through a series of in-country training courses for fishermen, fish plant supervisors and processors. Advice was also given on improving the facilities at each fishing centre.

33. Advisory and consultative visits were also made to Western Samoa (September), American Samoa (September), Solomon Islands (December), and Vanuatu (February). Advice was given to an entrepreneur in American Samoa about design and equipment for a proposed fish handling and processing plant to be built in Pago Pago. A short report was also submitted to the Solomon Island Fisheries Department, making recommendations for a small Fish Receiving Depot planned for Honiara, and commenting on the technical aspects of a commercial fish export operation visited while in the capital.

## **Training**

34. SPC was invited by FAO to assist with a National Workshop in Fish Handling and Processing which was held at the National Fisheries College, Kavieng, Papua New Guinea, from the 28 November to 16 December. FHPO attended the first two weeks of the three week workshop, lecturing and supervising practicals and demonstrations. A clear indication of the high level of interest and enthusiasm shown by the 14 participants (13 from PNG, one from Vanuatu) were the requests from the students for additional lectures/practicals.

35. Women's role in fisheries is being given increased attention within the FHPP. In addition to women's involvement in the pilot project recommended for Tokelau, a workshop is planned for women in Papua New Guinea, and an active interest maintained in a regional consultative programme on the 'Role of Women in Small Scale Fisheries in the South Pacific', directed by the Commonwealth Secretariat, that will have a major post-harvest input. The PNG Fish Handling and Marketing workshop, funded by ICOD is a collaborative effort with the SPC Women's Bureau, the PNG Fisheries and Marine Resources Department, and the PNG Department of Home Affairs and Youth, and will be held in Port Moresby this September, for 24 women from the Papuan Region of the country. A planning meeting in April in Port Moresby, attended by the FHPO and SPC Women's Programme Officer, finalised the programme for the workshop. Interest has already been expressed from other regions of PNG for a similar workshop.

36. A beche-de-mer workshop on processing and marketing will be held in Port Vila at the beginning of August. This follows a request from the Government of Vanuatu for assistance to improve the quality and marketing of smoke-dried beche-de-mer, the export of which is presently banned due to poor quality of the product.

37. The first pair of training videos, from an ICOD funded project for the production of technical videos on Fish Handling and Processing, have been completed in English, with the French version to follow shortly after. Work will continue on translating one video on handling fish on a fishing boat, into the region's many languages. The bulk of the footage was filmed in Vanuatu in February by technical staff from SPC's media center. Editing, narration, animation and credit titles, plus some additional filming was completed at SPC's Suva facility. Plans are in hand to continue the video series with subjects drawn from the following topics: freezing, refrigerated stores management, seafood packaging, air-freighting fish, cured fish production, handling and marketing tuna (with longlining fishing techniques).

## **Other Activities**

38. A three week programme at the Institute of Marine Resources, Suva, investigating the potential for tuna product development, was completed in June/July. The short project was designed to try out a number of simple processing/preservation techniques on fresh tuna to establish the potential for a more in-depth programme on 'value-added, non-canned tuna products'. Techniques that were tried included salt/drying, marinating followed by drying and marinades. A dried tuna product, which simulates beef jerky, in garlic, chili and sweet/sour versions, proved promising following informal tasting sessions. The ultimate aim of the project is to find alternative, marketable, tuna products that island communities can manufacture and export profitably.

39. An initiative for a 'Regional Post-harvest Fisheries Laboratory', discussed in detail and approved in principle at last year's RTMF, continues to develop. A proposal has been prepared for the facility to be installed at the Institute of Marine Resources, as a joint project of IMR and SPC, and potential donors approached. IMR would use the facility to upgrade the post-harvest component of the Diploma in Fisheries, while SPC's FHPP would initiate and direct applied research activities. Technical training workshops on specialised topics would be run from time to time with both IMR and SPC inputs. To support and direct the research function of the facility, a review of post-harvest fisheries research activities is being commissioned through the FHPP, to help identify and establish priorities for applied research projects appropriate to Pacific Island Countries.

### **Information/Publications**

40. The revised edition of *Beche-de-Mer of the Tropical Pacific* should be ready for printing August/September. Preparation of this publication has been delayed by commitments to country assignments and other projects. A late start was unfortunately made with the Field Manual for Seafood Poisoning Outbreaks as recommended at last year's RTMF workshop on Fish Poisoning and Seafood Toxicity. The handbook will take the format of a Protocol to investigate instances of fish poisoning by health and fisheries personnel, and should be available by the end of the year.

41. The information base on post-harvest fisheries topics continues to grow. A wealth of technical information is available to respond quickly and effectively to enquiries for assistance from countries. Data assembled range from bibliographic information on new and improved traditional processing and preservation techniques; quality assessment and assurance methods; processing equipment and materials (fish handling, refrigeration, processing lines, etc); plant hygiene; packaging technology (consumer to airfreight packaging); and, training materials (manuals, videos, slides, etc).

### **Future Directions**

42. The following work and activities are planned for the project:

- (i) During the Pacific Latin America Countries - Pacific Island Nations, International Fisheries Conference, held Peru in September/October, one of the proposals adopted by the meeting concerned technology transfer between countries of the two regions, with post-harvest fisheries technology identified as one of the areas of greatest potential interest. The Conference subsequently approved a proposal for the FHPO to visit fish technology institutes in selected Latin American countries, to identify and formulate cooperative programmes between the two regions. It is proposed that this visit proceeds with two or three selected Pacific Island Nationals with an interest and experience in post-harvest fisheries technology (see proposal in SPC/Fisheries 21/WP 11.)
- (ii) Countries are being canvassed to establish their interest in a series of subregional workshops in specific areas of Fish Handling and Processing (Micronesia, Polynesia and Melanesia) for 1990. It is hoped to base these workshops on the successful formula of the Extension Training Programme organised by the Regional fisheries Training Project. (See Working Paper No.4.).

### **3 ) DEEP SEA FISHERIES DEVELOPMENT PROJECT (DSFDP)**

43. The post of Fisheries Development Officer (FDO), which had been vacant since it was first advertised in November 1987, was filled in early April of 1989. At last year's RTMF it was announced that the arrival of an FDO was anticipated in November of 1988. However, extenuating circumstances forced the candidate to eventually decline the post. During the interim, from November 1988 until early April 1989, the duties of the FDO were carried out by the Senior Inshore Fisheries Scientist.

44. For most of the past twelve months the Project's field staff consisted of three Master Fisherman. Between August 1988 and December the Project had four Master Fishermen in the field. In December, Master Fisherman Lindsay Chapman left SPC to attend college; in March 1989, a consultant Master Fisherman completed his six month assignment, reducing the number of Master Fishermen to two. Since the FDO's arrival two Master Fisherman have been recruited, one to a full-time post and the other to a four month consultancy. Additional Master Fishermen will be recruited for short term consultancies as the need arises.

#### **Country assignments**

45. The DSFD Project has now completed 50 country assignments since it began in 1978, and during the past 12 months, operated in 6 countries: Federated States of Micronesia (Truk), Kiribati, Papua New Guinea, Tonga and the Commonwealth of the Northern Mariana Islands (Phase 1), with two still in progress (Tonga - gear development, and Kiribati - Small-scale longlining). Brief details of each assignment are given in Table 1.

46. There are several outstanding country requests for assistance: the Commonwealth of the Northern Mariana Islands (Phase 2 - bottom longlining, is scheduled to commence immediately following the RTMF), the Solomon Islands (bottom fishing and trolling), Palau (assistance with construction and deployment of FADs), and Papua New Guinea (an informal request for additional training in bottom fishing).

#### **Gear Development Sub-Projects**

47. The Gear Development Sub-Project was established to adapt new or unfamiliar fishing methods to Pacific Island countries to promote capture of locally available under-exploited species in a manner suited for local conditions. It was agreed that longer than average country assignments were necessary to overcome the variables introduced from frequent project relocation, to assist evaluations of project trials, and to reinforce project conclusions. With that in mind the first Gear development Sub-Project was based in Vava'u, Tonga in 1986, and the second component was recently established in Tarawa, Kiribati in early 1989.

**Table 1. DEEP SEA FISHERIES DEVELOPMENT ACTIVITIES  
August 1988 - 31 July 1989**

Country, dates Master Fisherman	Primary Objectives	Activities of Master Fisherman
Tonga, September 86 - continuing Paul Mead	Fishing Gear Development Sub-Project	Deployment of FADs Developing a number of fishing techniques, deep trolling, bottom longlining, and small- scale bait netting.
Federated States Micronesia (Truk) October 1988 Lindsay Chapman	Explanatory fishing/demons-	Survey of deep-bottom fishing areas around Truk. Demonstration of deep-bottom fishing techniques to local fishermen.
Papua New Guinea March 88 - Sept. 88 Paxton Wellington	Training/explana- tory fishing	Survey fishing and demonstration of deep-bottom fishing methods to local fishermen in Oro Bay and Rabaul, Practical training at Kavieng National Fisheries College.
Wallis and Futuna Aug. 88 - March 89 Pale Taumaia	Demonstration and training	Survey fishing, demonstration, and training of deep-bottom fishing and trolling techniques.
Northern Mariana Islands. Sept. 88 - Dec. 88 Paxton Wellington	Exploratory fishing/ Training	Survey fishing of deep-bottom fishing areas around Saipan. Demonstration of deep-bottom fishing techniques to local fishermen.
Kiribati Jan. 89 - continuing Paxton Wellington	Fishing Gear Development Sub-Project	Adaptation and development of gear for small-scale vertical and horizontal longlining.

### **Tonga**

48. Master fisherman Paul Mead, on assignment in Tonga since 1986, has had a multi-task assignment. Information from trials between 1986 and 1988 were highlighted in Working Paper 33 at last year's Regional Technical Meeting on Fisheries. This work has continued with emphasis on 1) adapting exotic deepwater trolling techniques to tropical tuna fisheries; 2) vertical and horizontal longlining; 3) ika-shibi trials, particularly around seamounts; 4) improvements in bait-catching methods (on an opportune basis); and 5) devising methods to manufacture traditional pearl shell lures with the use of locally available modern technology. Masterfisherman Mead has also continued putting together information on FADs, particularly with respect to mooring hardware and the effects of biofouling.

## ***Kiribati***

49. Masterfisherman Paxton Wellington began a gear development assignment in Tarawa, Kiribati in late January of this year. His principal task is to adapt tuna longlining techniques studied in New South Wales, Australia for small-scale Pacific Island fisheries. For the first six weeks of his assignment Paxton studied local conditions, surveyed fishing grounds around Tarawa atoll, and conducted vertical longlining trials from a 27 foot skiff using the SPC wooden handreel. Since early July he has concentrated on hand-hauled horizontal longlining.

50. In addition to gear development, at the request of Kiribati Fisheries, Masterfisherman Wellington assisted local fishermen deploy two FADs made from coconut logs at Aurorae, one of the southernmost atolls and a traditional fishing stronghold in the Gilbert chain.

51. The gear development sub-project has now been in operation for three years, and while substantial and significant information has been gained, and Masterfishermen assigned to gear development tasks have readily assisted host country fisheries departments with a wide variety of other development activities, it is considered timely that this activity be critically reviewed. SPC Fisheries will undertake a thorough assessment of both the project itself and the needs of member countries in this important area to evaluate present effectiveness and shape its redirection. Upon its completion, the evaluation along with any proposed changes will be distributed to member countries for input and comments.

## **Reporting**

52. Considerable progress has been made in clearing the large backlog of DSFD country reports. A technical writer was employed for 8 months during which 20 reports were written and compiled, three of which have been sent to countries for final approval. The remaining 17 completed reports are in the 'lay-out' phase, and will be sent for country clearance in the near future. Five reports still need to be completed, and this work will retain high priority. During this drive to eliminate the report backlog, considerable effort has gone into streamlining report preparation procedures so that future reports can be produced in a timely fashion while maintaining the standard of technical content.

53. Several publications and technical reports are still in the planning or preparation stages; a handbook on deep-bottom fishing methods, designed as a companion volume to the highly successful Handbook on Trolling Techniques for the Pacific Islands is in progress, and an updated version of the SPC Handbook on FAD Construction and Deployment is now being planned. The FAD publication will be expanded to include the most recent developments in FAD technology. The completion of these publications depends on other work priorities, and on extra-budgetary support.

54. Technical reports based on the Gear Development Sub-Project which has operated in Tonga since 1986 will cover deep-trolling, vertical longlining, and bottom longlining and will also incorporate relevant work from other areas, particularly the longlining trials by SPC Master Fishermen in Kiribati. These reports should be completed by late 1989 or early 1990.



## **Future Directions**

55. Country requests for DSFDP assistance reflect the widening spectrum of development conditions that have emerged among Pacific Island countries, particularly during the past 5 years. Now, harvesting fisheries resources or developing new fisheries, post-harvest handling and disposition of catch, conservation and management of heavily fished inshore resources are more closely linked than ever before. In recognition of this, the DSFDP will work closely with the Fish Handling and Processing Project and the Inshore Fisheries Research Project to ensure that its goals complement those of the other two projects.

56. The Project will seek greater involvement of countries in the planning of DSFDP assignments, backed by accurate assessments of the prevailing development circumstances and endorsed development strategies, to facilitate tailoring the DSFDP assignment to meet the specific needs and desires of individual countries.

57. A core staff of masterfishermen will be retained but with country assignments covering a wider and increasingly more complex range of activities, greater future use will be made of regionally available fisheries specialists through short-term consultancy arrangements. This will increase the flexibility of the project and enable the skills and experience of individual specialists to be matched more closely with the specific tasks of the country assignment. In keeping with this, the DSFDP will seek to establish a directory of Masterfishermen consultants whose collective skills will span the range required.

## **4 ) INSHORE FISHERIES PROJECT (IFRP)**

### **General**

58. Initiated in January 1988 with extra-budgetary funding provided by the UK government, the IFRP has suffered as a result of staff shortages within the coastal fisheries programme generally. Because of recruitment difficulties, only one of the two professional positions in the project (Senior Inshore Fisheries Scientist [SIFS]) was occupied during 1988 and the first part of 1989. Until March 1989, when the FDO position was filled after being vacant for almost 18 months, the SIFS also retained responsibility for the administration of the Deep Sea Fisheries Development Project in addition to the IFRP, as well as duties related to the newly created Fisheries Information Project (see below). In order to alleviate this workload, and to enable progress with specific IFRP objectives, a consultant fishery scientist on leave of absence from ICLARM was employed for 6 months during 1989. The vacant IFRP position (Inshore Fisheries Scientist, [IFS]) was filled substantively in July 1989.

59. These manpower limitations meant that some of the IFRP's aims were not fully realised during 1988/89. However, despite these problems, the project realised several significant achievements during the year, as outlined below.

### **Country Activities**

60. A principal objective for establishing the IFRP was to service the needs of SPC member countries in planning, executing and reporting projects aimed at gathering and interpreting the information required for effective management of fishery resources. Three projects of this nature were undertaken during 1988 and 1989 in the Cook Islands, Fiji and the Federated States of Micronesia.

***Cook Islands: Marine resource survey of Palmerston Atoll***

61. Palmerston Atoll has become a major source of fish for Rarotonga and income from fish catches has supplanted that from copra harvesting. A major component of the catch is parrotfish. A survey of the status of the parrotfish fishery, and other fisheries of the atoll, was undertaken in response to concerns by the islanders that parrotfish catch volumes had declined and that there had been a decrease in the average size of fish captured.

62. The survey was carried out jointly by technical staff of the Cook Islands Ministry of Marine Resources (MMR), the IFRP, and the Forum Fisheries Agency, with research associates from Fiji, Kiribati and Tuvalu also participating. Financial support was provided by the participating institutions and by BDDP, FAO/UNDP SPRFSP, and ICOD.

63. As well as documenting the status of the parrot fish fishery, an inventory of Palmerston Atoll other exploited or exploitable marine resources was also completed during the survey. Management strategies for the island's major fishery resources were formulated by the survey team and discussed with the Palmerston island council and the MMR, and some of these are presently in the process of being implemented. A report of the survey has been submitted to the Cook Islands government and this will be finalised for publication in the near future.

***Fiji: Beche-de-mer exploitation***

64. Sea cucumber or beche-de-mer production increased rapidly in Fiji from a total harvest in 1985 of 66 tonnes to 640 tonnes in 1987. Given a 90% weight loss this represents a 1987 harvest in wet weight of 6500 tonnes, or about 40% of Fiji's total commercial seafood production. One species, *Actinopyga miliaris*, previously of minor importance, now comprises about 95% of the beche-de-mer harvest.

65. The explosive growth in this fishery led to an immediate need by the Fiji Fisheries Division for information on the degree to which such greatly increased beche-de-mer harvests might be sustainable. The IFRP provided technical and financial support to a field survey programme in a major harvesting area off the coast of north-west Vanua Levu, designed to gather basic information on levels of exploitation and its effects on sea cucumber populations. The team comprised about ten professional and technical staff from Fiji's Fisheries Division, the IFRP, and a research associate from Papua New Guinea's Department of Primary Industries.

66. The survey team gathered baseline data on the abundance and exploitation rates of commercial holothurian resources in Fiji which can be used as a basis for comparison in future. Based on the data collected, the team recommended appropriate means of evaluating and monitoring these resources and suggested possible management options for this fishery, some of which have been implemented. A preliminary report of the survey has been drafted but it will not be possible to finalise this until some of the taxonomic problems encountered during the field work have been resolved by external specialists. This should take place before the year end, at which time the report will be finalised and, with the Fiji Government's approval, published.

***FSM: Development of a ciguatera sampling protocol for fishes***

67. Increasing amounts of fish are being exported from the FSM to US territories such as Guam, Saipan and Hawaii. Concern has been expressed over the possibility of people being poisoned through the consumption of fish from the FSM. Besides the debilities caused by ciguatera poisoning, such intoxications may lead to costly litigation and adverse publicity for the FSM.

68. After fact-finding and advisory visits to Kosrae, Pohnpei, Truk and Yap by an IFRP scientist, methodologies were suggested whereby data could be gathered to monitor the extent of ciguatera fish poisonings in the FSM, and by which specific tests could be carried out on fishes to determine levels and extent of ciguatera, and its importance as a threat to commercial marketing of FSM seafood.

69. National-level activities in which the IFRP is expected to become involved in the coming 12 months are:

- (i) Assessment of wild pearl-shell stocks and evaluation of culture potential in Christmas Island (Kiritimati) lagoon, Kiribati, and in Namdrik atoll, Marshall Islands.
- (ii) Assessment of data on Papua New Guinea's barramundi fisheries.

70. Further projects are under development but have not yet been formalised by submission through official government channels.

**Regional Activities**

71. A long-standing project that has been undertaken this year by the IFRP has been the analysis of deep water fishing catch and effort data from the records collected by SPC Master Fishermen over the past 10 years. During this period, the Master Fishermen have collected data from over 100 locations in the Pacific Islands, some of which have been visited repeatedly. A preliminary report which details variation in catch rates and species composition in the SPC region, and their relationship to island type, has been prepared and circulated in draft form at this meeting. Also available for inspection is a draft document which summarises catch, effort and related data for all deep-bottom fishing trials (not only those carried out by SPC) that we have details on so far. Once we are reasonably sure that this is complete, this document will be finalised for publication. The final version will contain a summary for each country or island group, detailing local deep-bottom fishery exploitation history and providing indications of appropriate development and management approaches for the future. It is anticipated that this will be completed at the end of 1989 or early in 1990.

72. In conjunction with the FAO/UNDP South Pacific Regional Aquaculture Development Programme (SPRADP), a literature review is in preparation on the potential of juvenile release as a means of enhancing wild populations of exploited tropical Pacific marine invertebrates. This review was discussed in detail at last years RTMF and is the first step in a 3-year cooperative programme between the IFRP and SPRADP which will attempt to evaluate the success and feasibility of reef reseeding trials for selected species. The SPRADP will be responsible for all aquaculture-related aspects of such trials, while the IFRP's role will be confined to monitoring the results of juvenile releases on wild populations.

73. The IFRP has been active at a regional level in the field of information-gathering and redistribution, and the gradual building up of a network of contacts working in various branches of fisheries research. The Workshop on Pacific Inshore Fishery Resources, held in March 1988, generated renewed interest in the management of fishery resources throughout the region, and this has been capitalised upon. Now that it is operational, the Fisheries Information Project will take over most of the information related functions undertaken so far by the IFRP, in particular those related to the operation of special interest groups (see below).

74. An aspect of research that the IFRP will address in the future is the need to upgrade report writing and production by Pacific Island national scientists in order to encourage better documentation and dissemination of fishery research findings from the region. A proposal is presently being developed to initiate a programme of related activities to promote the production of timely technical documentation of fishery research and development projects. These will include at least one training workshop which will aim at improving report writing and presentation skills in selected participants: ongoing provision of editorial assistance and advice; support for the drafting of technical illustrations; help to authors in finalising papers and submitting them for publication in external journals; and the establishment of a report series within the IFRP dedicated to publishing scientific and technical papers on fisheries authored by Pacific Island fishery workers. Such a project will make a significant contribution to reducing the often-cited problem of inadequate documentation and communication of fishery research and development activities in the region. A funding approach will shortly be made to enable commencement of this project, which includes a large training component, will rely heavily on liaison with the Fisheries Information Project.

75. Other regional activities in which the IFRP is expected to become involved in the coming 12 months include:

- (i) Participation in a regional public education campaign on ciguatera fish poisoning, in conjunction with the Fish Handling and Processing Project.
- (ii) Application of remote sensing techniques and technologies to problems of marine resource assessment.

### **Training**

76. Providing training to, and encouraging the professional development of, fishery scientists from SPC member countries is a major objective of the IFRP. Training elements are incorporated into IFRP activities, particularly field surveys, wherever possible. Fishery scientists from Fiji, Tuvalu and Kiribati participated in the Palmerston Atoll survey, and a fishery scientist from Papua New Guinea assisted in the Fiji beche-de-mer survey. Future field work by the IFRP will continue to use Pacific Island fishery expertise, so that participating individuals may contribute their own skills and knowledge to project activities, while at the same time benefitting from exposure to on-site application of resource assessment methods and techniques.

77. Another training function of the IFRP is the attachment training of national scientists at SPC headquarters to improve analytical and data presentation skills. This was initiated this year with the 3 week residency by a Ni-Vanuatu fishery scientist who carried out an analysis of data on deep reef fish stocks in Vanuatu. This was the last part of a three stage training process which also involved participation in two workshops on computer assisted stock assessment, and general upgrading of computer assisted analytical skills. A Fisheries Officer from the Federated States of Micronesia is expected to undertake an attachment to the IFRP immediately after the RTMF, again in connection with the analysis of deep-bottom fishing data from his country. Further requests for attachment training from member countries will be met whenever logistics and project finances permit.

78. A proposal to organise training in the use of visual methods to assess reef fish stocks was discussed at the last RTMF, at which time some member countries indicated that they would give higher priority to training in methods of assessing and monitoring invertebrate fisheries. In the event, manpower shortages have meant that little progress has been made in either area. It is hoped that it will be possible to devote more effort to developing training initiatives in these two areas in the coming year.

79. Finally, the proposal to provide assistance and support for the production of technical documentation on fishery research and development activities, if funded, will include a major training element, as described in paragraph 76.

## **5 ) FISHERIES INFORMATION PROJECT**

80. The Fisheries Information Officer position was filled in April 1989, with extra-budgetary funding provided by the French government. The FIO's first priority activity is to clear the outstanding backlog of SPC Fisheries Newsletters which are presently running several months behind schedule due to manpower shortages over the past year.

81. Of particular significance to the Fisheries Information Project is the establishment of special interest groups (SIGs) which will serve as information and communication networks for researchers with common interests. Following the 1988 Workshop on Pacific Inshore Fishery Resources, questionnaires were circulated among fisheries workers in the tropical Pacific, seeking information on individual areas of research interest and activity. About 250 responses have so far been received, with additional returns arriving regularly. These have been entered into a data base to permit automated circulation of information packages to individuals that have expressed interest in given subject areas, and to allow identification of external specialists who may be able to respond to information requests. The first two SIGs, will become active in August, with additional groups to follow, up to a maximum of twelve. Operation and management of the SIGs will devolve on the Fisheries Information Officer.

82. The Fisheries Information Project is also the mechanism whereby SPC participates in the Pacific Island Marine Resources Information System, PIMRIS, a joint activity involving SPC, FFA, USP and CCOP/SOPAC. The agencies participating in PIMRIS will provide a variety of services to member countries, including the gradual compilation of a computerised database of marine resource information, provision of bibliographies and literature searches, in-country assistance in organising information collections, and question-and-answer services. A separate presentation on PIMRIS will be made at this meeting. The FIO's main activities under PIMRIS will be in coordinating responses to requests for technical information, the preparation of information packages, and activities aimed at improving the availability of information in-country.

83. As part of its PIMRIS-related activities, the Commission employed a temporary librarian for 8 months during 1989 to catalogue all the library's fisheries and marine resource holdings. Bibliographic information has been entered onto a microcomputer using CDS-ISIS software and forwarded to USP for incorporation into the PIMRIS database. The catalogue, which will be regularly updated, also serves as a reference tool for SPC library users and can be used to generate select bibliographies of SPC holdings on request.

84. Information services, in particular the provision of technical advice and reference material in response to requests, is an important function of all SPC fisheries projects. As well as permitting the specific activities described above, the appointment of a Fisheries Information Officer will improve our capacity to provide this service in a coordinated manner.

## **II OCEANIC FISHERIES - TUNA AND BILLFISH ASSESSMENT PROGRAMME**

85. Two projects are defined within the Tuna and Billfish Assessment Programme (TBAP), the Fishery Statistics Project and the Tuna and Billfish Research Project. These projects, while interacting to a large extent, reflect the two basic types of work undertaken by the TBAP: (i) the collection, processing and dissemination of fisheries statistics pertaining to tuna and billfish stocks in the SPC region; and (ii) the conduct of a programme of scientific research on those stocks. The activities of both projects remain focussed on the priority tasks defined in the TBAP mission statement approved by the 19th RTMF and progress is reported on this basis.

### **1 ) FISHERY STATISTICS PROJECT (FSP)**

#### ***Regional Tuna Fisheries Database***

86. Since its inception in 1981, the TBAP has maintained a database on industrial tuna fisheries in the region. The main sources of data have been daily catch and effort logsheets provided to SPC by member countries; the logsheets have been obtained either from distant-water fishing nations (DWFNs) under access agreements or from vessels operating locally. A catalogue of data held in the SPC regional tuna fisheries database is given in SPC/Fisheries 21/Information Paper.2.

87. The database is used for research and monitoring purposes. The Tuna and Billfish Research Project uses the database to assess the state of exploitation of the stocks and to study interactions between the different fleets operating in the region. Monitoring of the fisheries is accomplished by the FSP through quarterly publication of statistics compiled from the database in the SPC Regional Tuna Bulletin.

88. In addition to research and monitoring conducted at SPC, the FSP also provides direct output through data summaries to the SPC member countries which provide the data. Reports summarizing the data are sent back to member countries on a regular basis. For several member countries, the processed data are returned on diskettes for incorporation into databases which are maintained on computers in-country.

89. Daily catch and effort data for tuna vessels fishing in the region were received during the past twelve months from Australia, the Cook Islands, the Federated States of Micronesia, Fiji, French Polynesia, Kiribati, the Marshall Islands, New Caledonia, Palau, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, the United States and Vanuatu.

90. In 1988, the FSP began to compile statistics on tuna landings in the region. Data on transshipment in Guam, Noumea and on Tinian were received from Guam, New Caledonia and the Northern Marianas, and data on landings at Levuka were obtained from Fiji.

91. Coverage by the SPC database of activities in the region has continued to improve. In 1989, coverage has been extended to include the longline fleet in Australia, pole-and-line vessels in Kiribati, longliners in New Caledonia, the pole-and-line and purse seine fleets in Solomon Islands and the single pole-and-line vessel of Tuvalu.

92. Coverage of American purse seiners increased considerably as of June 1988, when the multilateral fisheries treaty between the United States and certain Pacific Island nations went into effect. In addition, a large amount of historical data on Asian longliners operating in the southern portion of the region was received from Australia, French Polynesia and New Caledonia. Daily catch and effort data for Korean and Taiwanese longliners based in Pago Pago, American Samoa, were received from the United States for 1987.

### ***SPC Regional Tuna Bulletin***

93. In August 1988, the Fisheries Statistics Project first prepared the SPC Regional Tuna Bulletin. Four editions of the Tuna Bulletin have since been distributed on a quarterly basis to fisheries officers within the region and to research institutions and industry within the region and beyond. The Tuna Bulletin has been particularly well-received, in part because it represents the only authoritative source of information on the fishing activities of the industrial tuna fleets in the Central and Western Pacific, particularly since the cessation of publication of tuna fishery statistics by Japan and the Republic of Korea in 1980. The First Quarter 1989 edition of the Tuna Bulletin is contained in SPC/Fisheries 21/Information Paper 9.

### ***National Fishery Statistics Systems***

94. In the past, several member countries have been assisted with the collection and analysis of local fisheries data. In February 1985, a data collection programme was implemented in Tuvalu to monitor subsistence and artisanal fisheries. In June 1986, SPC undertook a consultancy to review the fisheries statistics system in Tonga. In January 1987, a review of inshore fisheries data collection in Solomon Islands was conducted. In November 1987, the fisheries data collection programme in Palau was evaluated.

95. Commencing in 1988, tuna fishery databases have been developed and installed in the Federated States of Micronesia, Fiji, Guam, the Marshall Islands and Papua New Guinea. Each database has been customized to the needs of the individual country. Thus, in the Federated States of Micronesia and the Marshall Islands, the database systems enable monitoring of foreign fishing activities and licensing; in Guam, tuna transshipment by foreign vessels is monitored; in Fiji, foreign fishing activities, in addition to the local pole-and-line tuna and bait fisheries, are monitored; while in Papua New Guinea, the database contains logsheets from foreign fishing vessels.

96. Database systems for local fisheries were developed for several countries (Fiji, Tonga, Tuvalu, Vanuatu) at the SPC Fisheries Statistics Workshop held during February 1989 at the University of the South Pacific in Suva.

***Statistical Support for Other SPC Fisheries Projects***

97. Statistical support is provided to other SPC fisheries projects, in particular the Tuna and Billfish Research Project, the Deep Sea Fisheries Development Project, the Inshore Fisheries Research Project and the Regional Fisheries Training Programme.

98. The research activities of the Tuna and Billfish Research Project are supported by the regional tuna fisheries database maintained by the FSP. In addition, databases for Solomon Islands length frequency data and US Multilateral Treaty port sampling and observer data have been developed, as well as for observer data from the South Pacific albacore fishery and sampling data from albacore transshipment activity in New Caledonia.

99. In March 1989, the FSP implemented a database for detailed catch statistics collected during fishing trials in member countries by the Deep Seas Fisheries Development Project since 1981. The database will be used by the Inshore Fisheries Research Project for analysis.

100. In 1988, a database covering the background of participants in regional fisheries training courses was also developed for the Regional Fisheries Training Programme. The FSP also assisted the Regional Fisheries Training Programme with organization of the SPC Fisheries Statistics Workshop held at the University of the South Pacific in February 1989 and shared in tutoring of the participants at the workshop (see paragraph 10).

**2 ) TUNA AND BILLFISH RESEARCH PROJECT**

**Assessment of Interaction Between Fisheries for Oceanic Species**

***Regional Tuna Tagging Project***

101. Although EEC funding for the RTTP was approved in principle, as part of the Lome III Pacific Marine Resources Development Programme in December 1988, procedural difficulties continue to delay implementation of the field work. Restricted invitations to tender, following a prequalification process, were issued during July, with the formal opening of the tenders scheduled for the 29th of August. It is hoped a suitably modified vessel will begin tagging operations in Solomon Islands in October 1989.

102. A work plan for Year 1 has been prepared and approved. A tentative operating schedule is as follows:

July 89	Finalise selection of companies applying under restricted invitations to tender and issue of tender documents for vessel charter. Release international tender for equipment supply.
August 89	Select successful vessel tender. Complete negotiations with contractor regarding operational details. Select successful tender for equipment supply.
September 89	Five new staff recruited to Noumea. Vessel modifications take place in Suva, Fiji. Local purchase of supplies in Fiji and elsewhere.
October 89	Delivery of vessel to Honiara. Commencement of field work in Solomon Islands. November 89. Continue field work in Solomon Islands.
December 89	Vessel transfers to PNG (based at Kavieng or Manus Island). Field work begins in the general area of the distant-water purse-seine fishery (10°N-5°S, 135°E-165°E).
January 90	Continue field work in above area. Vessel base may shift depending on fishing conditions.
February 90	First six-monthly report submitted to EC Delegation, Solomon Islands.
August 90	Second six-monthly report submitted to EC Delegation, Solomon Islands.

### ***In-Country Tagging Activities***

103. It is planned to undertake a number of in-country tagging projects under the general umbrella of the regional programme. The objectives and operational details of each project will be developed in close co-operation with the national governments concerned, and extra budgetary funding sought as required.

104. The first of these projects is currently underway in the Solomon Islands with funding assistance from Australia. A detailed description of this project, being undertaken jointly by the TBAP and Solomon Islands Government, is given in SPC/Fisheries 21/Information Paper 1. Field work for this project began in July this year, and the first tagging cruise on a Solomon Taiyo vessel is scheduled to finish in mid-August. Two more cruises on Solomon Taiyo vessels will be undertaken in March and June 1990. In addition, the chartered RTTP vessel will contribute to this project in October - November 1989 when working in Solomon Islands. A preliminary project report will be considered at the 1990 meeting of the Standing Committee on Tuna and Billfish.

## **Assessing and Monitoring the Levels of Exploitation of Stocks of Commercially Important Tuna and Billfish Species**

### ***Catches***

105. Estimates of total catch and effort in the SPC statistical area for 1987 and 1988 are provided in SPC/Fisheries 21/Information Paper 9. The total catch of all tuna and billfish increased from an estimated 623,000t in 1987 to 650,000t in 1988. The catch of skipjack in 1988 was approximately 448,000t, well up from the 354,000t in 1987. The catch of yellowfin, however, fell from 188,000t in 1987 to 125,000t in 1988. This decrease was due to greatly reduced catches of yellowfin by purse-seiners in 1988 (73,000t compared with 145,000t in 1987). The reasons for this decrease are not yet totally clear, however the 'La Nina' phenomenon is thought to have resulted in a deeper mixed layer in the main purse seine area during the second half of 1988 (the bottom of the thermocline fell to 170m, the deepest such recording during the past 10 years). This could have reduced the vulnerability of yellowfin to purse-seining.

106. The large increase in the drift gillnet fishery in the Tasman Sea and in the subtropical convergence zone (STCZ) east of New Zealand during 1988/89 has led to a dramatic increase in the catch of albacore in the South Pacific (SPC/Fisheries 21/WP.6). Although statistics are still being compiled, the best currently available data indicate that the drift gillnet catch of albacore by Japan and Taiwan increased from 5,800t in 1987/88 to at least 25,000t in 1988/89. Over the same period, troll catches increased from 4,200t to 9,200t, resulting in an increase in total surface catches from 10,000t to at least 34,000t. The longline fishery for albacore in the South Pacific has been fairly stable in recent years, averaging about 30,000t per year.

### ***CPUE Trends***

107. Currently, monitoring CPUE trends in the Japanese pole-and-line, purse-seine and longline fisheries provides the best means of assessing the conditions of skipjack, yellowfin and bigeye resources in the Western Tropical Pacific.

108. Skipjack CPUE in the Japanese distant-water pole-and-line fishery has varied over the years, but the general trend is increasing (Figure 1). In 1988, an overall catch rate of 11.5 tonnes per day was recorded, which is the highest ever.

109. Skipjack CPUE by Japanese purse-seiners has also increased in recent years (Figure 2), however, yellowfin CPUE in 1988 was the lowest on record. This was also evident in other purse-seine fleets, particularly the U.S. fleet. As noted above, the 1988 ENSO anomaly is a possible cause of the reduction in yellowfin CPUE by purse-seiners. Preliminary data for 1989 suggest that yellowfin CPUE is currently at a more typical level.

110. Japanese longline CPUE for yellowfin has been declining steadily throughout the 1980's (Figure 3). It is possible that this is an effect of increased purse-seine catches, however, similar declines in CPUE have occurred in the past, before the introduction of large-scale purse-seining. The TBAP will be addressing this problem through the up-coming RTTP and a collaborative study of fishery statistics with Japanese scientists.

111. In contrast, bigeye CPUE has been increasing throughout most of the 1980's, although there was a sharp reduction in 1988.

#### **South Pacific Albacore Research**

112. The TBAP has substantially upgraded its research effort on South Pacific albacore during the past twelve months. Efforts have concentrated on:

- (i) staging the Second South Pacific Albacore Research (SPAR) Workshop;
- (ii) co-ordinating an observer programme during the 1988/89 surface fishery;
- (iii) broadening port sampling coverage of albacore fisheries in the South Pacific;
- (iv) planning a large-scale albacore tagging project for the 1989/90 season.

113. Scientific advice was also provided to three consultations on South Pacific Albacore Fisheries Interaction (Suva, Nov 88, Mar 89 and Jun 89) and to the First Meeting on South Pacific Albacore Drift Gillnet Fisheries (Suva, Jun 89).

#### ***SPAR Workshop***

114. The Second SPAR Workshop was held in Suva on 14-16 June, with the Government of the Republic of Fiji acting as co-hosts. A report of the meeting is contained in SPC/Fisheries 21/WP 6, which will be given detailed consideration under agenda item 7. The major outcomes of the meeting were:

- (i) best estimate of the historical catch record by gear type, nationality and year was constructed.
- (ii) Doubts regarding the sustainability of current catch levels were expressed.
- (iii) Agreement was reached on the establishment of a 'common' albacore data base at SPC. Participating countries would make data available to SPC in an agreed format annually. After compilation, all data would be distributed to participating countries.
- (iv) Research priorities were identified and include the development and/or application of various models, including computer simulation models, for stock assessment; tagging studies; description of spawning seasonality; age and growth studies; and the estimation of drift gillnet dropout rates.

#### **Observer Programme 1988/89**

115. The programme, requested by the First Consultation on South Pacific Fisheries Interaction (Suva 3-4 Nov 1988), was co-ordinated by SPC, with assistance from New Zealand's Ministry of Agriculture and Fisheries, and was funded by the UNDP. A detailed report is provided in SPC/Fisheries 21/Information Paper 6.

116. Two observer cruises were undertaken in the STCZ on the New Zealand troll vessel Daniel Solander and U.S. troll vessel Barbara H. During the cruises, over 10,000 albacore were measured for fork length, samples of which were also measured for girth, weighed and the presence of gillnet marks recorded. At least three age groups were visible in the length frequency data, the sizes of which agreed closely with other samples taken from the surface fisheries. Minor gillnet marks to the body were found on albacore of all sizes, but were most prevalent in fish 60-75cm. Minor marks to the head were most common in fish larger than 70cm, while severe abrasions were found in fish 60-65cm. These observations are consistent with small albacore being able to pass easily through the gillnet meshes without injury, albacore 60-75cm being most effectively caught and only escaping with sometimes severe injury, and larger albacore not being able to pass completely through the meshes, therefore often escaping with minimal injury to the head. Gillnet marked albacore were found to be of slightly lower condition than unmarked albacore on the basis of length - weight - girth measurements.

117. The percentage of gillnet marked albacore was 12.6% and 19.0% of the total troll catch inspected on the first and second cruise, respectively. The percentages varied from about 3% to 30% on individual days. This suggests that the exploitation rate of albacore by the surface fishery is high in this area.

#### **Albacore port sampling 1988/89**

118. With the increased surface fishery activity in 1988/89, there was a need to broaden the coverage of albacore port sampling from the established programmes in Pago Pago (NMFS) and Papeete (EVAAM).

119. SPC conducted sampling of Japanese drift gillnetters transshipping in Noumea (SPC/Fisheries 21/Information Paper 4.) and made arrangements for similar work to be carried out at the PAFCO cannery in Levuka, Fiji, the latter with funding assistance from FAO/UNDP. Of the 29 transshipments by gillnetters in Noumea, 14 were sampled and 1,438 albacore and 478 skipjack measured. Descriptions of the gear and estimates of by-catch were also obtained. The Noumea sampling has provided the only hard data on 1988/89 drift gillnet fishing to date.

#### **Albacore Tagging Project**

120. This project was prompted by the urgent need, as expressed by several member countries, for information on the population dynamics of albacore and the interaction among the three main gear types used in the South Pacific - troll, drift gillnet and longline. A funding commitment has been obtained from the EEC to enable the project to begin in November 1989. A detailed project proposal, including work plan and budget, is contained in SPC/Fisheries 21/Information Paper 3.

#### ***In-Country assessments***

121. During the past year, one confidential country report has been prepared and submitted (Marshall Islands), while another is in the final stages of preparation (FSM). Staff shortages throughout the year have restricted our work in this area.

## TUNA BIOLOGY AND ECOLOGY

### Study on tuna and their environment

122. ORSTOM and SPC have been cooperating for some years in studying the effect of environmental variations on tuna fishing, under an agreement between these two bodies. The value of this cooperation lies in the opportunity it provides to pool and compare the data available for the region at ORSTOM (oceanography) and at the SPC (tuna statistics). This agreement renewable yearly, continued in 1988.

123. The long-term goal of the programme is the study of the impact of seasonal and inter-annual environmental variations, (in particular those linked to the El Nino phenomenon) on the space-time distribution of tuna as well as on their availability and catchability to various fishing methods. Since 1988 a more practical component has been added consisting of an oceanographic input to the updating of country reports; a contribution to the Tuna Bulletin is also envisaged.

124. In the past year ORSTOM's existing oceanographic surface databases (surface temperatures and salinity levels, meteorological data from 1962 to 1985) and sub-surface databases (XBT 1979 to 1988) were transferred to the HP9000 at the SPC. enabling a description of oceanographic conditions to be included in the country reports at present being updated (Papua New Guinea, Marshall Islands).

125. A preliminary study using these data together with Japanese surface fisheries statistics (200-300 GT pole-and-liners, and 200-500 GT purse-seiners) was undertaken for the area 6°S-16°N, 135-180°E, subdivided into 6 sectors according to the prevailing currents system in the western Pacific. This study is dealt with in a separate paper (SPC/Fisheries 21/Information Paper 11.) outlining ORSTOM's three ocean research programmes in the western Pacific (SURTROPAC, PROPAC, and TUNA/ENVIRONMENT), the general oceanographic characteristics of the western Pacific, the data used and the monthly variations observed in the various oceanographic parameters and in fishing yields over the period 1979-1988. Irregularities linked to the ENSO (El Nino Southern Oscillation) events which occurred in 1982/83 and 1986/87 are shown for the different areas, and their relations with fishing yields analysed. The main findings are as follows:

- (i) The Enso events (1982/83 and 1986/7 had a positive effect on the yields of pole-and-liners (in particular during the initial phase); no effect could be demonstrated for the purse-seiners, possibly on account of the shortness of the statistical series;
- (ii) Good correlations were obtained between intensity of the geostrophic currents and yields of the pole-and liners; however in view of the fact that these correlations are negative (and not positive as was suggested by Tanaka, 1980) this finding needs to be re-examined;
- (iii) No relation was observed between yields and depth of the thermocline, but this finding may be an artifact linked to the geographic subdivisions adopted and their latitudinal coverage.

126. These are preliminary results which must be viewed with caution, particularly as the statistical series used was very brief, data concerning certain large fisheries were unavailable, and no typical anti-ENSO event, like the one that has developed since occurred in 1988.

127. SPC/Fisheries 21/Information Paper 12 describes the typical situations created by the September 1987 El Nino and the September 1988 La Nina as regards the hydrological parameters (thermal and haline structures), chemical parameters (nitrate levels) and biological parameters (chlorophyll, nanoplankton, cyanobacteria and microalgae and zooplankton) observed during PROPPAC cruises. It clearly demonstrates the water enrichment resulting from the equatorial upwelling (1.5 times in terms of chlorophyll, 3 to 5 times in terms of nanoplankton, 2.5 times in terms of zooplankton).

128. The work scheduled for this year includes updating the oceanographic data base, providing further input into country reports, initiating contribution to the Tuna Bulletin (1st quarter 1989) and verifying certain aspects of the study outlined here. Priority will be given to refining the combined oceanography/fishery data base (by months and 2° latitude x 5° longitude rectangles), exploiting it, and investigating the effect on surface fisheries of the equatorial upwelling during the La Nina period.

## **Provision of Fisheries Observers and Advice on Development of Observer Programmes**

### ***U.S. Multilateral Treaty Observer Programme***

129. The TBAP has continued to provide support to FFA regarding the observer programme on U.S. purse-seiners. Observer reports provided by FFA are processed and analysed at SPC and a report sent back to FFA. To date, three observer reports have been received and processed in this way.

### ***Other observer activities***

130. As described above, the TBAP co-ordinated an observer programme in the albacore surface fishery during 1988/89. It is planned to continue this activity in collaboration with New Zealand and the U.S. in the 1989/90 season.

131. Preliminary discussions have been held with Fiji and Tonga regarding the possible implementation of albacore observer programmes on longliners working in their waters. This work would focus on the collection of reproductive material to determine seasonality of spawning (a research priority identified by SPAR 2).

132. Discussions have also been held with FSM regarding the incorporation of FSM observer reports from Japanese purse-seiners, pole-and-liners and longliners into the TBAP data base. Co-operation between the FSM observer programme and the RTTP has been agreed.

### **Monitoring the Use of Fish Aggregation Devices**

133. There have been no activities under this priority during the past year.

### **Standing Committee on Tuna and Billfish (SCTB)**

134. The second SCTB meeting was held in Suva, Fiji on 19-21 June 1989. The meeting was attended by representatives from several Pacific Island Countries, distant-water fishing nations and, for the first time, ASEAN countries. The deliberations of this meeting are reported in (SPC/Fisheries 21/WP 7.)and will be considered in detail under agenda item 6.

**SPC Secretariat action in response to Recommendations of Twentieth Regional Technical Meeting on Fisheries 1988.**

**RESTRUCTURING OF SPC FISHERIES PROGRAMME**

**Recommendation No. 1**

After considering Secretariat action taken to restructure the SPC Fisheries Programmes in response to direction from the 19th Regional Technical Meeting on Fisheries and the 27th South Pacific Conference, the meeting noted with approval the changes implemented in the programme structure and recommended approval of the new position of Secretary to Fisheries Coordinator.

*Action taken* : The position of Secretary/Fisheries Coordinator has now been substantively filled.

**REPORT ON WORK PROGRAMME ACTIVITIES**

**Recommendation No. 2**

Endorsing a recommendation from the 1988 SPC FAD Workshop, the meeting recommended that the Secretariat provide member countries with graphs and/or tables to assist with the calculation of catenary curves for mooring systems for FADs.

*Action taken* : Plans are well advanced to revise the SPC Handbook on FADs during which the development of a simple aid to the calculation of rope lengths in the mooring system will be given priority.

**Recommendation No. 3**

The meeting recommended that the SPC Secretariat provide a work programme for the Regional Tagging Project. The work programme should identify:

- 1 ) objectives for country-specific projects;
- 2 ) research procedures to be used to address the country objectives.

The work programme should be circulated to member countries for comments and technical evaluation by the Standing Committee on Tuna and Billfish (SCTB).

*Action taken* : The Regional Tuna Tagging Project was discussed in detail by the SCTB (See SPC/Fisheries 21/WP.7)

#### **Recommendation No. 4**

The meeting further recommended that the activities of the Regional Tuna Tagging Project and of the proposed small-scale purse seine programme be coordinated when appropriate.

*Action taken* : This was taken into account during phase 2 planning for the purse seine project and noted for future action as appropriate.

#### **SPC POLICY ON CONFIDENTIALITY OF DATA SUBMITTED BY MEMBER COUNTRIES TO THE TUNA AND BILLFISH ASSESSMENT PROGRAMME (TBAP)**

The dissemination or publication of summaries of data relating to individual countries is regulated in strict accordance with the confidentiality requirements of the country or agency supplying the data. Only the country or agency supplying the data, or other countries or agencies so designated in writing by the country or agency supplying the data, will receive summaries.

The dissemination or publication of summaries of catch and effort data relating to the region as a whole will only be disseminated in a form aggregated by time period and by geographic area wherein the minimum level of aggregation will be (i) by month and (ii) by one-degree square of latitude and longitude. When this level of aggregation is not sufficient to meet the confidentiality requirements of a country or agency, the confidentiality requirements of the country or agency will have priority.

*Action taken* : This policy was formally adopted by the 28th South Pacific Conference in Rarotonga, Cook Islands 1988.

#### **CONSIDERATION OF THE REPORT OF THE FIRST MEETING OF THE STANDING COMMITTEE ON TUNA AND BILLFISH (SCTB)**

##### **Recommendation No. 5**

Recognising the desire for close cooperation and collaboration between DWFNs and SPC member countries, the meeting recommended that scientists or other representatives from DWFNs be encouraged to attend future meetings of the Committee.

*Action taken* : Scientists from Japan, Korea and Taiwan attended the SCTB 2 along with representatives from Philippines, Indonesia and Malaysia.

##### **Recommendation No. 6**

The meeting recommended that, considering the importance of fishery interaction issues in the SPC area and other regions, the FAO be requested to reactivate and fund their Expert Consultation on the topic of tuna and billfish fishery interactions.

*Action taken* : FAO agreed to reactivate this Expert Consultation with SPC hosting a steering committee meeting to be held in Noumea, New Caledonia late October 1989.

### **Recommendation No. 7**

The meeting recommended that succeeding meetings of the SCTB :

- (a) be held separately from the annual SPC RTMF to enable time for preparation between the two meetings;
- (b) be held over three days to permit sufficient time for more detailed presentation and discussion of scientific results and preparation of the final meeting report;
- (c) accept the procedure that the Chairman of the SCTB meetings be provided by the country supplying the Chairman to the annual RTMF.

*Action taken* : SCTB 2 was held in Suva, Fiji from 19 to 21 June 1989. Australia retained Chairmanship in absence of the Cook Islands.

### **Recommendation No. 8**

Recognising the key role that member countries can play in encouraging and promoting greater DWFN involvement in the work of the SCTB, the meeting recommended that the SPC write to each member country in the region and request that cooperation and assistance from DWFNs in the forthcoming Regional Tuna Tagging Project be stressed during the course of access negotiations, and that national observers placed on foreign fishing vessels undertake to publicise the Regional Tuna Tagging Project whenever possible.

*Action taken* : Letters were sent to all member countries with encouraging results. Specific action was taken by several countries, including Australia, the Federated States of Micronesia, Fiji and the Solomon Islands.

## **SPC/FFA COMPUTER TRAINING PROGRAMME**

### **Recommendation No. 9**

Recognising that some countries have an urgent need for assistance in further developing their fisheries databases, the meeting recommended that arrangements to run a computer systems workshop proceed as soon as possible.

*Action taken* : A four week Fisheries Systems Workshop was conducted at USP Suva, Fiji from 1 to 24 February 1989, funded by ICOD (See paragraph 9.)

## **SOUTH PACIFIC REGIONAL TUNA FISHING PROJECT - A PROPOSAL FOR A REGIONAL TRIAL PURSE SEINING PROGRAMME**

### **Recommendation No. 10**

Having received the project proposal as approved in principle by CRGA 9, and after careful consideration of the detailed report prepared by the Phase 1 Study Team, the meeting unanimously endorsed CRGA approval of this project as proposed, and recommended early implementation of the Phase 2 activity.

*Action taken* : the draft project proposal developed during Phase 2 will be presented for consideration under Agenda Item 8.

## **WORKSHOP : FISH POISONING AND SEAFOOD TOXICITY**

### **Recommendation No. 11**

The meeting recommended that the poke stick test be evaluated by appropriate laboratories in the Pacific area using a combination of animal bioassay procedures on proven toxic and non-toxic fish samples, e.g.

- The Louis Malardé Medical Research Institute in Tahiti
- The Queensland Department of Primary Industries  
Southern Fisheries Research Centre.

*Action taken* : The QDPI has continued with limited testing of poke stick method.

### **Recommendation No. 12**

The meeting recommended that, in consultation with appropriate regional health and fisheries experts, the SPC Health and Fisheries programmes compile a concise practical manual to aid the clinical diagnosis of various types of fish poisoning in the SPC region. Such a manual should be accessible to both Fisheries and Health personnel.

*Action taken* : A field manual for seafood poisoning outbreaks is now in preparation. This handbook will take the format of a protocol to investigate instances of fish poisoning by health and fisheries personnel and should be available by the end of the year.

### **Recommendation No. 13**

The meeting further recommended that the Secretariat encourage and support national programmes to improve the diagnosis and formal notification of instances of fish poisoning. The meeting recognised that this action would require close collaboration between regional and national health and fisheries authorities.

*Action taken* : Action being coordinated through SPC Health programme.

## **PROPOSAL FOR A REGIONAL POST-HARVEST FISHERIES LABORATORY**

### **Recommendation No. 14**

The meeting endorsed the concept of establishing a regional post-harvest laboratory and recommended the formation of a small working committee to further develop this proposal taking into account country requirements.

*Action taken* : A proposal has been prepared for the facility to be installed at the Institute of Marine Resources, as a joint project of IMR and SPC, and potential donors approached. IMR would use the facility to upgrade the post-harvest component of the Diploma in Fisheries, while SPC's FHPP would initiate and direct applied research activities.

## **PROPOSAL FOR JOINT SPC/SPRADP REGIONAL RESEARCH PROJECT ON REEF RESOURCE ENHANCEMENT AND CULTURE**

### **Recommendation No. 15**

Having reviewed and discussed the SPC/South Pacific Regional Aquaculture Development Project Proposal on Reef Resource Enhancement and Culture and noting the great interest and expressed needs of island countries in promoting ranching, culture and enhancement of valuable species, the meeting recommended that the proposed Phase 1 activities, including analysis of possible implications of introductions of new species, be undertaken by joint efforts of the SPC Inshore Fisheries Research Project and the FAO SPRADP and that Phase 2 activities, where they support on-going projects of SPC member island governments and regional institutions, likewise be promoted.

*Action taken* : Phase 1, a review of available literature and experience, is now close to completion.

## **REPORTS BY OTHER ORGANISATIONS**

### **Recommendation No. 16**

Member countries expressed their thanks and support for the FAO/UNDP programme in the SPC region and recommended that the SPC and member countries convey their strong concern at the pending severe cuts to the programme's funding.

*Action taken* : Formal letters sent to FAO and UNDP Headquarters, with similar action taken by a number of member countries.

### **Recommendation No. 17**

The meeting also recommended that member countries use all available diplomatic channels to have the issue raised in the United Nations with a view to encouraging UNDP to reconsider.

## **OTHER BUSINESS**

### **Recommendation No. 18**

Recognising the difficulty countries have to fund participants to the RTMF, and the desirability of having at least one participant from each member country attend the meeting, the meeting recommended that SPC fully fund one participant from each Island Country.

*Action taken* : Some additional funds located by SPC so that full support could be extended to several countries for this meeting. FAO/UNDP generously supported the participation of four countries (FSM, PNG, Niue and Solomon Islands). Every effort will be made to ensure full funding available for 1990 RTMF if at all possible.