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SOUTH PACIFIC COMMISSION

TWENTY-SECOND REGIONAL TECHNICAL MEETING ON FISHERIES
(Noumea, New Caledonia, 6 - 10 August 1990)

**SUMMARY REPORT OF THE SOUTH PACIFIC COMMISSION 1989/90 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 1989 through June 1990, 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 WP.10.
3. The SPC Fisheries Programme is comprised of seven principal projects (listed below) covering two broad areas of activity - coastal fisheries and oceanic fisheries. A diagram of the Fisheries Programme structure is presented in Appendix I with a staffing list covering the twelve month period given in Appendix II.

COASTAL FISHERIES PROGRAMME

- 1) **Inshore Fisheries Research Project**
- 2) **Fisheries Information Project**
- 3) **Deep Sea Fisheries Development Project**
- 4) **Fish Handling and Processing Project**
- 5) **Regional Fisheries Training Project**

OCEANIC FISHERIES

Tuna and Billfish Assessment Programme

- 6) **Tuna and Billfish Research Project**
- 7) **Fisheries Statistics Project**

4. This document reports in some detail the accomplishments and undertakings of each project during the past twelve months together with an indication of future directions and an outline of planned new activities where appropriate to assist country consideration of the work of each project and to facilitate discussion during the meeting itself.

I. COASTAL FISHERIES PROGRAMME

5. 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) demonstration and development of gears and techniques; 3) technical assistance in a range of post-harvest areas; and 4) research and advice on aspects of resource management, and information services.

1) INSHORE FISHERIES RESEARCH PROJECT

General

6. The Inshore Fisheries Research Project commenced operations in January 1988 with extra-budgetary funding provided by the UK government. Funding was allocated for a three-year cycle which is presently scheduled to terminate in January 1991. A mid-term review has been carried out by BDDP, and on the strength of this, further funding support is being considered for an additional two-year period. Also associated with the IFRP is the Fisheries Information Project (FIP), within which the single FIP staff position of Fisheries Information Officer is funded by the Government of France.

7. Problems during the first year of operation caused by recruitment difficulties and staff shortages within the Coastal Fisheries Programme as a whole have now been resolved.

Summary of activities to date

8. The first activity of the IFRP was the organisation of the SPC Workshop on Pacific Inshore Fishery Resources (IFRW), in March 1988. Since then, IFRP staff, consultants, trainees and funds have supported sixteen specific national-level resource assessment projects, plus numerous smaller assignments, as well as four regional resource assessment activities, and longer-term information gathering and dissemination activities. A summary of activities to date is as follows:

- Workshop on Pacific Inshore Fishery Resources (March 1988)
- Fishery resource survey of Palmerston atoll, Cook Islands (October 1988)
- Beche-de-mer resource survey, Vanua Levu, Fiji (November 1988)
- Analysis of SPC bottom fishing data (January 1989-ongoing)
- Ciguatera sampling protocol, Federated States of Micronesia (February 1989)
- Deep-bottom fishery data analysis, Vanuatu (June 1989)
- Pearl-oyster resource survey, Kiritimati, Kiribati (September 1989)
- Management of inshore fishery resources, Palau (October 1989)
- Review of Tonga Inshore Fisheries Assessment Project (November 1989)
- Review of PNG baitfish data (December 1989)
- Review of field research activities, Vanuatu (February 1990)
- Development of fishery statistics system, Tuvalu (February 1990)
- Survey of pearl oyster resources, Nukulaelae, Tuvalu (April 1990)
- Review of Pacific Island FAD programmes (May 1990)
- Analysis of catch data from the Chuuk outer banks survey, Pohnpei (June/July 1990)
- Assessment of ciguatera poisoning distribution, Federated States of Micronesia (June 1990)
- Survey of beche-de-mer resources, Ha'apai, Tonga (June 1990)
- Fishery resource survey of Niue (July 1990)
- Survey of commercial sponge broodstock, Federated States of Micronesia (July 1990)
- IFRP/SPRADP Reef Reseeding Project (ongoing)
- Establishment of Special Interest Groups (ongoing)
- Fisheries Technical Paper Series (ongoing)

9. Project activities carried out between 1 August 1989 and 31 July 1990 are described in more detail below. Likely future directions, and, where known, specific future activities, are also described.

Country-specific activities

10. 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. Eleven projects of this nature were undertaken during the period under discussion, as follows.

Kiribati (Kiritimati) - Pearl oyster resource survey (September 1989) - G. Preston/ N. Sims (consultant)

11. Kiritimati (Christmas) Island was harvested for its pearl shell 150 years ago, when more than 200 tons were taken from the small, shallow lagoon. Since that time it appears that stocks have remained depleted. Since the Kiribati Government is keen to pursue the potential of commercial pearl culture in selected lagoons, the IFRP was requested to assist in a survey of pearl shell resources in Kiritimati and in the formulation of a management approach that would keep open the option of pearl culture in future. The survey revealed that pearl shell stocks were still depauperate, and that even without exploitation the stock was probably only just self-sustaining. Future culture options range from low-level activities aimed at replenishing the natural pearl-shell population, to aquaculture at higher levels of intensity. As well as conducting the survey, five spat collector lines were constructed and deployed, so that levels of juvenile settlement can be assessed in future.

Palau - Management of Inshore Fishery Resources (October 1989) - G. Preston

12. Harvesting of reef fish in Palau, always traditionally important, has become more extensive and efficient in recent years with the introduction of higher-technology boats and fishing equipment, and the development of a local and export marketing infrastructure. The Palau Government's Marine Resources Division (MRD) is concerned at continuing reports of declining catch rates and average sizes of fish, and requested IFRP advice on a suitable programme of fishery information gathering which would permit the development of a management regime. A report containing a proposed research and management approach was prepared and its main recommendations, regarding biological data and fishery data collection, a standardised fishing programme, and improved communications with state administrations, accepted by MRD. Several tasks were identified that could be achieved by the Palauan USP students during their vacation time in Palau. Ultimately, the work will be supervised by a professional fishery biologist.

Tonga - Review of Inshore Fisheries Assessment Project (December 1989) - J. Munro (consultant)

13. This activity was carried out in conjunction with ICLARM, who provided the services of a consultant, Dr John Munro, to review the achievements of a three-year programme of data collection and analysis on the inshore fisheries of Tongatapu and Ha'apai, and recommend directions for future work. Sample surveys in Tongatapu in 1986/87 and in Ha'apai in 1988/89 have provided baseline data on local fisheries. However, routine fishing using a standardised array of gears has not been carried out to the extent planned and there have been problems in analysing the data gathered so far. The project is threatened with discontinuation of funding, hence there is a need to revise the work plan with this contingency in mind, and to make arrangements for data analysis to be completed in the near future. The report recommended future options based on different funding scenarios.

Papua New Guinea - Review of baitfish data (December 1989) - P. Dalzell

14. The completion of ACIAR-funded baitfish research projects in the Solomon Islands and the Maldives were marked by a workshop on baitfish biology and population dynamics held in Honiara, Solomon Islands. The IFS attended the workshop as an invited speaker, and presented a paper on the population biology of PNG baitfish. This included a review and some reanalysis of historical baitfish catch, effort and biological data.

Vanuatu - Review of field research activities (January 1990) - P. Dalzell

15. The research activities of the Fisheries Department and ORSTOM were reviewed, with particular emphasis on the village-based deep bottom fishery, where changes in the infrastructure have necessitated changes in the sampling methods employed. The most effective methods of data collection that would satisfy research and information needs were determined. Other important resources included in the review were trochus and other mother-of-pearl shells, bêche-de-mer and coconut crabs, about which little is known of the scale of exploitation. Information does exist in various forms but requires that effort be dedicated towards its collection and assimilation. There also remain problems to be resolved in estimating the total production of the bottom fishery. It was recommended that the Fisheries Department dedicate more manpower to the collection and compilation of fisheries statistical information and to analysis of the data collected.

Tuvalu - Development of fishery statistics system (February 1989) - P. Dalzell

16. This advisory visit to Tuvalu took place in response to an outstanding request to the SPC Fisheries Programme for a review of Tuvalu's fisheries statistics collection activities. The existing statistical system was established some years ago with substantial SPC inputs, and the Commission has attempted to provide support and technical advice to this and related activities in other countries when possible. The review provided advice to the Tuvalu Fisheries Division on the ways in which data collection activities could be extended to outer islands, and permitted a financial and economic analysis of the operations of the Tuvalu share-fishing fleet, which operates with substantial government support.

Tuvalu (Nukulaelae) - Survey of pearl oyster resources (April 1990) - G. Preston

17. The survey took place in response to Tuvalu Government's wish to investigate the possibilities of pearl oyster culture as an economic development activity for the outer islands. The survey team spent two weeks on Nukulaelae, the Tuvaluan island reputed to have the highest densities of pearl oyster. Survey work revealed that densities were nevertheless too low for culture work to be envisaged without a substantial programme of stock enhancement through the use of spat collectors. This approach was recommended and the Tuvalu Fisheries Division are now considering incorporating pearl oyster stock enhancement work into an ongoing giant clam culture project.

**Federated States of Micronesia - (Pohnpei) Ciguatera mapping (June/July 1990)
- P. Dalzell**

18. Persons from all over the FSM and other parts of Micronesia attend the Community College of Micronesia in Kolonia, Pohnpei, which is thus an excellent venue to obtain information on the incidence of ciguatera in different Micronesian locations. A number of questionnaires were completed from interviews with representative numbers of people from each state in the FSM. These were used to compile a map of the incidence of ciguatera in the country as a precursor to a more detailed epidemiological study of this form of fish poisoning. The results are also being used to ascertain as far as possible the different species of fish that are responsible for ciguatera in the FSM.

**Pohnpei - Analysis of catch data from the Chuuk outer banks survey,
(June/July 1990) - P. Dalzell**

19. The offshore banks and seamounts of Chuuk State in the FSM are currently being explored by a joint Japanese/ FSM investigation. The objectives of this work are to map the extent of these fishing grounds and to assess the extent and sustainability of the resource. The initial six months of data from this project were analysed and the data summarised by location for catch rate and species composition. Changes in catch rate, catch composition and species association with depth were also examined. Of particular interest were the possible declines in catch rate associated with continued fishing which may be due to fishing down of the standing stock. From this it may be possible to determine estimates of the stock size and potential yield.

Tonga (Ha'apai) - Survey of beche-de-mer resources (June 1990) - G. Preston

20. The Tonga Government wishes to actively promote beche-de-mer processing as an economic activity for the people of Ha'apai. Assistance was given to the Tonga Fisheries Division in carrying out a survey of high-value beche-de-mer species in the area, in order to assess the exploitation potential for this resource and to provide advice to the Tonga government on potential management problems that might arise with increased levels of harvesting. Results from survey work carried out in the past allowed a comparative study of the effects of the low levels of harvesting that have been taking place in selected locations.

Niue - Fishery resource survey (July 1990) - P. Dalzell

21. The IFRP collaborated with the FAO/UNDP Regional Aquaculture Support Programme in a survey of the marine resources of Niue to assess the potential of these for commercial development and aquaculture. Existing data on the marine resources of Niue were reviewed and field observations were carried out on the island. The survey team conducted underwater transects of the reef to quantify the occurrence of trochus, pearl shell and beche-de-mer, joined fishing trips to determine catch rates of pelagic fishes and carried out a household survey to estimate the amount of fishing and harvesting by the Niue population. A final report was produced documenting the present status of fisheries in Niue, and containing a profile of each major resource which also provides comments on potentials yields and development issues.

Federated States of Micronesia - Survey of commercial sponge broodstock (grant only) (July 1990) - P. Dalzell

22. Commercially valuable sponges are present in FSM, and experimental work has led to the establishment of pilot sponge culture activities in Pohnpei. The FSM Government wishes to extend this work to Chuuk and other island groups. The IFRP has provided a small grant to FSM's Marine Resource Department to support a survey of Chuuk lagoon to identify and map concentrations of commercial sponge species for use in supplying seed cuttings to a demonstration farm.

Non country-specific activities

IFRP/SPRADP Reef Reseeding Project (August 1988 - ongoing) - G. Preston

23. The activities of the South Pacific Regional Aquaculture Development Project (SPRADP), as well as other organisations (ICLARM, SPC), have aroused regional interest in the mariculture of juveniles of commercially exploited inshore marine organisms for use in programs of resource enhancement by reef restocking. However, most attention has focussed on aquaculture technology and techniques and the mechanics of producing seed in large numbers. Little work appears to have been done to assess the real effects of juvenile release on wild, exploited populations of tropical reef organisms. Working cooperatively, the IFRP and SPRADP are undertaking a two-phase research programme to address this issue. The first phase consists of literature research aimed at reviewing the results of relevant juvenile release programmes carried out elsewhere. A working paper based on this research is tabled for discussion at this meeting under a separate agenda item.

24. Phase two of the project will probably consist of at least one juvenile release and population monitoring experiment, involving one or more interested national fisheries bodies.

Analysis of SPC Bottom Fishing Data (January 1989-ongoing) - P. Dalzell/ G. Preston

25. Accumulated catch and effort data collected by the Master Fishermen of the Commissions Deep Sea Fisheries Development Project has been analysed to determine regional trends in catch rates and community structure, and their relationships with habitat types and other geographical features. Synopses have been compiled for each country of the region, summarising available deep-bottom fishing data, so that countries may make their own assessments of the local development potential of deep-bottom fishing as an economic activity. A draft copy of the analysis is being circulated at this meeting and country representatives are requested to comment on the report, particularly on those sections that apply to their own areas. We are very keen to obtain data for inclusion in the analysis that we may have overlooked or not been aware of. The document will be finalised for publication as a technical report when any comments received have been incorporated.

Review of Pacific Island FAD programmes (May 1990) - G. Preston

26. Fish aggregation devices (FADs) are in widespread use as fishery enhancement tools throughout the Pacific Islands region. For the past 8 years the SPC has been instrumental in developing FAD technology and in supporting country efforts to establish effective FAD programmes. An invitation to SPC to participate in an IPFC symposium on FADs and artificial reefs provided an impetus to review the problems and issues still facing Pacific Island countries in this area. The review was presented as a symposium paper, and served as a starting point for a more in-depth analysis of country experience in FAD use carried out by an SPC consultant.

**Participation in SPC ciguatera committee (June 1990 - ongoing) - G. Preston/
P. Dalzell**

27. An inter-disciplinary committee has recently been formed to ensure coordinated SPC responses to problems involving ciguatera. This subject has relevance to the Fisheries, Health, and Nutrition sections, and all are represented on the committee. So far discussions have focussed on means of gathering information on: ciguatera incidence, and especially outbreaks, in the region; providing information and educational materials to help avoid the occurrence of ciguatera poisoning; and identifying and supporting ciguatera research priorities in the region. The committee has prepared a working paper for this meeting which will be discussed under a separate agenda item.

Attachments

28. Since the inception of the project twenty-five Pacific Island fishery workers have participated in IFRP field activities, either as local counterparts, overseas technical assistants, or attachment trainees, as follows:

- Palmerston marine resource survey (6)
- Fiji beche-de-mer survey (7)
- FSM ciguatera sampling protocol (1)
- Kiribati pearl-shell survey (2)
- Palau marine resource management (1)
- Tuvalu fishery statistics development (1)
- Tuvalu pearl-shell survey (2)
- Tonga beche-de-mer survey (4)
- Niue marine resource survey (1)

29. Two national fisheries officers have undertaken attachments at SPC headquarters, working on specific issues of national importance in their home countries.

Publications

Technical reports

30. Draft reports of all country-specific activities have been forwarded to Fisheries Departments and other relevant bodies of the countries concerned, usually within two months of the completion of the field work. (Copies of all non-confidential IFRP reports are available from the Secretariat). In most cases these will ultimately be published as IFRP technical documents or in other forms.

31. The output of formal publications from the project has so far been small, since their production is time-consuming and because emphasis has been given to the development of a solid programme of field activities. However, it is planned to focus on publications during the first part of 1991 and to circulate project documents more widely at that time. Publications will be in the form of a Technical Document series which will serve as a vehicle for detailed survey reports, collections of specialist papers (see below), bibliographies, and other project outputs.

Fisheries Technical Paper Series

32. Problems in the production of permanent records of fisheries research and development activities and data in the region have been noted in numerous fisheries development reports and meetings. As a result much undocumented work loses its value, and information is not circulated to potential users, leading to wasteful repetition of fisheries activities in different countries, or even over time in the same country. In response to this problem, it is planned to establish an occasional technical paper series in which fisheries reports can be published. These will take the form of collections of between six and ten papers published together as intermittent issues of the IFRP Technical Document series.

33. A draft of the first issue is available for examination at this meeting, and should be published by the year-end. Early issues will consist at least in part of selected papers from the IFRW, manuscripts that have already been submitted to, but are too technical for use in, the SPC Fisheries Newsletter, and solicited manuscripts. Subsequently, the series will come to rely more and more on contributions by fisheries workers in the region. These will be encouraged by correspondence and during duty travel by project staff, who will provide in-country editorial assistance and advice when required.

34. Although supported mainly by the IFRP, this activity forms part of SPC's contribution to the PIMRIS project. Funding support is being sought to enable a more extensive programme, involving both training and publication support, aimed at upgrading technical writing skill and the level and quality of report production in the region.

Future activities

35. Based on requests received so far from member countries, the activities of the IFRP in the coming year are likely to include:

- beche-de-mer survey work in the Marshall Islands and Papua New Guinea;
- biological research on beche-de-mer in Papua New Guinea;
- support to development of pearl oyster culture activities in the Marshall Islands;
- trochus survey work in the Federated States of Micronesia
- pearl oyster survey work in Kiribati.
- support to preparation of technical reports, Papua New Guinea

36. The project will continue to develop regional initiatives in response to the expressed needs of SPC member countries, and to respond to specific country requests for assistance as they are received.

2) FISHERIES INFORMATION PROJECT

37. The Fisheries Information Officer (FIO) position, funded by the French Government, was filled in April 1989 by Mr Jean-Paul Gaudechoux. The FIO provides information, both routinely and on request, to assist fisheries scientists, development officers, extension agents, planners, managers and others involved in developing and managing fisheries at national, regional and international levels. Many such individuals work in remote locations with poor communications and inadequate access to advice and information on technical fisheries-related topics. The SPC has established this project with the goal of improving its capacity to process and disseminate information and is presently seeking additional funding support to allow its activities to be expanded.

The SPC Fisheries Newsletter

38. The FIO's first priority activity was to clear the outstanding backlog (2 years behind schedule) of the SPC Fisheries Newsletter. This backlog was a direct result of a severe staff shortage in the Coastal Fisheries programme which led to production delays for a number of the programme's publications. This main objective has almost been attained; the remaining numbers are in various advanced stages and the backlog, now reduced to less than one year, is scheduled to be cleared before the end of 1990. The 21st RTMF outlined the importance of the production and dissemination of practical information (new technologies, new materials [boats and gears], marketing problems, etc) and in forthcoming issues, accent will be put on these aspects.

39. Another important objective of the project is to raise the level of awareness of all those involved in fisheries, with the goal of convincing them to participate in the input of the SPC Fisheries Newsletter.

Special Interest Groups (SIGs)

40. Of particular significance to the Fisheries Information Project is the establishment of the special interest groups (SIGs) which will serve as information and communication networks for researchers with common interests. The groups were set up in response to a major concern expressed by participants in the March 1988 SPC Workshop on Pacific Inshore Fishery Resources about the low level of communication and information exchange occurring in the Pacific Islands region. To initiate the SIGs, a questionnaire seeking information on the interests of regional fishery workers was circulated. About 200 responses have been received and these have been entered onto a computerised database so that members can be sorted according to areas of interest, and mailing lists can be automated. From the responses, the most common areas of interest have been identified as beche-de-mer and pearl shell. These two first SIGs are now operational.

41. As part of the support offered to each SIG, SPC undertakes to circulate literature, technical materials, and correspondence relevant to the interests of group members on an occasional basis (Information Bulletin). The first Information Bulletins (one for each SIG) have been produced and each contains a list of all members, a list of all bibliographic references available in the SPC on each topic, and information relevant to the interests of other members of the group. These Bulletins have been enthusiastically received but, it must be stressed that this type of project is a co-operative venture and to make the bulletins informal and informative we need contributions from group members.

42. The third Special Interest Group, on ciguatera, was initiated in June 1990 after a meeting with the SPC Health section. The FIO, during duty travel to French Polynesia visited Institute de Recherches Medicales Louis Mallarde and met most of the people involved in ciguatera and fish poisoning research activities. SIG bulletins are planned on a six-month publication basis.

Pacific Island Marine Resources Information System (PIMRIS)

43. The Fisheries Information Project is also one of the mechanisms whereby SPC participates in the Pacific Island Marine Resources Information System (PIMRIS), a joint activity involving SPC, FFA, USP and SOPAC. The agencies participating in PIMRIS provide a variety of services to member countries, including provision of bibliographies and literature searches, in-country assistance in organising information collections, and question-and-answer services. They are also collaborating on the compilation of a computerised bibliographic database of Pacific marine resources. The FIO's main activities under PIMRIS are to coordinate responses to requests for technical information, preparation of information packages, and support of activities aimed at improving the availability of information in-country.

44. The FIO attended the PIMRIS Second Steering Committee meeting in Suva in November 1989. The Committee discussed coverage of the information disseminated in regional publications issued by PIMRIS agencies (the SPC Fisheries Newsletter, FFA News Digest, SOPAC Newsletter, and PIMRIS Newsletter), the development of PBIS (the PIMRIS Bibliographic Information System used for the computerised bibliographic database) and the collection of documents by members of the Committee visiting fisheries units and other national departments. The Committee also supported the submission of two funding proposals to ICOD by USP and SPC, for the appointment of a roving librarian, and for broad support to fisheries information-related activities, respectively. Further details of specific issues addressed by the Committee are given in WP.9.

45. SPCs' capability to provide fisheries-related information to its member countries has improved considerably since early 1989. Information services, in particular the provision of technical advice and reference material in response to requests, will continue to be an important function of the SPC fisheries programmes.

3) DEEP SEA FISHERIES DEVELOPMENT PROJECT (DSFDP)

General

46. The post of Fisheries Development Officer (FDO) became vacant in late October of 1989 following the resignation of the appointee due to pressing personal circumstances. The position was advertised immediately and was filled in May 1990. In the interim, management of the Project was conducted by the Fisheries Coordinator.

47. During the latter part of 1989 the Project's field staff consisted of three full-time Masterfishermen. In addition, a short-term consultant Masterfisherman was employed for six months in response to a member-country request for specific field work. In December of 1989 long-serving Masterfisherman, Paul Mead, completed his contractual service with the Commission, so that at the beginning of the year the field staff was reduced to three. Two further short-term consultancies were negotiated in the early part of 1990, one for a four-month term and the other for one month.

Work programme summary

48. The DSFDP has undertaken 62 country assignments since its inception in 1978, and during the past 12 months operated in five member countries: the Kingdom of Tonga, the Republic of Kiribati, the Commonwealth of the Northern Mariana Islands, Papua New Guinea, and the Republic of Nauru. Of these visits, four have been completed; the two conducted under the Gear Development Sub-Project, in Tonga and Kiribati, and the assignments supervised by consultant Masterfishermen, in the Northern Marianas and in Nauru. Current assignments include Papua New Guinea, Kiribati and the third, and final, phase of the Northern Marianas project. These are summarised in Table 1.

**Table 1.DSFDP Activities for the period
August 1989 / August 1990.**

Country Dates Masterfishermen	Primary Objectives	Activities of Masterfishermen
Tonga Sept. '86 - Dec.'89 Paul Mead (SPC Masterfisherman)	Fishing gear development sub-project	Design and deployment of deep and shallow- water FADs, deep- bottom fishing wind- ward slopes, vertical longlining for tunas, deep trolling, bait- fishing.
Kiribati Jan.'89 - June'90 Paxton Wellington, Tuainetai Rata (SPC Masterfishermen)	Fishing gear development sub-project	Adaptation and deve- lopment of gear for small-scale horizontal tuna longlining.
Northern Mariana Islands (Phase 11) August'89 - Feb.'90 Peter Watt (Consultant)	Exploratory fishing, training	Survey deep-bottom fish resources and fishing sites. Trial deep-bottom longlines. Demonstration and training in deep- bottom handreeling.
Papua New Guinea Jan.- August'90 Tuainetai Rata (SPC Masterfisherman)	Develop provincial deep-bottom fisheries. Develop gear rigs and techniques suited to local canoes.	Demonstration and training with village fishermen in East New Britain and Madang Provinces and with students at the National Fisheries College, Kavieng.
Nauru April - May'90 Paul Mead (Consultant)	Survey and chart FAD sites. Investigate locally suitable FAD design and material availability.	Echo-sounding survey of locally productive fishing areas to identify FAD sites. Chart sites and draw up suitable raft and mooring design. Prepare bill of FAD materials.
Northern Mariana Islands (Phase 111) April - August'90 Peter Watt (Consultant Masterfisherman)	Extend exploratory fishing survey to atolls and banks to north of Saipan. Train fishermen in deep-bottom droplining.	Survey grounds and stocks in unexploited areas. Continue deep-bottom fishing training programme.

Assignments presently in the last stage of preparation include the second phase of the Nauru FAD project, a tuna longlining project in Western Samoa, the extension of deep-bottom fishing skills to outer islands in Kiribati, a gear and techniques workshop for Niue fishermen, and assistance with FAD construction and deployment in Palau. The status of these projects is summarised in Table 2.

Table 2. Status of committed DSFPP country visits at August 1990.

Country Projected start-up date Expected duration	Primary objectives	Expected activities
Western Samoa Mid-September'90 Six months	Explore the feasibility of operating a small-scale tuna longline fishery with monofilament gear and basic mechanisation.	Conduct gear and fishing trials on board 12 m vessel. Compile catch and effort data. Explore productivity of grounds and variations in setting depth and bait type. Train local skipper and crew in fishing technique and offshore seamanship.
Kiribati August'90 Six months	Promote deep-bottom fisheries at suitable outer islands. Make gear and materials available.	Supervise team visits to a number of outer islands to demonstrate gear and techniques. Assist with fitting out local craft for deep-bottom fishing.
Palau Date not firm Three weeks	Rig and deploy FADs.	Supervise rigging and deployments on chartered sites. Train counterparts.
Nauru September-October'90 One month	Rig and deploy three FADs. Rig standby units. Demonstrate mid-water FAD-fishing techniques.	Supervise construction and rigging of rafts and moorings. Supervise deployments on sites previously chartered. Demonstrate vertical longlining, mid-water jigging at FADs.
Niue Jan./Feb.'91 One month	Introduce alternative/new fishing methods to full-time fishermen to increase productivity and expand resource base.	Demonstrate unfamiliar gear types and techniques in training workshop.
Cook Islands Oct. 90 5-6 weeks	Survey FAD deployment sites around Rarotonga and at least one outer Islands.	Demonstrate and train MMR team in FAD design construction and deployment with emphasis on the use and application of echo sounders in site bottom survey and FAD deployment.

Gear Development Sub-Project

49. The Gear Development Sub-Project (GDP) was established to adapt new or unfamiliar fishing gears and methods to Pacific Island countries in order to improve productivity in established fisheries and to promote the capture of locally under-exploited species in a manner appropriate to local conditions. It was agreed, that to meet these goals, longer-than-normal country assignments had to be undertaken; in order to overcome the variables arising from frequent project re-location; to allow for sufficiently extensive trials to gather worthwhile catch and effort data; and to thereby make valid conclusions about the regional value of new gears and techniques. The initial GDP, established in Vava'u, Tonga in 1986, and the Kiribati GDP begun in 1989, were undertaken in light of these principles.

Tonga

50. Masterfisherman Paul Mead, responsible for the management of the GDP in Tonga from November, 1986 to December, 1989, undertook a wide variety of fishing gear trials, with the intention of pursuing those techniques and gears which showed themselves to have most regional potential. In addition, he managed an active, and innovative, FAD construction, deployment and monitoring programme as a complementary activity. While early trials centred on bottom longlining and methods for bottom handreeling along windward reef-slopes (as reported in Working Paper 33 at the 20th RTMF), later activities moved towards:

- (i) extensive experimentation with vertical longlines for the capture of deep-swimming tunas (as reported in Working Paper 30 at the 21st RTMF);
- (ii) a variety of traditional and modern bait-fishing methods, both in association with FADs and in open waters;
- (iii) the adaptation of exotic deep-trolling techniques to the capture of tunas and other large pelagic species, and;
- (iv) the adaptation of modern materials and equipment to the traditional scoop-net fishery for flying fish.

51. Mead's work on the design, location and maintenance of both, deep and shallow-water FADs, has also produced information concerning site selection in relation to target species, the effectiveness of aggregating rafts moored to FAD buoys, the effects of biofouling, the underwater buoying of shallow-water mooring lines, and anti-corrosion procedures in the preparation of FAD mooring hardware. Work has begun on compiling this experience into detailed technical reports, the first of which, a handbook on the construction of simple, low cost vertical longline mainline and snood reels, constructed in timber, is now in near final form and will be released shortly.

Kiribati

52. Masterfisherman Paxton Wellington was assigned to manage the second GDP, based in Tarawa, Kiribati, late in January 1989. His principal concern was to adapt modern, small-scale commercial tuna longlining techniques and gears to Pacific Island fisheries, and to determine whether modified versions of these gears could be effectively scaled-down to suit typical island fishing craft. The fishing trials, which were concluded in June this year, centred on hand-setting and hand-hauling horizontal longlines from an 8 m skiff. Considerable experience was gained in the effects of varying the gear configuration and in type and method of bait presentation, as well as data concerning the possible effects on productivity of moon phase, current and setting and soak times. In addition to gear development, Wellington, at the request of Kiribati Fisheries Division, supervised the deployment of FADs at Arorae and Tamana, atolls in the south of the group, and assisted fisheries staff with the preparation of a project proposal for the local fabrication of deep-bottom fishing equipment and the extension of deep-bottom fishing skills throughout the group. The report of this work is presently being compiled.

53. The Gear Development Project has now operated for three years, and while substantial and significant information has been compiled, and the Masterfishermen in-country have made wide-ranging contributions to other fisheries development tasks, it is considered appropriate that the sub-project now be the subject of critical review. It is intended therefore, that SPC Fisheries will undertake a thorough assessment of the project itself, and of the needs of member countries, so that its effectiveness and future direction can be determined.

Country specific activities

Northern Mariana Islands - Deep-bottom fish survey and stock assessment project (Phases 11 and 111)

54. Tourism-driven growth in the market for prime deep-bottom fish species, and a chronic shortfall in production from waters around Saipan, Rota and Tinian, led the Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife to request the assistance of the DSFDP in undertaking a comprehensive assessment of the state of the local deep-bottom resource and fishery, with the aim of determining potential productivity and bringing production to that level. This involved the surveying of inshore and offshore grounds, and the assessment of stocks and effective exploitation techniques through test fishing with various gear types. An initial survey visit made by SPC Masterfisherman Paxton Wellington in 1988 (Phase 1) was severely disrupted by poor weather, causing the survey to be abandoned ahead of schedule. Being committed to completing this work, the DSFDP, in September 1989, assigned a consultant to continue the programme and, at the request of CNMI, to test fish with a bottom longline system. Early results indicated that grounds in range of the main population centres held only limited stocks vulnerable to this gear type, however, satisfactorily productive catches were taken by handreel on offshore banks and seamounts. These catches aroused considerable local interest and a training programme for local fishermen was organised and just under way when very poor weather conditions again curtailed activities. This phase of the project concluded in February 1990. In order to satisfy the some 50 fishermen enlisted in the training programme, and to extend the survey to little-exploited grounds in the north of the group, CNMI requested a further DSFDP visit (Phase 111), scheduled to coincide with a period when calm weather prevails. The consultant was again retained and is presently in the field.

Northern Mariana Islands - Provincial deep-bottom fishing demonstration and training project

55. The Project's most recently appointed Masterfisherman, Tuainetai Rata from the Cook Islands, was, at the request of the Government of Papua New Guinea, assigned in January 1990, to work for six months with provincial village fishermen in promoting deep-bottom fishing skills, and to determine and then demonstrate fishing techniques appropriate for small local fishing craft, particularly canoes. Rata's first duty station was Kokopo, in East New Britain Province, where he worked with local fishermen in an attempt to increase their catches and subsequently the supply of fish to the Kokopo Fish Market. Only limited progress was made in this area due to a general lack of craft and gear and spells of heavy weather. He later responded to requests for assistance from various isolated settlements around the Gazelle Peninsula, where considerable interest in the income-earning potential of small-scale fisheries was evident. Handreel construction and deep-bottom techniques were demonstrated to, and adopted by, several groups in these areas intending to deliver catches to Kokopo. The Masterfisherman then transferred to Madang province where an extensive roving training programme had been organised. Rata visited village fishing groups along the length of the Madang Province coastline on board a Fisheries Division vessel, providing training for villagers on their own fishing grounds. The success of this extension programme led to a request that the Project's stay there be extended by two months. In light of the achievements to date this was agreed to. At the conclusion of this segment of the visit Rata transferred to the National Fisheries College at Kavieng. He is presently on station there demonstrating locally appropriate fishing techniques, and gear and boat rigging, to students there.

Nauru - FAD construction and deployment project (Phase 1)

56. In response to a request from the Government of the Republic of Nauru for assistance in initiating a FAD programme, former SPC Masterfisherman, Paul Mead, was engaged to travel to Nauru in order to evaluate potential FAD sites and to investigate the local availability of material resources necessary to fabricate and rig FAD rafts and moorings. To assist with this, and future FAD site selection and fisheries work, the DSFDP acquired a dual frequency, deep-water capability, echo-sounder. This unit, a Furuno FCV 362 (28/50 khz), gave good bottom returns at 1600 m, and was adequate to the task of sounding Nauru's deep inshore waters. After consulting with officers of Nauru's Department of Island Development and Industry (IDI) and local fishermen, Mead completed an extensive echo-sounding survey of potential sites. Three sites, selected so as to provide access to local launching points in all but very bad weather, were located and plotted. The sites lay at an average depth of 1100 m and approximately one mile offshore. The local availability of potential FAD materials was then investigated and work begun on a suitable raft design and mooring calculation. Mead's design was then forwarded to U.S. Coast Guard Buoy Engineer, Lt. R. Boy, for his expert evaluation, and a bill of materials subsequently supplied to Nauru so that IDI can order and land the requisite materials. At that time, it is expected that Mead will return to Nauru to supervise the deployments.

Reporting

57. Clearing the backlog of DSFDP country reports has remained a priority task. Fifteen reports in this group have now been submitted to country for approval, while four more relating to French territories are in the process of translation. Five other reports are either in the final lay-out stage or in final draft form and will be distributed to country shortly. Eight more reports remain in draft form, including those of the Tonga and Kiribati Gear Development Sub-projects completed recently. Progress with report finalisation was somewhat disrupted by staff changes during the past year, but a streamlined system of preparation is now in place and it is expected that the backlog will shortly be cleared, and that reports of current and future activities will be produced in timely fashion.

58. Other publications in the preparation or planning stage include: a handbook on deep-bottom fishing methods, designed as a companion volume to the well-received Handbook on Trolling Techniques for the Pacific Islands; and technical reports derived from the Gear Development Sub-Projects, which will describe in precise detail the gear construction, gear rigging and fishing techniques for vertical longlining, deep-trolling, small-scale surface longlining and other methods. In addition, the DSFDP will be closely involved in the preparation of the revised SPC Handbook on FAD Construction and Deployment, which will incorporate the findings of the SPC FAD Research study. The completion of these publications will, in some cases, depend on other work priorities and on extra-budgetary support.

Future Directions

59. Country requests for DSFDP assistance reflect the widening view of fisheries development that has emerged in the region over the past few years. There is evidence of a growing appreciation that improving capture fisheries, developing new fisheries, post-harvest handling and marketing of catches, and conservation and management of inshore and offshore resources, are inevitably linked. In recognition of this, the DSFDP will work closely with the Fish Handling and Processing Project, the Fisheries Training Project, and the Inshore Fisheries Research Project to ensure that the DSFDP goals of improving productivity and returns in regional fisheries, and of promoting awareness of the exploitable fish resources available, will be pursued in a manner complementary to the concerns of these projects and the needs of member-countries.

60. A core staff of Masterfishermen will be retained, but with country requests covering a wider and increasingly more complex range of activities, greater use is now being made of fishery specialists, through short-term consultancy arrangements. This gives the project considerable flexibility and enables it to call upon the service of some of the most able and informed fishery development personnel available, and to better match skills to specific country needs.

4) FISH HANDLING AND PROCESSING PROJECT (FHPP)

General

61. Much of the programme for the Fish Handling and Processing Project (FHPP) during the year has been occupied with issues on women-in-fisheries and the regional post-harvest fisheries facility. The videos on chilling fish have been distributed around the region, and plans are in hand for completing videos on freezing fish. The project in Tokelau on improved processing and marketing of cured fish was unfortunately delayed due to cyclone Ofa, but this should now go ahead in September. A number of other initiatives in the pipeline include a project for regional and in-country training for the chilled fish sector; a study visit to fish technology institutes in Latin America. Priority will continue to be given to timely response to specific requests on training (e.g. New Caledonia) or advisory visits to countries of the region.

62. This project is funded by the UK government through the British Development Division in the Pacific (BDDP), with ICOD very supportive of several specific initiatives.

Advisory Services

Tokelau - Pilot fish processing project

63. Following an advisory visit by the FHPO to Tokelau in September 1988, during which a trial cured-fish processing and marketing project was recommended, the Office of Tokelau Affairs (OTA) expressed their intention to proceed with the project basically as recommended. The aim of the project is to install a simple fish handling facility for storing and processing fish; including the installation of a small block-ice plant; the training of fishermen to land improved quality fish, using ice to preserve the catch; and the training of women in improved procedures for sun-drying fish to produce a quality dried fish product which could be exported. A Tokelauan counter-part officer will also be trained so that he may supervise the project for the 12 month period that it is to run. A staff attachment to this project has been requested by the Tuvalu Fisheries Division, and funding will be provided for this through the FHPP. The target market for the cured fish will be Western Samoa, in the first instance, with some allocation of effort to assessing the potential of exporting cured fish to Auckland, New Zealand. Assistance was given in the drawing up of detailed plans for buildings and a community processing facility, and in obtaining quotations for capital equipment for ice makers, ice stores and other requisite materials. A brief visit was also made to OTA in Apia in early July to finalise the arrangements for the project. OTA had hoped to start the project in early 1990, but in the aftermath of cyclone Ofa this has been postponed until September. The FHPO will provide the technical expertise, and undertake the cured-fish marketing trials in Apia and Auckland, with the assistance of the South Pacific Trade Office, during September and October, 1990.

Papua New Guinea, Vanuatu, Solomon Islands - Assistance to womens groups

64. Following the successful workshop in fish processing and marketing, held for Papuan Region women in Papua New Guinea last September, the Department of Fisheries and Marine Resources and the Women's Division, have indicated their desire to develop, on a national scale, an ambitious programme to assist women from fishing communities. The FHPO visited Port Moresby in April to help draw up a project proposal to best carry out these plans. As Vanuatu and Solomon Islands have indicated their interest in being involved in similar schemes, the proposal was developed as a Sub-regional project. A number of broad activity areas were identified as a result of this visit, and it is suggested that an appropriate strategy would be to engage a specialist to oversee the development and implementation of these projects. WP.17. proposes that a Women's Fisheries Programme Officer be employed within SPC's Fisheries Programme, to undertake this task, under the FHPP, but working in close collaboration with the Pacific Women's Bureau. This officer would be responsible for satisfying request for development projects for women-in-fisheries for the region, beginning with the sub-regional project for Melanesia.

Training

Papua New Guinea - The Papuan Region Women's Workshop on Fish Processing and Marketing

65. This Workshop, funded by the International Center for Ocean Development (ICOD), was held at the University of Papua New Guinea, in Port Moresby, from 4 to 15 September 1989, for twenty two selected women participants from the Papuan Region of the country. The workshop was a practical one, with projects and demonstrations dominating the timetable. Participants were generally very pleased with this format. Interest was expressed in immediate follow-up activities at the village level for the workshop participants in their home provinces (funding for this is presently being sought). A report of the workshop was published by SPC in May, 1990 and circulated to all fisheries departments, governmental women's offices and NGOs in the region. PNG now wishes to develop an ambitious programme to further support women's activities in PNG, such as similar workshops, and follow-up and extension activities in 1991 for New Guinea Islands and Momase Regions.

Vanuatu - Beche-de-mer training workshop

66. A two-week beche-de-mer processing workshop was held in Port Vila last August. This followed a request from the Government of Vanuatu for assistance in improving the quality of smoke-dried beche-de-mer, the export of which was banned at the time due to the persistent problem of poor quality resulting in low prices for the product. A beche-de-mer processing expert from Fiji Fisheries Division, (Sitiveni Yabaki) was engaged to conduct the workshop. Four of the workshop's participants have since been granted processing export licences and exports have now been re-established to markets in Singapore, Hong Kong and Australia. Export permits are issued by the Fisheries Department only if required quality standards have been met. In May 4,420 kg of improved quality processed beche-de-mer was exported, the best monthly export figure since the August 1989 workshop.

Cook Islands - Workshop for Fishermen

67. Following a request from the Ministry of Marine Resources, Cook Islands, the FHPO conducted a short training workshop for Rarotongan fishermen in the use of ice for chilling fish. This followed the installation of a flake-ice maker in Rarotonga. Advice was also given to a fish retailer on improving quality, fish displays and the production of value-added chilled products.

New Caledonia - Training for fish market vendors (ongoing)

68. The Southern Province Fisheries Department has requested the assistance of the FHPP to organise a workshop for fish retailers in November 1990. The workshop will cover improved handling, display and storage of fresh and frozen fish, for retailers intending to operate stalls at the new fish market presently being built in Noumea. The market is due to be opened in January, 1991. Fish retailers will only be allocated a stall if they have participated adequately in this workshop.

Papua New Guinea - Fish Inspection and Quality Control Workshop for Surveillance and Inspection Officers (ongoing)

69. The FHPP has been requested by the Surveillance and Inspection Section of the Department of Fisheries and Marine Resources, to organise a workshop for fish inspectors responsible for examining all seafood products exported from Papua New Guinea, including frozen prawns, lobster and barramundi, dried beche-de-mer, etc. As part of the same request opportunities for further training overseas are being investigated for the microbiologist responsible for analysing export marine products for bacterial contamination.

Other activities

Fish Handling and Processing Video Series

70. English and French versions of two training videos, ('An Icy Tale' and 'A Chilling Story') were distributed to all Pacific Island countries in February this year. The videos have been favourably received by member countries and were widely commended by international organisations. The translation and dubbing of the narration of one of the videos ('An Icy Tale - Chilling fish on-board') into any of the region's many languages, will be undertaken upon request for each regional fisheries department. A funding proposal for production of further training videos in this series is now under consideration by ICOD, who funded the first set. The topics selected for the next video series will be 1) the proper freezing and 2) cold storage of seafood products.

The Regional Post-harvest Fisheries Facility

71. The concept of the establishment of a 'Regional Post-harvest Fisheries Laboratory', first discussed at the Twentieth RTMF in 1988, and further elaborated at last year's RTMF, has continued to take high priority in the FHPP work programme. Following a recommendation made at last year's RTMF (Recommendation 11), the writing of a detailed funding proposal was commissioned (May/June) for presentation to this meeting. The FHPO accompanied the consultant engaged for the task (Mr J. Crossland) to Fiji, Vanuatu and Solomon Islands, and visited countries that could not be included in the consultant's travel itinerary, Papua New Guinea, Palau, Guam and the Federated States of Micronesia. The consultant also visited Tonga, American Samoa, Western Samoa, Kiribati and Tuvalu. The consultant's report is the subject of Working Paper 5.

Post-harvest study tour of Latin American fish processing technology institutes

72. Planning is proceeding for the study tour to Latin American fish processing technology institutes, as directed by RTMF 21 (Recommendation 6), which will provide for a team of selected Pacific Island nationals to accompany the FHPO to Chile, Peru, Ecuador and possibly Mexico. As this initiative arose from the Pacific Latin America-Pacific Island Nations International Fisheries Conference, held September, 1988 in Lima, Peru, the PECC Fisheries Task Force Coordinator Dr Gordon Munro, has assumed an active role in seeking funds and, while funding has yet to be confirmed, prospects appear promising. It is hoped that the study tour can take place in early 1991.

Information / Publications

73. Further delays were experienced in finalising the revised edition of 'Beche-de-Mer of the Tropical Pacific', again due to commitments to country assignments and other projects. The edition has now been finalised, and is ready for printing. No further progress has been made with the 'Field Manual for Seafood Poisoning Outbreaks' for similar reasons.

5) REGIONAL FISHERIES TRAINING PROJECT (RFTP)

General

74. The Regional Fisheries Training Project has continued as its priority activity, the identification of training requirements within the region which are not presently being addressed by the established training institutions. Wherever possible, these needs have been met through ad hoc regional and in-country training courses and workshops, as appropriate.

75. The training project was transferred to Suva in February 1990 and is now based at the SPC centre at Navua. The project is now back to its full complement of three staff: the Fisheries Education and Training Adviser (the change of title from Fisheries Training Officer was made to better reflect the role of the position); the Fisheries Training Associate (previously A/FTO) and a Programme Assistant. The position of Fisheries Training Associate, whose role had been undertaken by short term consultants since May 1989, was filled in May 1990 by Michel Blanc. Michel is a French national and it is expected that the addition of his services will strengthen considerably the ability of the training project to address the training needs of French-speaking member countries.

76. Core funding for this project continues to be provided by the Governments of Australia and France, with a welcome contribution from New Caledonia. The project also receives financial assistance for individual courses from a variety of funding sources the most prominent of which are ICOD, the New Zealand Government, Commonwealth Secretariat, Commonwealth Foundation, and FAO/UNDP Regional Fishery Support Programme

Completed Activities

Extension Training Project.

77. The comprehensive exercise in extension training which was initiated in 1987, continued through 1989 with the operation of a two-week course in Vanuatu in August, and concluded in January, 1990 with completion of an in-country course in French Polynesia. These courses were the final activities of the second stage of the programme. The programme having comprised a four-week block course to train the trainers and ten subsequent in-country courses.

78. All participants in the initial block course were brought together again in March, 1990 for a one-week Extension Development Workshop, during which they critically reviewed the extension project to date and made recommendations for the future development of extension and extension training, both within their individual countries and regionally. The recommendations of that Workshop have led to further SPC initiatives in extension training; these are reported under future activities.

79. Costs for all elements of this comprehensive, three-year project in extension training have been met by the International Center for Ocean Development, with the exception of the Fiji course where costs were met by the FAO/UNDP Regional Fishery Support Programme and the French Polynesian Course which was funded by SPC.

Refrigeration Course for Papua New Guinea.

80. Following the successful course conducted at the National Fisheries College (NFC) of Papua New Guinea in 1987, the SPC assisted the PNG Department of Fisheries and Marine Resources to organise and conduct a second eighteen-week course in refrigeration maintenance and repair. This was held at NFC from 22 August to 15 December, 1989 and was attended by fourteen trainees from Papua New Guinea and, and two from the Solomon Islands.

81. The course followed a similar approach to the earlier ones (Rarotonga and PNG) with the eighteen weeks of training broadly divided into two sections. The first nine weeks covered fundamental refrigeration theory and practice; including equipment, components and tools while the second nine weeks was largely practical; including commercial service calls and supervised workshop experience covering the repair of a variety of equipment in common use by the fishing industries of Pacific Island countries. At the conclusion of the course all remaining refrigeration equipment and tools were donated to the College to augment their on-going capabilities to teach this subject.

82. All costs associated with the attendance of the PNG participants were met by the Government of New Zealand, those of the two Solomon Islanders by the Commonwealth Fund for Technical Cooperation, while all expenses associated with the Senior Lecturer/Course Supervisor were provided by the FAO/UNDP Regional Fishery Support Programme.

SPC/Nelson Polytechnic Pacific Island Fisheries Officers Course.

83. The Eleventh SPC/Nelson Course was held from Monday 5 February to Friday 13 July. The course followed a syllabus and structure similar to previous years. An eighteen-week module at the School of Fishing, Nelson Polytechnic, New Zealand, was followed by a five-week practical fishing module at a Pacific Island venue. In line with SPC's practice of involving regional training institutes as far as possible in all of its projects, the 1990 practical fishing module was held in conjunction with the University of the South Pacific's Institute of Marine Resources (IMR). The module was based at the IMR research station at Dravuni, using two of the IMR vessels and staff from IMR and SPC.

84. The syllabus has once again been reviewed and some minor changes made for the 1991 course content to maintain relevance to the changing Pacific Island needs of countries. This course continues to be popular with Fisheries Divisions within the region and has retained strong support from funding agencies. Given the present level of demand, this course could continue in its present form for several years. However, there have been some significant developments within USP regarding the recommended restructuring of the Diploma of Tropical Fisheries, and the further recommendation that a Certificate in Fisheries Technology be initiated. It is timely, therefore, to consider the possible longer term benefits to the region of a reorganisation of the present SPC course to encompass an expanded course outline and to running this in conjunction with USP. The alterations to the present course syllabus and the background to the proposed Certificate of Fisheries Technology are presented in WP.18, and some guidance is sought from the meeting on both these issues.

85. Funding for this course was provided by the Government of New Zealand, the FAO/UNDP Regional Fishery Support Programme, The Commonwealth Foundation, The Commonwealth Secretariat and the SPC.

Ongoing and Future Training Activities

FAO/UNDP/SPC Organisational Management Workshop for Senior Fisheries Personnel.

86. Preparation for this two-week workshop is well in hand. It will be held in Suva commencing Monday 26 November, 1990. The workshop has aroused considerable interest and promises to be an exciting and challenging experience. In order that the workshop philosophy, contents and structure can be thoroughly discussed and developed to address all concerns of member countries, the workshop supervisor/senior facilitator, Mr Chris Bunnings, Director of Staff Training, Queensland Department of Primary Industries will attend this years RTMF and the course will be discussed under Agenda Item 5.3(i).

Extension and Communication Skills.

87. The Extension Development Workshop, held over seven consecutive working days in March, was directed at the original participants in the initial 'train the trainers' course, who had completed their own in-country courses under the programme. In addition, the fisheries extension managers from Vanuatu and the Solomon Islands attended as resource persons.

88. The workshop was characterised by very lively and wide-ranging discussions, which resulted in several recommendations for future action. These are summarised below:

- (i) That the exchange of tutors from one country to another be effected to provide additional teaching input into the in-country courses, and further teaching experience for the visiting tutor.
- (ii) That the operation of another block course to train teachers of fisheries extension and communication skills be held.
- (iii) That the Extension Training Manual be published and circulated.
- (iv) That a workshop or training course on organisational management for senior fisheries personnel be held.
- (v) That sub-regional networks to facilitate information transfer be developed.

89. The senior management workshop (Item 4) is being implemented and the participants themselves have taken responsibility for the development of sub-regional networks (Item 5).

90. Items 1, 2 and 3 will be actioned by SPC with activities to commence immediately. Up to six tutor exchanges have been financed and will commence as soon as courses and locations have been finalised. Work on the manual is currently being undertaken and it is expected that it will be published and distributed before the end of the year. The second block course to train teachers of fisheries extension and communication skills will be similar in structure and content to the original 1987 course. It is expected to run late this year or early in 1991.

91. All of these new initiatives in extension training and development have been financed through the continued support of ICOD.

Educational Materials for Schools.

92. Considerable interest in this subject has been expressed by various agencies, including FFA and FAO/UNDP. This is an area that previous technical meetings have instructed the SPC to address, but no action has been possible largely because of staff shortages. With the recruitment of the Fisheries Training Associate it is anticipated that the project will work in concert with FFA and FAO/UNDP during the next twelve months towards the development of suitable materials.

SPC Consultancy to Examine Manpower Development plans of Pacific Island Fisheries Departments for Future Education and Training

93. The SPC will conduct a consultancy which will assess, mindful of the existing economic constraints of each country and fisheries department, the future personnel needs of all fisheries administrations in regard to qualifications, skills, levels of competence and staffing levels. The study team will use this information to develop recommendations which will assist countries, agencies and educational institutions develop appropriate approaches and training strategies in order to better address national and regional training needs. The approach to be adopted for this study is outlined in WP.19 and will be discussed in detail under Agenda Item.5.3(i).

Post Harvest Training.

94. Following the recommendation of the 1989 RTMF (Recommendation No. 7) funding has been actively sought for a project in post harvest training. WP.20 describes some minor changes in approach which have been adopted to reflect comments made during last year's meeting. This major project will be a joint activity of the Fish Handling and Processing Project and the Regional Fisheries Training Project and subject to funding availability it is expected to commence this training project no later than the first quarter of 1991.

Publication of A Revised Directory of Training Opportunities

95. Funding has been obtained from ICOD to revise thoroughly the SPC Directory of Training Opportunities Available to Pacific Island Personnel. Using the experience gained and additional information available since the printing of the first document the directory will be totally revised. Some entries will be updated, some non-relevant entries deleted and additional relevant entries listed. It is expected that the Directory will be completed, printed and circulated by the end of this year.

Publication of a Safety Handbook for Small-Boat Fishermen.

96. Previous Technical meetings have identified this as a task to be undertaken by the training project. Funding will be sought and if forthcoming the project will be addressed in the coming year.

II OCEANIC FISHERIES - TUNA AND BILLFISH ASSESSMENT PROGRAMME (TBAP)

General

97. The Tuna and Billfish Assessment Programme (TBAP) has as its goal the provision of assistance to SPC countries to develop, rationally exploit and manage the renewable oceanic resources of the region; the tuna resource constituting the largest single resource available to member countries. Two projects are defined within the TBAP, the Tuna and Billfish Research Project (TBRP) and the Fishery Statistics Project Research Project (FSP). These projects, while interacting to a large extent, reflect the two basic types of work undertaken by the TBAP: (1) the conduct of a programme of scientific research on tuna and billfish stocks in the SPC region; (2) the collection, processing and dissemination of fisheries statistics pertaining to those stocks. The activities of both projects remain focussed on the priority tasks defined in the TBAP mission statement approved by the 19th RTMF, but the division provides a clearer definition of staff responsibilities and activities within the scope of the TBAP, and recognises the role of the Fisheries Statistics Project in supporting other SPC Fisheries Projects. In addition, the TBAP is involved with ORSTOM in a continuing cooperative study of the effects on environmental variation on tuna fishing.

6) TUNA AND BILLFISH RESEARCH PROJECT (TBRP)

98. The work of the TBRP can be conveniently subdivided, with the recent involvement with albacore issues, into that involving tropical tunas and albacore, respectively.

Tropical Tunas

Catches

99. Estimates of total catch and effort in the SPC statistical area for 1987 and 1988 have been provided in Regional Tuna Bulletins for the first quarter 1988 and 1989 respectively. The total catch of all tuna and billfish increased from an estimated 623,000 t in 1987 to 650,000 t in 1988. This upward trend appears to have continued through 1989. The catch of skipjack in 1988 was approximately 448,000 t, well up from the 354,000 t in 1987. The catch of yellowfin, however, fell from 188,000 t in 1987 to 125,000 t in 1988. This decrease was due to greatly reduced catches of yellowfin by purse seiners in 1988 (73,000 t compared with 145,000 t 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 170 m, the deepest such recording during the past 10 years). This could have reduced the vulnerability of yellowfin to purse seining. The return during 1989 to catch rates intermediate between those of 1987 and 1988 would further support this contention.

CPUE Trends

100. Currently, monitoring CPUE trends in the Japanese pole and line, purse seine and longline fisheries provides the best means of assessing the condition of yellowfin, skipjack and bigeye resources in the western tropical Pacific. Catch and effort data for most other fleets are incomplete. Reports on the stock status of skipjack and yellowfin are given in WPs 2 and 3.

101. Skipjack CPUE in the Japanese distant-water pole and line fishery has varied over the years, but the general trend is increasing. In 1988, an overall catch rate of 11.5 t per day was recorded, which is the highest ever. Preliminary 1989 figures indicate a continuation of this trend.

102. Skipjack CPUE by Japanese purse seiners has also increased in recent years, 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. Data for 1989 suggest that yellowfin CPUE has returned to a more typical level.

103. Japanese longline CPUE for yellowfin has been declining steadily throughout the 1980's but with a general levelling out since 1985. 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 is currently addressing this problem through the recently initiated RTTP and a collaborative study of fishery statistics with Japanese scientists.

Regional Tuna Tagging Project (RTTP)

104. The TBAP has embarked on a major new large-scale tagging programme that will add substantially to existing knowledge of yellowfin and skipjack stocks in the region. This project, supported by EEC funding under Lome III, has rapidly become the major focus for TBRP activities in the 1989-91 triennium.

105. The Regional Tuna Tagging Project officially commenced with the departure of the chartered Tuvalu pole-and-line vessel *Te Tautai* from Suva on 15 December, 1989 following modifications to the vessel to accommodate the requirements of the project. This followed award of the open international tender to the *Te Tautai* in September and subsequent signing of the service contract in October. Five staff were recruited for the project, including three Pacific Island nationals.

106. Field operations of the RTTP commenced with the departure of the vessel from Honiara, Solomon Islands on 21 December, 1989. During the first seven months of charter, operations have generally followed the approved Work Plan for Year 1, as follows:

- (i)
Dec. 21st 1989 - Jan. 3rd 1990.
Working up the vessel and developing required techniques, Solomon Islands.
- (ii)
Jan. 4th - Feb. 27th 1990.
Tagging activities over a wide area of Papua New Guinea with emphasis on northern equatorial areas.
- (iii)
Feb. 28th - Mar. 31st 1990.
Tagging activities, Solomon Islands, concentrating on areas not covered by the Solomon Islands In-Country Tagging Project.
- (iv)
Apr. 1st - May 8th 1990.
Further tagging activities in northern Papua New Guinea.

(v)

May 11th-14th 1990.

Tagging activities in the vicinity of Pohnpei, Federated States of Micronesia.

(vi)

May 15th-27th

Tagging activities in the vicinity of Kosrae/Pohnpei, Federated States of Micronesia.

(vii)

May 28th-June 24th

Further tagging activities in northern Papua New Guinea.

(viii)

June 25th-July 6th

Tagging activities in southeast Palau.

107. During the first seven months of vessel charter, over 30,000 tunas had been tagged and released, with yellowfin, skipjack and bigeye comprising 51.9%, 45.7% and 2.4% of these releases respectively. These releases, all within the primary operational area, have exceeded expectations and nominal targets for this period, particularly as below-average catches have been recorded in the PNG/Solomon Is. area by most fleets during this period. A series of Activity Reports provide further details of these operations, which include a range of biological studies undertaken concurrently with tagging operations. The charter operation was reviewed as required after the first five months and given approval to proceed.

108. The second five-month period currently underway will see tagging activity directed towards the Federated States of Micronesia (FSM), Palau and the Philippines, before the first ten-month charter period concludes in October 1990. It is probable some time will be spent in Kiribati and Marshall Islands towards the end of this period.

109. Numbers of tags are already being received from most DWFN fleets active in the tropical western Pacific, e.g. Japanese seiners (group and single), Philippine seiners, Korean purse seiners and longliners, and U.S. purse seiners. Considerable effort has been directed towards publicity for the programme and tag recovery processes, with material prepared in eight languages.

110. Recognising the difficulty of tagging a wide size range of yellowfin tuna, in particular, using pole-and-line techniques alone and the difficulty of working in some parts of the operational area where live bait supplies are limited, an experimental tagging cruise was conducted on-board a Japanese group purse seine vessel during April. This was made possible with FSM Government support. Tunas tagged and released totalled 294 and operational details of these vessels elucidated, but a method of routinely tagging and releasing large yellowfin has yet to be developed. A technical report summarizing this work has been prepared.

In-Country Tagging Activities

111. Under the general umbrella of the Regional Project, several collaborative in-country tagging projects, to address local tuna fishery interaction issues, are planned, normally involving separate extra-budgetary funding.

112. The field phase of the first of these projects, carried out in the Solomon Islands as a joint project with the Ministry of Natural Resources and with AIDAB funding, has recently been completed. The planned four tagging cruises, utilising commercial pole and line vessels, in July/August, October/November 1989, March 1990 and June 1990, tagged and released over 8,000 fish (93% skipjack). Return rates from the earlier cruises were approaching 14% by July 1990, and a preliminary analysis of these results has been completed. These in-country Solomon Islands releases are supplemented by RTTP releases in adjacent areas and the final release total will exceed 13,000 tunas, primarily skipjack.

Multilateral Treaty Observer Programme and other Observer Activities

113. 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. In support of Treaty annual review activity, a detailed analysis of both observer and port sampling data collected under Treaty provisions was prepared (TBAP Internal Report No. 20).

114. 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. Cooperation between the FSM observer programme and the RTTP has been agreed, but not yet implemented.

In-country assessments

115. No in-country assessments have been completed during the year, due primarily to demands on staff time associated with RTTP and other new activities. Short-term assistance, however, will be available later in 1990 with ACIAR funding, to enable several outstanding reports to be finalised.

South Pacific Albacore

The Fishery

116. The large increase in the driftnet fishery in the Tasman Sea and in the subtropical convergence zone east of New Zealand during 1988/89 led to a dramatic increase in the catch of albacore in the South Pacific. Although statistics are still being compiled, the best currently available data indicate that the driftnet catch of albacore by Japan and Taiwan increased from 5,800 t in 1987/88 to at least 31,000 t in 1988/89. Over the same period, troll catches increased from 4,200 t to 9,200 t, resulting in an increase in total surface catches from 10,000 t to at least 40,000 t. The longline fishery for albacore in the South Pacific has been fairly stable in recent years, averaging about 30,000 t per year. With voluntary reduction of driftnet effort during the recently completed 1989/90 season, catches are expected to be of the order of 20,000 t.

Research

117. The TBAP has continued to upgrade 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, immediately following SCTB 2;

- (ii) coordinating an observer programme during the 1989/90 surface fishery; including driftnet vessels for the first time;
- (iii) broadening port sampling coverage of albacore fisheries in the South Pacific, to include Levuka (Fiji), and Tonga and more recently, Noumea;
- (iv) planning a large-scale albacore tagging project. Considerable delays have been experienced in funding for this project, which was initially scheduled for the 1989/90 season.

118. Funding has recently become available from ICOD for the recruitment of an albacore scientist for a three-year period, enabling these efforts and in particular, data collection to be better co-ordinated, leading to a much needed assessment of South Pacific albacore stocks.

119. Scientific advice was provided to the first and second Consultations on Arrangements for South Pacific Albacore Fisheries Management (Wellington, November 1989; Honiara, March 1990). As a result of the latter meeting, a Scientific Advisory Group, with draft structure and functions was established, with SPC TBAP to serve as Secretariat for an interim period. The first meeting of this group, which will incorporate SPAR, is scheduled for October 9-12 in Noumea.

SPAR Workshop

120. The Second SPAR Workshop was held in Suva immediately following SCTB 2 on 14-16 June 1989, with the Government of the Republic of Fiji acting as co-hosts. 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 1988/89 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 driftnet dropout rates.

Observer programme 1989/90

121. The programme, originally requested by the first Consultation on South Pacific Albacore Fisheries (Suva, 3-4 November 1988) continued under TBAP co-ordination. In cooperation with New Zealand's Ministry of Agriculture and Fisheries (MAFFish), observers were placed on U.S. and N.Z. troll vessels. For the first time, an observer was also placed onboard a Japanese driftnet research vessel, with the co-operation of JAMARC. (TBAP Internal Report No. 18). Observer activities were funded by BDDP, EEC and MAFFish.

Albacore port sampling 1989/90.

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

123. Arrangements were made for sampling albacore gonads and size distribution at the PAFCO cannery, Levuka, Fiji, and on-board the Tongan longliner *M.V. LOFA*. Initial collections of material have been received from both sources. More recently (April 1990), weekly sampling of domestic longliners unloading in Noumea has commenced.

124. There was no shore unloading of driftnet vessels in the region during 1989/90 and consequently no port sampling of these vessels was possible.

Albacore Tagging Project

125. 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 the South Pacific - troll, drift gillnet and longline. A partial funding commitment has been obtained from the EEC to enable the preparation for the project and some ancillary activities (e.g. port sampling, biological sampling) to proceed. The bulk of the funding is expected in the near future to enable tagging to be undertaken hopefully during the December 1990 - April 1991 period. A detailed project proposal has previously been submitted and accepted.

Tuna Biology and Ecology

Study on tuna and their environment

126. 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 during 1989/90, and has recently been approved for 1990/91.

127. 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 Niño phenomenon) on the space-time distribution of tuna as well as on their availability to and catchability by various fishing methods. Since 1988 a more practical component has been added, consisting of an oceanographic input to country reports.

7) FISHERY STATISTICS PROJECT (FSP)

Regional Tuna Fisheries Databases

SPC/FFA Regional Tuna Fisheries Database

128. Since its inception in 1981, the Tuna and Billfish Assessment Programme 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 of domestic fleets.

129. 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.

130. 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 summarising the data are sent back to member countries on a quarterly basis. For several member countries, the processed data are returned on diskettes for incorporation into databases which are maintained on computers within each country.

131. Daily catch and effort data for tuna vessels fishing in the region have been received from Australia, the Cook Islands, the Federated States of Micronesia, Fiji, French Polynesia, Kiribati, the Marshall Islands, New Caledonia, New Zealand, Palau, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, the United States and Vanuatu.

132. Coverage by the Regional Tuna Fisheries Database has continued to improve. In 1989, coverage was 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. In 1990, data covering the pole-and-line and purse seine fleets of Australia were included in the database.

133. 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 in 1989 from Australia, French Polynesia and New Caledonia. Daily catch and effort data for Korean and Taiwanese longliners based in Pago Pago, American Samoa, have been received from the United States covering fishing activities in 1987 and 1988.

National Fishery Statistics Systems

134. 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.

135. Commencing in 1988, tuna fishery databases have been developed and installed in the Federated States of Micronesia, Fiji, Guam, the Marshall Islands, Papua New Guinea and Solomon Islands. 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; in Solomon Islands, foreign and domestic fisheries are monitored; while in Papua New Guinea, the database contains logsheets from foreign fishing vessels.

Standing Committee Database

136. At the meeting of the Standing Committee on Tuna and Billfish held in Suva on 19-21 June 1989, the Committee considered the problem of inadequate statistical coverage of the fishing activities of distant-water fishing nations in the region, including Indonesia, Korea, Japan, Philippines, Taiwan and the USSR.

137. The Standing Committee discussed the establishment of a common database consisting of aggregated data provided by all fishing nations (including DWFNs), which would be separate from the data currently assembled by SPC in the SPC/FFA Regional Tuna Fisheries Database (which are contributed only by SPC/FFA member countries).

138. The Standing Committee subsequently recommended that "SPC work towards the implementation of a common regional tuna database, holding data aggregated to an acceptable level, which would be available to all contributing partners via a defined distribution network." Representatives at the Twenty-First Regional Technical Meeting on Fisheries, held in Noumea on 7-11 August 1989, recognised that "the proposed common regional scientific tuna database will considerably improve scientific studies and assessments of regional tuna fisheries" and strongly recommended that it be implemented as soon as possible.

139. Requests to all fishing nations to participate in the Standing Committee Database were sent in March 1990. Several countries have since contributed all their data (Australia, Fiji, New Caledonia, Solomon Islands), while others have not responded to the request (Japan, Korea). Two countries have contributed some, but not all, of their data (republic of China, United States of America), and three countries have not yet contributed their data but intend to do so in the near future (Kiribati, New Zealand, Tonga).

SPAR Database

140. At the Second South Pacific Albacore Research (SPAR) Workshop, held in Suva on 14-17 June 1989, the participants agreed to the offer made by SPC to act as a clearinghouse for the receipt and distribution of albacore data. Further, at the Second Consultation on Arrangements for South Pacific Albacore Fisheries Management, held on 2-7 Feb, 1990 in Honiara, Solomon Islands, the meeting agreed that, as an interim arrangement prior to the establishment of the South Pacific Albacore Scientific Advisory Group, data will be provided to SPC by all fishing parties, and that SPC will compile all data and make it available for distribution, in an agreed format, i.e.

- (i) total albacore catch in numbers and effort by gear by 5° square by month,
- (ii) total albacore catch in numbers by gear by 5° latitude by 10° longitude by month by 1 cm size class.

141. Requests for data for the SPAR Database were sent to all countries concerned in October 1989. At present, catch and effort data have been provided by Australia, New Caledonia, Taiwan and the United States. Size frequency data have been provided by the United States.

Transshipment Data

142. In 1988, the FSP began to compile statistics on tuna landings in the region. Data on transshipment have been received from French Polynesia, Guam, New Caledonia, the Northern Marianas and Palau, and data on landings at Levuka have been obtained from Fiji.

SPC Regional tuna Bulletin

143. In August 1988, the Fisheries Statistics Project first prepared the SPC Regional Tuna Bulletin. The Tuna Bulletin has 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 in 1980.

Statistical Support for other SPC Fisheries Projects

144. 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.

145. 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 port sampling data from transshipment by Japanese gillnet vessels in New Caledonia.

146. A database has also been developed for the tagging projects conducted by the Tuna and Billfish Research Project since 1989. The tagging database system allows tagging data to be entered on laptop computers onboard the tagging vessels; the tagging data can then be transferred to SPC headquarters on diskette.

Standing Committee on Tuna and Billfish (SCTB)

147. The Third Standing Committee on Tuna and Billfish was held in Noumea, New Caledonia from 6-8 June 1990. The meeting was attended by scientists from Pacific Island countries, distant water fishing nations, several ASEAN countries (Philippines and Indonesia) and NMFS. As the SCTB is an advisory body to the RTMF, the deliberations of this meeting are reported in WP.4 and will be considered in detail under Agenda item 5.2 (iii).

III OTHER FISHERIES PROGRAMME ACTIVITIES

Fish Aggregation Device (FAD) Research Study

148. Fish Aggregation Devices (FADs) have been in use as fishery enhancement tools in the Pacific for more than a decade. All Pacific Island countries, with the exception of Pitcairn, have adopted FAD deployment programmes for one reason or another; whether to diversify fishing effort toward less heavily exploited resources, to improve the economy, productivity and security of small-scale fishing operations or, in some countries, to improve the effective yield of industrial fishing concerns. This growing appreciation of the value of FADs has always been countered to some extent by a general failure to achieve satisfactory longevity. A short average life span coupled with, the relatively high expenses associated with FAD deployments, has resulted in continuing doubts about the cost-effectiveness of these devices. Other important questions, relating to the way in which FADs work and their effect on overall resource dynamics, also remain effectively unanswered.

149. SPC has played a key role in the development of FAD technology and use in the Pacific since the early 1980's. At that time, SPC research showed that inadequate mooring design and the use of unsuitable components were important factors contributing to premature FAD loss. This study led to the publication of the well-regarded and much-used SPC handbook, *Design Improvements to Fish Aggregation Device (FAD) Mooring Systems in General Use in Pacific Island Countries*, and a two-week workshop for regional fisheries officers with responsibility for FAD programmes, held in Kiribati in 1987.

150. In the six years since the publication of the SPC handbook, FAD deployments and FAD-based fisheries have continued to flourish in the region, largely at the urging of the fishermen who have come to depend on the devices to maintain or improve catch levels. It has been evident for some time that sufficient new research evidence and experience now exists to suggest that a comprehensive review of FAD technology, FAD-associated fish behavior and fisheries, is likely to produce significant information of value to FAD-programme managers, national planners and fishermen. A commitment on the part of SPC's Fisheries Programme to pursue such a study was given at both the 1988 and 1989 RTMFs. Subsequently, the SPC FAD Research Study was initiated on 1 April this year.

151. The study involved a wide-ranging survey of FAD experience, developments in FAD technology and fisheries, and research findings and trends, undertaken by a consultant, Mr Paul Gates of Hawaii. The findings will form the basis of the workshop session at this year's RTMF, and will lead to the publication of a revised FAD handbook which will provide a practical guide to the all technical aspects of FAD site selection, mooring calculation, component selection and rigging, and deployment. It will also incorporate the latest knowledge in important aspects of FAD-programme initiation, management and exploitation.

Remote Sensing Project

152. Along with other parts of the Commission, the Fisheries Programme has become increasingly interested in the use of remotely sensed data for resource assessment purposes. This is particularly useful in difficult or inaccessible areas, or those that are too large to allow cost-effective surveying by conventional methods.

153. As well as having experimented with the use of remotely sensed data in one filed project (Palmerston survey in 1988), the Inshore Fisheries Research Project is presently involved in two further exercises to test the usefulness of this technology for marine resource assessment. In addition, IFRP staff have been instrumental in developing a proposal to carry out a feasibility study examining the Commission's remote sensing needs in more detail. This is discussed more fully in WP.16.

Regional Small-scale Purse Seine Test Fishing Project

154. The development of a trial purse seine test fishing project was approved in principle by the Twenty-eighth South Pacific Conference, pending review by the Twenty-first Regional Technical Meeting on Fisheries (1989) and final approval by the Twenty-ninth South Pacific Conference. A four-phase approach was adopted for the definition and implementation of this project. Phase 1, comprised preliminary consultations to determine country needs and biological and technical constraints, was completed in 1988. Phase 2, which includes the preparation of detailed proposals for funding, to be submitted to the European Economic Community, was completed in 1989 with the approval of the final project proposal by the Twenty-ninth South Pacific Conference. During Phase 2, study missions were undertaken to countries not covered by the Phase 1 consultations which expressed interest in the project. Phase 3 will see the implementation of the project as soon as suitable funding is confirmed. Phase 4 - Project implementation.

155. The project document was approved by the 1989 South Pacific Conference in Guam and was one of two fisheries projects submitted by SPC to the Eighth Pacific ACP Council of Ministers Third ACP/EC joint meeting (2-4 April 1990) for funding consideration under Lome IV.

Grants and assistance for research, study visits, and expert consultations.

156. Over the past twelve months fisheries staff have also contributed to a number of assistance programmes provided for under the following SPC Grants in aid programmes. Accounts of various of these undertakings in which SPC fisheries staff have been directly involved in a field role have been given under the relevant work programme sections. Other fisheries related activities under these programmes in which Fisheries staff have advised include:

Short-Term Experts and Specialist Services

Palau

157. The Republic is presently undertaking a major FAD programme in collaboration with the Palau Community Action Agency and with core funding from the National Marine Fisheries Service. The SPC contribution involves funding for the provision of a FAD expert to advise in the procurement phase and to train personnel of Palau's Marine Resources Division in the technical aspects of successful rigging and deployment. It is expected that the first deployments will take place shortly.

Inter-Territorial Study Visits and Travel Grants

Guam

158. As part of its efforts to revitalise the activities of the Guam Aquaculture Development and Training Center (GADTC), the Government of Guam requested SPC support for the visit of a GADTC staff biologist to the Institut Français de Recherche l'Exploration de la Mer (IFREMER) in Tahiti, French Polynesia, to study the Institute's penaeid shrimp production facility and techniques. The visit was undertaken in March and April by GADTC staff member Andrew Torres and has subsequently resulted in his completion of a practical manual on *Macrobrachium rosenbergii* post-larval production.

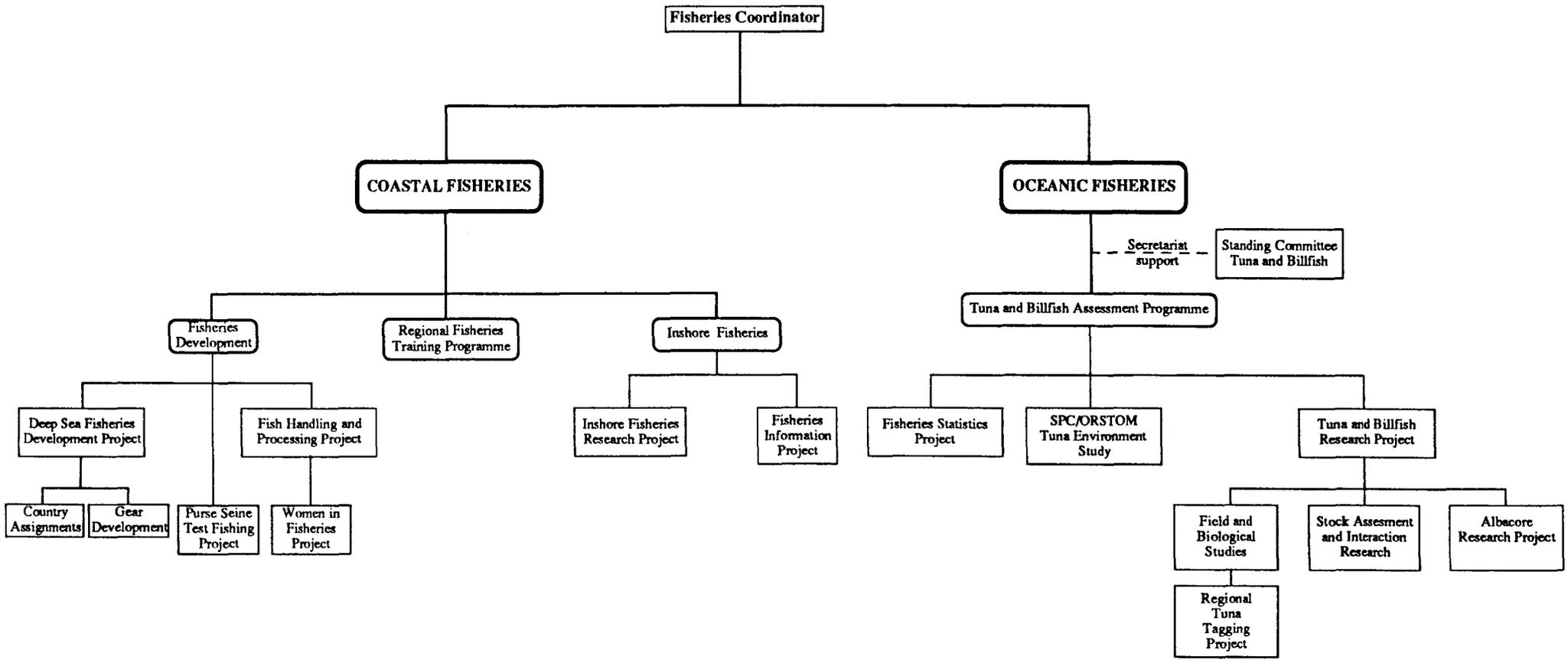
Tuvalu

159. In support of efforts to establish dried fish production at community fishing centres on Nukufetau and Nanumea atolls, the Government of Tuvalu requested SPC funding for the attachment of Fisheries Extension Officer, Satalaka Petaia to a similar project being conducted in Tokelau under SPC's Fish Handling and Processing Project. This attachment has been approved, but delayed due to cyclone damage in Tokelau.

Assistance to Applied Research Experiments and Fieldwork

American Samoa

160. A small grant was made in response to an application by the Government of American Samoa for research funding to investigate the use of alternative fish species and plant feeds for aquaculture production in support of that government's Integrated Agriculture - Aquaculture Programme.



**CURRENT STAFF LISTING - SPC FISHERIES PROGRAMMES
(1989/1990)**

Fisheries Coordinator
Secretary

Bernard Smith
Helen Wolfgramm-Page

COASTAL FISHERIES

Inshore Fisheries Research Project

Senior Inshore Fisheries Scientist
Inshore Fisheries Scientist
Project Assistant

Garry Preston
Paul Dalzell
Kay Legras

Fisheries Information Project

Fisheries Information Officer

Jean-Paul Gaudechoux

Deep Sea Fisheries Development Project

Fisheries Development Officer

Project Assistant
Masterfisherman
Masterfisherman
Masterfisherman
Consultant Masterfisherman

Paul Gates (12/04/89-26/10/89)
Peter Cusack (started 31/05/90)
Marie-Ange Bao
Paxton Wellington
Tuainetai Rata
Paul Mead (ended 31/12/89)
Peter Watt

Fish Handling and Processing Project

Fish Handling and Processing Officer

Steve Roberts

Regional Fisheries Training Programme

Fisheries Training Officer
Assistant Fisheries Training Officer
Project Assistant

Alastair Robertson
Michel Blanc (started 05/05/90)
Pauline Wagabuli (started 23/07/90)

TUNA AND BILLFISH ASSESSEMENT PROGRAMME

Chief Fisheries Scientist

Antony Lewis

Tuna and Billfish Research Project

Principal Fisheries Scientist

John Hampton

Senior Fisheries Scientist

Vacant

Senior Fisheries Scientist

Vacant

Fisheries Scientist

David Itano

Fisheries Scientist

Kevin Bailey

Systems Manager

Jeffrey Stander

Secretary

Patricia Townsend

Project Assistant

Vacant

Fisheries Statistics Project

Fisheries Statistician

Timothy Lawson

Assistant Fisheries Statistician

Peter Williams

Programmer/Research Officer

Russell Price

Data Entry Technician

Helene Ixeco

Data Entry Technician

Nathalie Lemelse (ended 10/07/90)

Regional Tuna Tagging Project

Fisheries Research Scientist

Joel Opnai

Fisheries Research Scientist

Benoit Caillart (ended 17/07/90)

Experimental Officer

Felipe Viala

Experimental Officer

Etimoni Palu

Fisheries Research Officer

Veronica Logez

South Pacific Albacore Research Project

Senior Fisheries Scientist

Vacant

Fisheries Scientist (Albacore)

Vacant