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(Noumea, New Caledonia, 1 - 5 August 1988)

SUMMARY REPORT OF THE SOUTH PACIFIC COMMISION 1987/88 ACTIVITIES UNDER THE FISHERIES WORK PROGRAMME

(Paper prepared by the Secretariat)

INTRODUCTION

1. The activities of the South Pacific Commission in the development of fisheries throughout the region, covering the period August 1987 to June 1988, will be reported in detail under Agenda item 6. A summary is presented here to facilitate discussion.

2. The 1987 Regional Technical Meeting on Fisheries (RTMF), recognising the increasing interdependence of the two major fisheries programmes, the Tuna and Billfish Assessment Programme (TBAP) and the Coastal Fisheries Programme (CFP), recommended that a Fisheries Coordinator be appointed to provide overall coordination and direction to SPC fisheries activities, and passed a further eleven recommendations aimed at improving the responsiveness and effectiveness of SPC projects. These were endorsed by CRGA and adopted by the 1987 South Pacific Conference. Having due regard to the concerns expressed by delegates to the above meetings, the Secretariat reviewed the existing staff structure and activities with a view to further improving the technical services provided to member countries through the more effective utilisation of existing resources. After careful consideration, a revised programme structure has been adopted. Action taken in this regard was reported to CRGA 9 in May (see WP.1) and will be discussed in detail under Agenda item 5.

3. Following the Conference decision to establish the Fisheries Coordinator post, and in order to ensure continuity, the Fisheries Adviser assumed the responsibilities of directing the Tuna and Billfish Assessment Programme as well as the Coastal Fisheries programme. With the new structure of the fisheries programmes finalised in late April, he was subsequently appointed to the post in May.

4. The SPC Fisheries Programme comprises six major projects as listed below and activities undertaken during the last twelve months are reported by individual projects.

- Regional Fisheries Training Project
- Fish Handling and Processsing Project
- Deep Sea Fisheries Development Project
- Inshore Fisheries Research Project
- Tuna and Billfish Assessment Programme
  - Tuna and Billfish Research Project
  - Fishery Statistics Project

I. COASTAL FISHERIES PROGRAMME

5. This section of the Fisheries work programme includes several related projects whose combined aims are to assist the development of small- to medium-scale locally-based fisheries by programmes of formal and informal training, technical assistance in a range of harvest and post-harvest areas, and research and advice on aspects of resource management.

1) REGIONAL FISHERIES TRAINING PROJECT

General

6. Following the direction given by previous Technical Meetings, the Regional Fisheries Training Project has continued, throughout this year, to identify training requirements within the region which are not being addressed by existing training establishments or programmes and to develop effective responses to meet these needs using various training options, i.e. regional or sub regional training courses and workshops, in-country courses, or by arranging specialised attachments where appropriate. All SPC training activities are now co-ordinated under the auspices of the RFTP, which also responds to national and regional requests for assistance or advice within the broad area of general training. Core funding for this project is provided by the Australian Government with strong funding support from a wide range of donors for specific training activities. In addition, technical assistance usually in the form of specialist tutors and equipment support, was provided by a number of cooperating organisations and institutions.

Completed Activities

FAD Workshop

7. The FAD workshop was specifically initiated and designed to give technical personnel from Pacific Island countries who were directly responsible for the design (including ordering of materials), construction and deployment of FADs two weeks of extensive training, with emphasis placed on the exchange of experience, and the critical examination of individual country practices to identify errors which may lead to premature failure. In order to improve FAD deployment site survey techniques, a course segment in the understanding and use of deep water echo sounders was included. This used a Simrad echo sounder simulator and the on-board sounder of the deployment boat.

8. The workshop was largely practical in nature with the participants making and setting two permanent FADs and also deploying several practice FADs which could be retrieved and redeployed as required.

9. The workshop was hosted by the Kiribati Government and was run at the Marine Training Centre, Betio from the 26th of October to the 7th of November 1987, with nineteen participants from 16 countries attending. Funding for 15 participants and core course costs was provided by the Government of New Zealand, and FAO/UNDP Regional Fisheries Support Programme funded four other participants.

Regional Refrigeration Course

10. Following the success of the two refrigeration courses run in Rarotonga in 1985 and 1986 SPC received a request from the government of Papua New Guinea for a similar course mainly for Papua New Guinea participants. This was held at the National Fisheries College, Kavieng, from the 3rd of August to the 4th of December 1987 for eleven participants from PNG and six regional trainees.

11. Adopting the approach developed and used for the earlier courses, the eighteen weeks of training were broadly divided into two sections, with the initial nine weeks covering the fundamental refrigeration theory and practice including refrigeration equipment, components and tools; the second nine weeks were largely practical and included commercial service calls and supervised workshop experience with the repair of a variety of equipment. The course also included diesel maintenance and repair, electric repairs, and training in a variety of welding and soldering techniques.

12. The Papua New Guinea trainees were funded by the Government of New Zealand. The costs for the six regional students were covered by UNDP (1), CFTC (1), FAO/UNDP (2), and ADAB/SPC (2). FAO/UNDP met all costs associated with supplying the Senior Tutor Mr M. Vincent, and the Government of Papua New Guinea provided the use of the college and services of staff for administrative, teaching and support duties.

1988 SPC/Nelson Polytechnic Pacific Island Fisheries Officers Course

13. The ninth SPC/Nelson course was held from Monday 8th February to Friday 15th July 1988. The course commenced with an eighteen week section at Nelson where the participants studied a comprehensive range of subjects relevant to the practical work of a fisheries extension officer. This was followed by a five week practical fishing exercise at Palau. The Nelson section followed the usual course outline with the inclusion for the first time of basic tuition in the use of micro computers. Palau was a very effective venue for the practical training which allowed many of the trainees to study and practice fishing methods which they had not been exposed to in their own countries. As well as standard trolling, and various other line-fishing methods, the students were able to see or participate in mariculture activities, pole-and-line fishing, catching and holding livebait, greenstick trolling, and surface longlining for yellowfin. We would like to record our appreciation to the Government of Palau and especially the Chief, and Staff of the Marine Resources Division for their well organised, logistical and personal support, which ensured the success of this section of the course.

14. Funding for this course was supplied by the Government of New Zealand, FAO/UNDP, The Commonwealth Foundation, The Commonwealth Secretariat and the SPC.

Comprehensive Training Programme in Extension Skills

15. This training programme was developed over an extended period drawing on information obtained during SPC surveys of regional training needs, the Workshop on the Role of the Fisheries Extension Officer in Pacific Island Countries which was held at the 18th RTMF in 1986, and from experience gained in running a two weeks Extension Skills Section of a Catching Methods Course held at Suva in 1987. The approach adopted consists of a four week Stage 1 core course to train national trainers, followed by a series of Stage 2 courses conducted in-country by the national trainers, with the initial assistance of the core tutors. The purpose of this total training package is to create the infrastructure which will give all practising fisheries extension officers of the region the opportunity to obtain the necessary training to significantly improve their personal abilities in communication and extension skills, thereby greatly increasing their effectiveness as extension agents. At the completion of this project, participating countries should have one or more trained staff who can initiate their own courses, and pass on these skills over the longer term.

Stage 1 Extension Skills Course

16. This four-week course was held in Suva, Fiji from 11th April to 6th May 1988 and was the first step in training the trainers. The course was structured to give the participants two weeks initial training in the development of their personal communication and extension skills: afterwards, under supervision, they developed the syllabus and material for their own two week in-country courses. As part of the second stage activities participants also prepared a manual in extension and communication skills for Pacific Island fisheries extension officers, which will be used in all subsequent stage two courses. It will then be revised in the light of comments received during the operation of these courses, and printed for regional circulation.

17. The Stage 1 course was totally funded by the International Centre for Ocean Development. Tutorial support was supplied by three members of the Queensland Department of Primary Industries: these tutors will take turns in attending stage 2 courses in an advisory capacity.

Stage 2 Extension Skills Courses

18. The high levels of enthusiasm and skill which so characterised participants to the stage 1 course has ensured the quality of the manual and of stage 2 course materials and preparation. It is anticipated that this impetus will continue, and that all the stage two courses will maintain this high standard. All of these courses should be completed by the end of this year or early 1989. FAO/UNDP agreed to fund the stage 2 Fiji course, which has now been completed, and ICOD has very generously undertaken sponsorship of all remaining courses.

19. The Stage 2 Fiji course was very successfully run in Suva from 20th to 30th June by national trainers with the support of one QDPI tutor. The results of this will be reported briefly during the meeting. The schedule for remaining stage 2 courses is as follows:

FSM/Marshalls	August 1988.
Kiribati,Tuvalu,Cooks.	August 1988
Solomon Islands	November 1988.
PNG (Kavieng)	November 1988
PNG (Port Moresby)	December 1988
Vanuatu	Early 1989.

20. This training programme will make a significant impact on the effectiveness of fisheries extension in the region and go a long way to raising skills and knowledge in an area which has been identified by senior officers as needing attention. The regional Fisheries Training Project is already receiving enquiries from some countries regarding possible third stage activities. The form these would take will be addressed on an individual country basis.

Other Activities

21. A considerable amount of time was spent in developing a course of study in the use of micro computers and in researching participant needs and possible course structures for this. This course could have been run in May or August of this year but unfortunately funds were not forthcoming. It is possible that this will be implemented in cooperation with FFA and USP later this year as described in SPC/Fisheries 20/WP.8.

22. In cooperation with the Queensland Department of Primary Industries, and the Kiribati Fisheries Division, an attachment and course of study was organised for seaweed technician Mr Tikarerei Mwea to increase his knowledge and abilities in simple chemical oceanography, basic scientific experimental design, simple analysis and presentation of data, supervision of staff, and the preparation of scientific reports. This type of individually designed training, which included attachments integrated with class time at appropriate institutions, is very effective and in many cases would provide an attractive alternative to attendance at a more general overseas course during which considerable time can be spent learning subjects of marginal relevance, or taught at an inappropriate level.

23. In addition to these specific activities the programme responded to a range of questions regarding training and disseminated information on the subject by means of circular letters, etc.

2) FISH HANDLING AND PROCESSING PROJECT (FHPP)

24. During the year the Fish Handling and Processing Project (FHPP) finally established itself within the Fisheries Programme, following a disrupted start in 1986, and the recruitment of the replacement Fish Handling and Processing Officer (FHPO) in mid 1987. The project has progressed well, covering a wide and diverse range of activities, and next year should see further expansion based on the foundation now in place, with a series of in-country training courses scheduled, the preparation of three training video films, and with two regional proposals under development.

Advisory services

25. A number of country assignments were undertaken in response to specific requests and are briefly reported below.

(i) Cook Islands (Marine Resources) - advice on new refrigeration equipment for a fish handling and processing premises in Rarotonga, the layout of the equipment within the available building, and the modifications required to the building to bring it up to the standard expected of food processing premises. Detailed specifications were drawn up for all refrigeration equipment and stores, for tender documentation. Subsequently, critical reviews were provided for each of the tender bids received.

(ii) Palau (Marine Resources Division) - an evaluation of the procedures and facilities for the handling and processing of fish at the Palau Federation of Fishing Association's landing in Koror. The two-week assignment took place at the end of November 1987 and included a visit to the outer island of Peleliu. Recommendations were made for a major upgrade of the facilities in Koror for ice production, chilling, freezing and storing fish, and building structure and layout. Training courses for staff and fishermen were also recommended.

(iii) Kiribati (Fisheries Division) - technical comment on the plans for diversification of product being considered by Te Mautari Limited, South Tarawa. This proposal is linked with the Outer Island Commercial Fisheries Trial (a BDDP funded project). During the February 1988 assignment a visit to Butaritari, one of the outer islands chosen for the trial, was made to evaluate the site. Detailed recommendations were made on the proposed procedures, equipment, materials and training for staff.

(iv) Guam (Department of Commerce) - a brief review of the operations of the Guam Fishermens Cooperative was completed and a report submitted giving outline recommendations for upgrading and improving operations.

(v) Tuvalu (Fisheries Division) - a preliminary evaluation of the Fish Processing and Marketing Centre was undertaken and a report submitted as for above.

26. Short consultative visits were also made to Fiji, Vanuatu, Marshall Islands, Federated States of Micronesia, and Northern Mariana Islands to discuss national post-harvest fisheries needs and priorities with a view to identifying areas where the FHPP can best respond and assist with future national programmes.

27. Outstanding requests for assistance from the FHPP include processing and marketing assignments to Tonga, Tokelau, and Yap State, Federated States of Micronesia, and training courses for Truk State, Federated States of Micronesia and Papua New Guinea (FAO workshop). These will be implemented by the end of 1988.

Training

28. During country visits every effort was made to spend time with graduates of the 1986 SPC Regional Fish Handling and Processing course when they were contactable, to discuss their progress and to determine any further requirements and technical assistance. This was possible with graduates from Fiji, Vanuatu (2), Palau and Tuvalu, and it was pleasing to note that most are using the knowledge gained during this course and many are actually involved in the training of fisheries personnel at all levels. However, there is a recognised need to further assist graduates organise in-country training activities and to assist with the acquisition of the equipment and materials necessary for effective demonstrations and practicals.

29. Plans for the production of training materials include a series of training videos in a wide range of post-harvest fisheries topics. ICOD have generously agreed to fund the first series of videos which will cover on-board and on-shore chilling techniques for fish. Subjects to be covered by the following series include freezing, refrigerated store management, packaging, air-freighting, cured fish production, etc.

Information

30. An extensive information base has been building up quickly over the year so that detailed technical information and effective advice is available to countries as required. Data assembled range from bibliographic information on new and improved traditional processing and preservation techniques, quality assessment and assurance methods, processing equipment and materials (fish handling, refrigeration, processing lines, etc), packaging technology (consumer to airfreight packaging) and, training materials (manuals, videos, slides, etc). The revised edition of SPC Handbook "Beche-de-mer of the Tropical Pacific" is in the final draft form and will be available by the end of the year.

Other activities

31. The Seventh Session of the IPFC Working Party on Fish Technology and Marketing, Bangkok, was attended by the FHPO during April. Papers were presented to the meeting on the research activities of IPFC members in post-harvest fisheries.

32. Included in the itinerary to S.E. Asia were visits to INFOFISH headquarters in Kuala Lumpur, and the product development laboratories of MFRD/SEAFDEC (Marine Fisheries Research Department/South East Asian Fisheries Development Centre), in Singapore.

Future directions

33. All country visits and assignments gave invaluable background to the needs of countries in Fish Handling and Processing and stimulated requests for further assistance. Problems that need attention can conveniently be put into two groups: problems common to most countries which can best be addressed at a regional level; and the diverse problems specific to the situation in each country. Problems specific to individual countries are being dealt with as and when requested, and within the constraints of the the FHPP work programme, will continue to be given the highest priority.

34. Since its inception in 1986, this project has been generously funded by the New Zealand Government. The UK Government has indicated its interest in funding the extension of this project for the next three years.

3) DEEP SEA FISHERIES DEVELOPMENT (DSFD) PROJECT

Staff

35. The staff resources of the DSFD Project underwent a certain degree of evolution in the last 12 months. With the transfer of former Assistant Fisheries Officer (AFO) to the Inshore Fisheries Research Project, the job description of the AFO post was revised to focus more specifically on the management and support of the DSFD project, and re-designated Fisheries Development Officer (FDO). The post was advertised in November 1987 but the recruitment process has been protracted for a combination of reasons. An appointment has now been made, with the incumbent to take up position in November. In the meantime, the Senior Inshore Fisheries Scientist continues to assume responsibility for DSFD Project management, with some assistance from the Fish Handling and Processing Officer since early June 1988 when the reorganisation of the Fisheries Programme brought the FHP Project and the DSFD Project into closer association.

36. The Project's field staff in 1987/88 consisted of three Master Fishermen for most of the year. In the second quarter of 1988, a short overlap period occurred when four MFs were operational.

37. Appointments to the extra-budgetary positions of fourth Master Fisherman and Project Assistant were not possible because of the withdrawal of promised extra-budgetary funding support. This had had serious implications for the Project's ability to meet existing commitments to member countries, and for progress on the backlog of Project country reports and technical documentation (see later). The Commission is attempting to locate extra-budgetary funds to allow appointments to these two posts as soon as possible.

Country assignments

38. During the last 12 months, the DSFD Project has operated in 5 countries : Federated States of Micronesia, (two visits, one to Kosrae and one to Truk), Tonga (Gear Development Sub-project - see below), Palau, American Samoa and Papua New Guinea. Details of the work undertaken are given in Table 1.

39. Several country requests for assistance under the DSFD Project, including those from Kiribati, New Caledonia, the Northern Marianas, and Wallis and Futuna, are still outstanding. The funding difficulties described in para 37 have made it difficult for the Commission to respond rapidly to country requests.

40. The project has now completed 47 country assignments since its inception in 1978, with two (Truk and Papua New Guinea), plus the Gear Development Sub-project (Tonga) still continuing. Demand for the services of the Project's Master Fishermen remains strong, and the complexity of the tasks demanded of them continues to increase.

Training

41. Training remains an important element of the Project activities. Three country assignments (Kosrae, American Samoa, and Papua New Guinea) had formal or extension training as a major focus. Counterpart training made up an important element of these and all other field activities.

42. Withdrawal of extra-budgetary funding made it impossible for the Commission to carry out its plan to organise four substantial training attachments per year, despite a number of requests for this type of training by member countries. Only one attachment has so far been carried out this year (Cook Islands Fisheries Officer Richard Story spent one month with Paul Mead in Tonga) with funding provided by the FAO/UNDP Regional Fishery Support Programme.

Table 1 : DEEP SEA FISHERIES DEVELOPMENT PROJECT ACTIVITIES 1 August 1987 - 31 July 1988

Country, dates Master Fisherman	Primary Ojectives	Activities of Master Fisherman
Tonga September 1986 - continuing P. Mead	Fishing Gear Development Sub-project	Deployment of a variety of types of Fish Aggregation Device. Development of a number of fishing techniques, including deep-trolling, bottom longlining and small-scale bait netting.
Federated States of Micronesia (Kosrae) June - December 1987 A. Moana	Training	Training programmes for operators of fishing catamarans newly delivered under Japanese aid.
Palau October 1987 - June 1988 L. Chapman	Seamount survey/ Exploratory fishing	Trial sounding to locate offshore seamounts. Deep-bottom fishing for comparison with previous project fishing results.
American Samoa January - June 1988 A. Moana	Training/survey fishing	Demonstration of vertical longline fishing to OMWR staff and local fishermen. Exploratory deep-bottom fishing in Manu'a group.
Papua New Guinea March 1988 - continuing P. Wellington	Training/ exploratory fishing	Survey fishing and demonstration of deep-bottom fishing methods to local fishermen in Oro Bay and Rabaul. Practical training at Kavieng National Fisheries College
Federated States Micronesia (Truk) June 1988 - continuing L.Chapman	Exploratory fishing/ demonstration	Survey of deep-bottom fishing areas around Truk. Demonstration of deep-bottom fishing techniques to local fishermen.

Reporting

43. The delay in appointment of the Fisheries Development Officer and the withdrawal of extra-budgetary funding support for the Project Assistant position, has meant that progress with clearing the backlog of DSFD country reports has not been as great as expected. However, savings on some budget items permitted the Commission to appoint a temporary technical writing consultant to work specifically on these publications as of June 1988. Funds for temporary secretarial support have also been identified. The Secretariat anticipates clearing most of the backlog by November 1988.

44. The long awaited Handbook on Trolling Techniques for the Pacific Islands was published late in 1987 and distributed in the region early in 1988. The handbook is for use in SPC and national fisheries training and extension programmes, and for distribution to bona fide fishermen in the region. A companion volume on deep-bottom fishing is in preparation and should be published before the end of 1988. Two further handbooks are under consideration, one on small-scale bait capture methods, and a revised version of the now out-of-print Handbook on FAD Construction and Deployment. This will be expanded to include recent information on shallow water moorings, FAD research results, and appropriate FAD-fishing techniques, and will be re-designed in the style of the Trolling Handbook. The production of these two publications will depend on other work priorities, and on the location of extra-budgetary funding support for them.

45. A number of technical reports are also planned for 1989, on deep-trolling, vertical longlining, and bottom longlining. These will have as a focus the work of the Gear Development Sub-project in Tonga, but will also draw together the results of trials of these techniques during routine Project country visits over the past 5 years or so. They will also attempt to include the results of relevant non-SPC fishing trials.

4) INSHORE FISHERIES RESEARCH PROJECT (IFRP)

46. The IFRP technically began its activities in January 1988 with the transfer of the then Assistant Fisheries Officer to the post of Senior Inshore Fisheries Scientist. The positions of Inshore Fisheries Scientist and Fisheries Information Officer, are presently under recruitment. The post of IFRP Project Assistant was taken up by the previous Assistant to the Regional Fisheries Training Project in February 1988.

Workshop on Pacific Island Inshore Fishery Resources

47. Because IFRP staffing levels were not at full strength, a consultant workshop co-ordinator was hired for 4 months to assist in organising and running the above activity. The 2-week workshop, which was run from 14-25 March 1988 was considered as the inaugural activity of the IFRP and proved to be the major information exchange anticipated by the Secretariat. Over 100 participants presented or tabled more than 150 papers on a wide variety of technical topics relating to the study, assessment and management of inshore fishery resources in the tropical Pacific. A synthesis of the main points emerging from the presentations and discussions was circulated as an information release in April 1988, and has also been distributed at this meeting. A full report of the workshop was circulated in June, and copies are available from the Secretariat. In the second half of 1988 it is planned to use groups of selected workshop papers as a basis for a number of resource reviews on selected topic areas (deep-water fish: reef and lagoon fish: mollusc resources: etc). These publications will also include transcriptions of the discussion sessions from the workshop, bibliographic information, and other materials solicited to complement the reviews.

48. The workshop also allowed the establishment of many formal and informal contacts which will greatly aid the flow of technical marine resource information and advice throughout the region. This network will now be strengthened by the formal establishment of a number of special interest groups on marine resources. A questionnaire seeking detailed information on major areas of interest was circulated in June. Working Paper 3 presents more information on the aims and functions of the special interest groups.

49. One of the most important outputs of the workshop was the identification by Pacific Island participants of the major areas of inshore fishery research needs in the region. A listing of priority areas of attention for the IFRP and other regional organisations was developed after two extra-plenary meetings of Island participants, and one formal session during the Workshop proper. Detailed comment on each of the priority areas identified is presented in WP.7

Country projects

50. Among the major functions envisaged for the IFRP were the provision of assistance to SPC member countries in planning, executing and reporting on projects aimed at gathering and interpreting the information required for effective management of Pacific Island inshore marine resources. A number of such projects are now under development in conjunction with national fisheries departments or their equivalents, and will be carried out in the second half of 1988. These are:

- Resource survey of Palmerston Island, Cook Islands (September/October)

- Study of Beche-de-mer stocks in Fiji (October/November)

- Development of a ciguatoxicity testing protocol for export fish in Federated States of Micronesia (November/December)

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

52. An additional activity, which has been transferred from the Deep Sea Fisheries Development Project is the analysis of deep-bottom fishing catch and effort data from previous DSFD country visits. Work is expected to commence in earnest on this activity when the position of Inshore Fisheries Scientist is filled.

Training

53. Emphasis will be given to attachment training during all field work undertaken by the IFRP. Provision for the attachment to up to four fishery scientists from other countries of the region has been made as part of the Palmerston Island survey mentioned above.

54. Two substantive training programmes are under development and will be conducted in late 1988/early 1989. These are:

- Training workshop on visual assessment of reef and lagoon fish (in conjunction with James Cook University and the University of the South Pacific);

- Training in analysis and interpretation of SPOT satellite data for marine resource assessment (in conjunction with ORSTOM).

55. Some countries have requested training attachments based at SPC headquarters to improve the skills of national scientists. These requests will be met as required. When possible attachment trainees will be encouraged to work on research problems or projects of direct relevance to their home countries.

II. OCEANIC FISHERIES - TUNA AND BILLFISH ASSESSMENT PROGRAMME

56. As part of the restructuring of SPC fisheries programmes (SPC/Fisheries 20/WP.1), two projects have now been defined within the Tuna and Billfish Assessment Programme (TBAP), the Fishery Statistics Project and the Tuna and Billfish Research Project. These projects, while interacting to a large extent, reflect the two basic types of work undertaken by the TBAP: (i) the collection, processing and dissemination of fisheries statistics pertaining to tuna and billfish stocks in the SPC region; and (ii) the conduct of a programme of scientific research on those stocks. The activities of both projects remain focussed on the priority tasks defined in the TBAP mission statement approved by the 19th RTMF and progress is reported on this basis.

1) FISHERY STATISTICS PROJECT (FSP)

Maintenance of Regional Oceanic Fisheries Data Base.

Coverage

57. Since its inception, the TBAP has compiled a database on tuna fisheries in the region. The main sources of data have been daily catch and effort logsheets submitted to SPC by member countries: The logsheets have been obtained either from distant-water fishing nations (DWFNs) under access agreements, or from vessels operating locally. SPC/Fisheries 20/Information Paper 2 presents a catalogue of data currently held by SPC.

58. Catch and effort data for vessels fishing in the region during 1987 were received from the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, Palau, Papua New Guinea, Solomon Islands, Tuvalu, Tonga and Vanuatu. In addition, a backlog of data for Japanese and South Korean longliners, for 1984-1986, was received from French Polynesia. During the past year, 35,439 records were added to the database, to give a cumulative total of 244,511 records for all logsheet data.

59. More so than in other ocean areas, the collection of logsheet data on tuna fishing activities for both DWFN fleets and local vessels in the SPC region has been difficult. For DWFN vessels, logsheets are only submitted under access agreements; data on activities in high seas areas inside the region are lacking. For certain DWFNs, logsheets are not supplied for all vessels, even though in principle they must be provided under the conditions of access.

60. In spite of the limitations with logsheet data, ordinarily it would be a straightforward task to determine rough estimates of the total catch in the region from the logsheet data, if the total effort for the individual fleets, and thus coverage rates, were known. However, even this basic information is missing for most DWFN fleets in the western and central Pacific. Nevertheless, the TBAP has undertaken to determine coverage rates using information on the number of vessels active in the SPC region obtained from a variety of sources. For 1987, it is estimated that logsheets submitted to SPC represent roughly 50 percent of the total purse seine effort in the SPC region (including high seas areas), 10 percent of longline effort and 20 percent of pole-and-line effort. The low coverage rates, particularly for the longline and pole-and-line fleets are of concern, and need to be improved for better estimates of total catch and effort.

61. Coverage rates for purse seine vessels are expected to increase markedly over the next year, with approval being given to the Forum Fisheries Agency by its members to transfer data collected under the Multilateral Treaty on Fisheries with the United States to the SPC.

62. Based on the logsheet data received and the estimated coverage rates, the total tuna and billfish catch for the region in 1987 is estimated to be approximately 657,000 t, consisting of 384,000 t by purse seine, 156,000 t by longline and 118,000 t by pole-and-line. More detailed catch statistics for 1987 are given in SPC/Fisheries 20/WP.10.

Database management

63. The database was transferred to the TBAP's new HP9000 minicomputer from the old HP1000 in mid-1987. Further modifications to the database were carried out when a hardware upgrade was implemented in March 1988.

64. An evaluation of database software for the HP9000 was conducted in late 1987. Of the four packages that were examined in detail (INFORMIX, INGRES, ORACLE and UNIFY), ORACLE was selected as the most appropriate for the TBAP. Advantages of ORACLE include: (1) has a wide user base; (2) has impressive support services; (3) satisfies all essential requirements of the TBAP; (4) has a large number of additional features; and (5) will be compatible with the computer system at the Forum Fisheries Agency. A technical report on the evaluation can be made available on request. It is anticipated that ORACLE will be fully implemented and operational on the HP9000 by December 1988.

65. Development of a tuna database system for microcomputers began in late 1987; programmes in dBASE III Plus were written for two HP Vectra microcomputers. The principal reason for having the database on microcomputers is that subsets of the database containing a member country's data can be made available to be installed in-country.

Output

66. On a regular basis, data submitted to SPC by member countries are processed, usually within a week, then a report summarizing catch statistics per vessel trip is sent back to the country. A summary of trips processed and reported back to countries during 1987 is given in Table 1. The format of the trip reports has recently been revised to include additional information and to improve legibility. Catches within EEZs are now reported, and summary tables listing statistics for ports of unloading and for vessel size classes are now available.

67. In an effort to disseminate the results of its statistical activities, the TBAP has begun producing the SPC Regional Tuna Bulletin; the first edition of the Bulletin was prepared for the First Quarter 1988. In its present form, the Bulletin presents the most recent data available on catch rates for purse seiners, longliners and pole-and-line vessels operating in the region. Statistical tables on data coverage and estimates of total catches within the region are also reported, and a section is included containing news on ongoing tuna research programmes. A draft of the first edition of the Bulletin is contained in SPC/Fisheries 20/WP.10.

Table 2. Summary of vessel trips in 1987, processed by the Fishery Statistics Project.

Vessel flag	Gear	Country supplying data: Cook Islands	Fiji	Federated States of Micronesia	Kiribati	Marshall Islands	Palau	Papua New Guinea	Solomon Islands	Tonga	Vanuatu	Total
Cayman Islands	PS				2			1				3
Fiji	PL		23									23
Indonesia	PS			11				8				19
Japan	LL			404	24	105	7	12	18			570
	PL		15	89	71	127	17	1	4			324
	PS			196				55				251
Korea	LL	8			33							41
	PS			28	2			27				57
Panama	LL	2			7							9
Philippines	PS							10				10
Taiwan	LL			85							1	86
	PS			35				37				72
Tonga	LL									9		9
United States	PS			5	13			5				23
Vanuatu	PS			4				5				9
TOTAL		**10**	**38**	**857**	**152**	**232**	**24**	**161**	**22**	**9**	**1**	**1506**

68. Four requests have been received by the TBAP to install in-country subsets of the tuna database. The first installation is to be carried out at the Federated States of Micronesia Marine Maritime Authority. The in-country system is user-friendly and no programming knowledge is required. A menu-driven interface allows for various types of reports, such as trip reports and tables of monthly catch statistics, to be produced when required, and maps depicting the location of fishing effort by one-degree squares within the country's EEZ can be drawn. Additional reporting and mapping programmes are supported on a request basis. Logsheets are still submitted to and processed by SPC; the in-country database is updated from diskettes sent from SPC Headquarters upon completion of data processing.

69. In addition to the regular output discussed above, a number of ad hoc requests for statistical information were received in the past year from the Federated States of Micronesia, French Polynesia, Kiribati, Papua New Guinea and Vanuatu.

Training attachment - Palau

70. As a follow-up to the earlier evaluation of Palau's fisheries data collection programme, Ms Evelyne Oiterong, Fisheries Statistics Officer with the Division of Marine Resources (DMR), undertook an attachment training programme with TBAP from January 10 to February 29 1988. The programme included two short courses (4 hours each) in Guam on computer basics, and 6 weeks in Noumea. DMR is converting from an Apple II computer to an IBM compatible system, so existing data were reformatted for the new system, and a suite of data entry routines and report programmes created. The actual training focussed on the management of data on micro computers, and the development of proficiencies in all new programming aspects of the dbase III software package. All travel costs associated with this attachment were funded by the FAO/UNDP Regional Fisheries Support Programme.

2) TUNA AND BILLFISH RESEARCH PROJECT (TBRP)

Assessment of interaction between fisheries for oceanic species.

71. The study of fishery interaction remains the primary focus of the Tuna and Billfish Research Project. SPC/Fisheries 19/WP.5 reviewed the subject of fishery interaction in some detail, and provided a summary of previous work carried out by the TBAP. The major conclusions of this review were that (i) there is little potential for skipjack fishery interaction between widely separated countries, although interactions on smaller geographic scales in areas of locally intense exploitation are certainly possible, and (ii) interaction between purse seine and longline fisheries for yellowfin is potentially very important, however there are few data on which a thorough analysis could be based at this time.

72. There are a number of ways in which the study of fishery interaction can be pursued; these are reviewed in SPC/Fisheries 20/Information Paper 5. The Tuna and Billfish Research Project has made substantial progress in each of these areas during the past year.

Interactions between purse seine and longline fisheries for yellowfin as implied from catch and effort data

73. Purse seine catches of skipjack and yellowfin in the western Pacific have increased from only a small amount in 1978 to an estimated 384,000 t in 1987. The fishery is concentrated in waters between 10°N and 5°S between Palau and Kiribati, with much smaller catches being taken in the eastern and southern waters of the SPC region. Longlining, for which yellowfin is the principal species, is more widely distributed, although again there is some concentration of activity in equatorial waters between 130°E and 180°E/W.

74. The potential for a large-scale interaction between purse seine and longline gears has important implications for many Pacific Island countries, particularly those that receive substantial access fees for licensing distant water longline fleets to fish in their EEZs.

75. SPC (1985)* compared Japanese longline catch rates for yellowfin in areas of differing purse seine intensity. However no significant effect of purse seine catches on longline catch rate could be detected. Because substantially more data are now available, the TBAP has reviewed Japanese longline and purse seine catch and effort data from the point of view of detecting interaction (SPC/Fisheries 20/WP.17).

Use of length-frequency data in detecting fishery interaction

76. Gross catch and effort data can be augmented with length-frequency data to provide more information on fishery interaction. The Tuna and Billfish Research Project has carried out a preliminary analysis of length frequency data from the Solomon Islands pole-and-line and purse seine fisheries to assess their suitability for studying fisheries interaction. A detailed account of this study is provided in SPC/Fisheries 20/WP.4.

77. The major conclusions of the study were that the purse seine and pole-and-line fleets appeared to be fishing common stocks of skipjack and yellowfin, but differences in size-specific vulnerability of the fish to those gears resulted in purse seiners catching slightly larger fish of both species than pole-and-line vessels. If length-frequency data are combined with data on total catch by gear type, it is possible to calculate size-specific fishing mortality rates for each gear type. From this, estimates of the effect on yield-per-recruit of one fishery caused by changes in the catch of the other fishery could be made. In addition, the desirability of targeting on different sizes of fish in either of the fisheries could be investigated.

Regional Tuna Tagging Project

78. The most detailed and specific information on fishery interaction is provided by tagging experiments. The SPC's Regional Tuna Tagging Project has been designed to provide information on yellowfin and skipjack population dynamics that will be essential for the assessment of a number of important potential fishery interactions, including yellowfin purse seine/longline interactions and interactions of national industrial and artisanal fisheries with DWFN surface fisheries. The project is now in the final stages of approval, and will attract in excess of US $4 million in funding from the EEC.

79. The Tuna and Billfish Research Project has now begun detailed planning of field operations, due to begin in early 1989. To this end, a consultation involving tuna experts and various fisheries officers from the region was held in Noumea during the Workshop on Pacific Inshore Fisheries Resources in March. As a result of this consultation, the project proposal was re-written and re-budgeted and an operational plan developed. A summary of the proposal is provided in SPC/Fisheries 20/WP.5.

In-country tagging activities

80. Although the Regional Tuna Tagging Project will carry out a substantial part of its work in locally based industrial and artisanal fisheries, efforts have continued to provide and develop national projects within a regional framework. In particular, a proposal has been developed in consultation with the Solomon Islands Government for an investigation of the fishery interactions and population dynamics of skipjack in that country's waters. It had been intended to carry out this project in 1988, however delays with funding have necessitated its postponement to late 1988 or early 1989.

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* SPC (1985). Yellowfin tuna catch rates in the western Pacific. SPC/Fisheries 17/WP.5, South Pacific Commission, Noumea, New Caledonia.

81. A trial tagging project was undertaken in Kiribati in May 1988 using local artisanal skiffs as tagging platforms. A detailed report of the trial is contained in SPC/Fisheries 20/WP.6. The objective of this pilot study was to examine the feasibility of using small boats for in-country tagging activities, either as part of the regional project or as dedicated specific purpose exercises. The trial was an unqualified success, with 503 tuna (371 skipjack, 115 yellowfin, 17 bigeye) being tagged and released in six days, indicating that this type of activity could be valuable in future tagging projects.

Next steps

82. Most of the efforts on fishery interaction over the next three years will be directed towards the Regional Tuna Tagging Project and associated in-country tagging projects. In addition, attempts will continue to be made (through the Standing Committee on Tuna and Billfish) to collaborate with Japanese scientists on a joint analysis of skipjack tagging data and Japanese pole-and-line and purse seine fishery catch and effort data. Such an analysis would provide greater insights into skipjack movements and mortality, which are the key determinants of fishery interaction.

Assessing and monitoring the levels of exploitation of stocks of commercially important tuna and billfish species.

83. Assessment of the status of stocks continues to be an important activity of the Tuna and Billfish Research Project, and in fact, this activity overlaps considerably with those of the Fishery Statistics Project in maintaining the Regional Oceanic Fisheries Data Base.

Skipjack and yellowfin

84. Trends in catch-per-unit-effort for the major gear types are shown in Figure 3. The catch rate of skipjack by pole-and-line, if anything, appears to have been increasing in recent years, probably as a result of retirement of less efficient vessels from the Japanese distant-water fleet. The catch rates for skipjack and yellowfin by purse seiners are unremarkable, producing a fairly constant 15 and 5 t per day on average, respectively. However, for the longline fishery, catch rates for yellowfin appear to have been decreasing, while those for bigeye appear to have been increasing. On the basis of the data presently to hand, these changes cannot be totally explained by the tendency towards deep longlining that has occurred since about 1983.

85. There is, therefore, no indication that surface fishery catch rates of skipjack or juvenile yellowfin have been reduced by the large increases in the catches of both species that have occurred since the early 1980s. If catch rates can be interpreted as indices of abundance, this would imply that recruitment is stable and has not been adversely affected by any reductions in adult biomass that might have occurred. This advice must be tempered by the possibility that high catch rates have been maintained by increases in vessel efficiency. There is, however, some indication that the abundance of adult yellowfin may have declined; whether this has been primarily due to the activities of the purse seine fishery, the longline fishery, or a combination of both is open to question.

In-country assessments

86. The TBAP has undertaken to periodically review data on tuna fisheries that are provided by member countries. These reviews will take the form of country reports that will be confidential to the countries providing the data. The first of these reports, for Papua New Guinea, has been prepared and the results discussed with PNG fisheries officers during a recent visit by a TBAP scientist. Similar reports will be prepared in the near future for Solomon Islands, Kiribati, Federated States of Micronesia, Palau, Marshall Islands, Tuvalu, Cook Islands, French Polynesia and Fiji.

Billfishes

87. Following the recommendation of the last RTMF, Programme staff have devoted more time to the evaluation of billfish stocks. Responding to an invitation to participate in the second international billfish symposium held in Hawaii, a paper evaluating the adequacy of current billfish fisheries statistics for stock assessment and management purposes was prepared. This paper together with the agenda of the symposium is presented in SPC/Fisheries 20/Information Paper 1. Unfortunately the timing of the symposium conflicted with the RTMF, precluding attendance by a TBAP staff member.

88. All contributions will be published in a high-quality hardcover volume which will receive wide distribution among the scientific, political, educational and public interest sectors during 1989. The TBAP plans to make available copies of material relevant to the region and to summarise the conclusions.

Albacore

89. The role of the TBAP in South Pacific albacore research has been from the onset one of coordination. During the past year, the work has consisted of consultations with the agencies conducting the research, namely New Zealand MAF, NMFS and ORSTOM. SPC/Fisheries 20/WP.13 provides a progress report of the activities so far, including intelligence on the fishery.

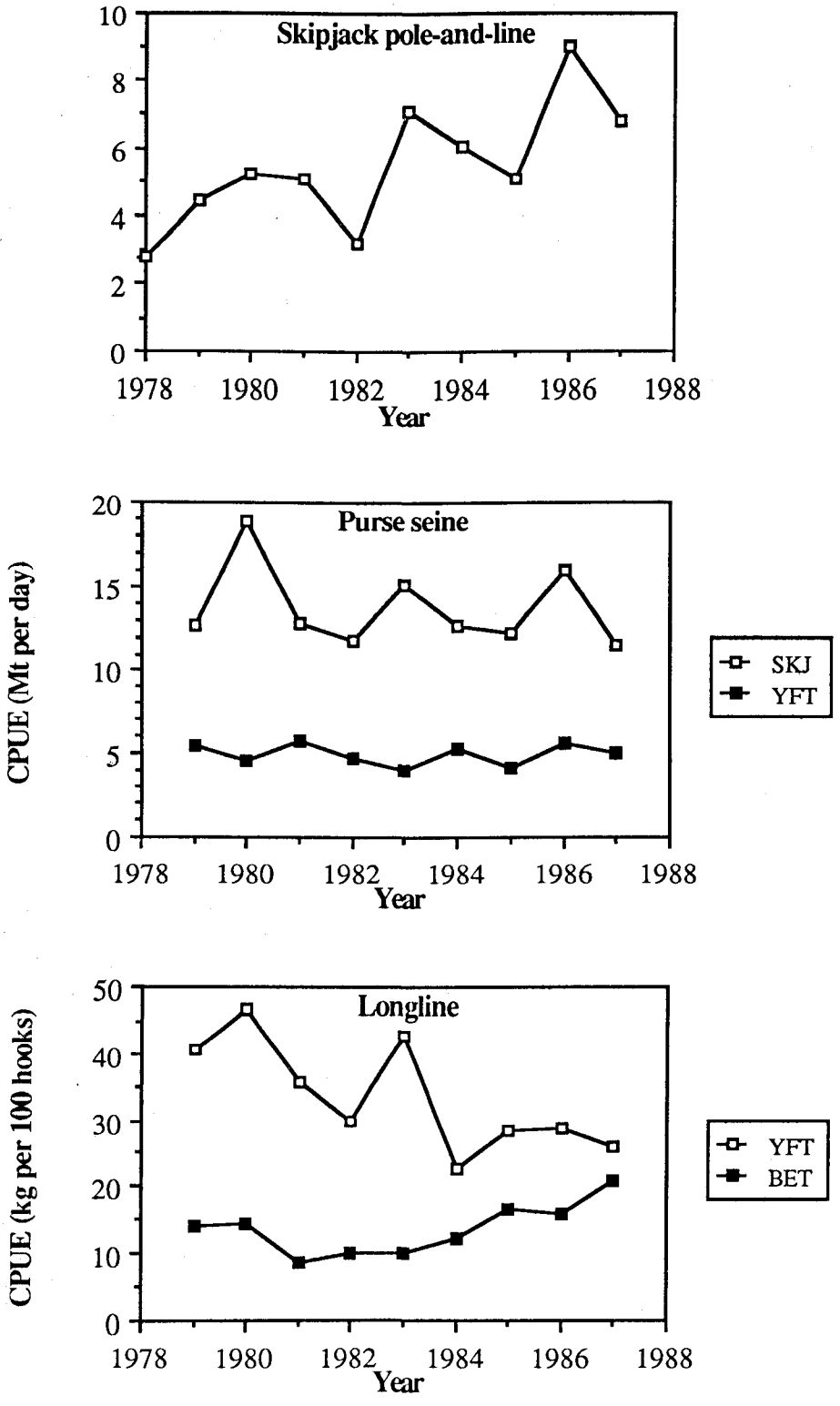
90. A second workshop concerned with data handling, data exchange protocols and future research needs is being planned for after the 1989 fishing season. The provisional agenda is included in SPC/Fisheries 20/WP.13.

Provision of fisheries observers and advice on development of observer programmes.

91. Activities under this priority have consisted of collaborating with the FFA on their programme of observer courses associated with the Multilateral Treaty on Fisheries with the U.S. Programme staff participated in the first of these held in Apia from 7 to 19 September 1987. Lectures were given on the biology of tuna, population dynamics, on-board sampling, collection of scientific data and catch statistics and basic observer duties. Background material and questions for practical and theory examinations were also provided. SPC has produced a length frequency log book and devised the on-board sampling procedures included in the observer manual.

92. It is anticipated that the TBAP will continue to work closely with the FFA on this activity, particularly with the processing of scientific data as soon as the cruises begin.

Figure 3. Catch rate trends for the major tuna fisheries in the region



Monitoring the use of fish aggregation devices.

93. The principal activity under this priority has been to produce a review paper for the habitat enhancement session of the Inshore Fisheries Resources Workshop, reviewing scientific and experimental results pertinent to the implementation of FAD programmes and to moderate the ancillary session. The outcome of the panel discussion was to encourage SPC to coordinate future activities, such as correlating traditional fishing lore concerning "tuna holes" with topographical or oceanographical features in order to investigate desirable attributes of FAD location. SPC has also undertaken to standardise future data collection procedures.

94. Following queries raised at the Workshop regarding FAD construction and deployment and the use of foam fillers for extra buoyancy, a fact sheet summarising the recommendations of a local technician and listing the suppliers of FAD hardware was prepared in collaboration with the Fisheries Training Officer and circulated to the workshop participants and elsewhere.

95. The optimisation of FAD deployment and exploitation continues to generate a lot of questions and the desirability of holding a comprehensive FAD workshop will be considered during the coming year.

Standing Committe on Tuna and Billfish

96. The inaugural meeting of the SCTB was held on 28-29 July 1988. The meeting was attended by representatives from a number of Pacfiic Island and Distant Water Fishing Nations, as well as by several technical experts. Research on tuna fishery interaction was reviewed and possible areas of collaboration discussed. The deliberations of the meeting will be reported under agenda item 8 (SPC/Fisheries 20/WP.15).

Study of the biology and ecology of commercially important tuna, billfish and bait species

Tuna/environment studies

97. The factors affecting the ORSTOM/SPC collaborative programme on tuna-environment interaction studies have changed since the last RTMF, and a number of objectives have been reviewed within the process of renewal of the Protocol of Agreement between the two organisations (cf. Appendix to the Protocol of Agreement).

98. The long-term goal (study of the impact of major climatic fluctuations in the SPC zone on the yields obtained by various tuna fishing methods) remains unchanged. The overall status of the programme has improved, despite recurrent staffing problems; the oceanographic data held by ORSTOM and the relevant software have been transferred to the TBAP's HP9000; the temporal sets of oceanographic parameters divided into rectangular grids (2° latitude x 5° longitude), which can be grouped to form bigger areas, have been established. The process of mapping catches and monthly units of effort in relation to significant sea surface parameters has, however, been delayed by software problems (ORSTOM's Contour programme has still not been adapted to the HP9000). Similarly, the study of correlation between raw CPUE figures and oceanographic parameters has been slowed for lack of time and programming support.

99. A new activity with a more immediate impact has been commenced: an oceanographic contribution both to the new country reports and to the Tuna Bulletin. This work draws on the oceanographic data base available at ORSTOM, the findings of international oceanographic expeditions carried out as part of the international TOGA programme and information gleaned from specialist scientific and technical publications.

100. After the major El Nino - Southern Oscillation (ENSO) phenomenon in 1982-83, the NOAA's Climate Analysis Centre (CAC) began publishing the Climate Diagnostics Bulletin, a monthly publication designed to provide the scientific community with an overview of climatic circumstances worldwide: maps and time series of various significant parameters (atmospheric pressure, Southern Oscillation Index (SOI), sea surface temperature at the equator, tradewind bearings and strengths, precipitation in the central Pacific) and anomalies in these (divergence from monthly means in the medium to long-term). An analysis of this information since August 1983 is in hand and will yield the foundation for an oceanographic article in the Regional Tuna Bulletin. In view of the interest in the ENSO phenomenon expressed by a number of member countries, a brief description of the 1986-87 event is presented in SPC/Fisheries 20/Information Paper 6.

III. INFORMATION SERVICES

101. The provision and dissemination of information is an important activity of the fisheries programme as a whole. The information function includes responding to requests for technical advice and documentation, forwarding relevant documentation to individuals or organisations with known interests, production of reports and technical documents by individual projects, and the publication of the SPC Fisheries Newsletter. These activities have continued during 1988, at a higher level than during previous years. Production of the Fisheries Newsletter continues to be hampered because of the heavy workload of the Programme, as well as a general overloading of the Commission's publication and printing services.

102. The need to upgrade the Fisheries Programmes ability to disseminate information more effectively has been recognised in the past, and addressed during the development of the Pacific Island Marine Resource Information System (PIMRIS), a joint SPC/USP/FFA activity. As part of its contribution to PIMRIS, the Commission will commence the cataloguing and computer indexing of all its marine resource-related literature holdings in September 1988. This will enable more rapid, automated location of reference material and will supplement the SPC library's present capability to carry out on-line searches in a number of major computerised bibliographic databases overseas.

103. The new position of Fisheries Information Officer is under recruitment and should be filled in late 1988. The Fisheries Information Officer will be active in collecting, repackaging and disseminating fisheries information both in a general sense, and to individual Pacific Island fisheries workers with known special interests. In addition, the Information Officer will coordinate a question-answer and advisory service in collaboration with other fisheries staff as well as taking over responsibility for the production of the Fisheries Newsletter and other information documents.

104. The establishment of special interest groups (see para 48) will play a major role in improving the dissemination of technical information on marine resources in the region and encouraging its exchange among individuals. The responsibility for maintaining the special interest groups will devolve on the Fisheries Information Officer when appointed.

IV. SPC GRANTS-IN-AID (FISHERIES)

106. **A. Inter-country study visits**

(i) FSM - Mr Pelson Moses fisheries officer travelled to the Cook Islands (dates) to study the pearl shell and pearl culture farming operations in Manihiki lagoon. Through the active support and assistance of the Cook Islands Department of Marine Resources, Mr Moses was able to participate fully in all activities associated with the study undertaken by pearl culture specialist Mr Hyuga.

(ii) Solomon Islands - Mr R. Seijama travelled to Suva to observe seaweed farming ventures and extension services in Fiji.

(iii) FSM - A period of attachment training for Fisheries Statistics Specialist Mrs S. Alik has been approved. Mrs Alik will travel to Noumea to work with staff from the Fishery Satistics Project.

107. **B. Short-term expert and specialist services**

(i) Guam - a study to advise the Government on the planned rehabilitation of the Guam Aquaculture Development and Training Centre to function as a production centre for Microbrachium and Penaeid post larvae, with a secondary role as a training facility. The study was carried our in February 1988 by Mr Jean-Louis Martin of IFREMER and Mr Virmaux of FRANCE-AQUACULTURE. A preliminary report was submitted before the consultants left Guam with the final report and detailed engineering drawings submitted later. The study was funded jointly by UNDP/ESCAP and IFREMER.

(ii) Fiji - former TBAP scientist Mr Charles Ellway spent 4 weeks in Suva assisting with planning and early implementation of a two-year yield assessment study of the deep bottom snapper fishery in Fiji. The consultant advised on sampling design and helped initiate the field sampling programme including the training of local technicians and government observers assigned to the project. It is anticipated that follow-up advice and assistance will be provided by scientists of the Inshore Fisheries Research Project.

(iii) Cook Islands - Mr Hyuga, a specialist pearl culture technician from Broome Pearl Traders visited Manihiki Island from late September through to November to assess the potential for the production of high grade pearls; to advise on culture production techniques for optimum yields, and to carry out a series of trial implantation operations on a number of local pearl farms. This programme was very successful, with 10,000 pearl shells seeded during his stay in Manihiki Manihiki atoll appears to be ideally suited to pearl culture, and while this will require further study, it appears possible that the lagoon could support a total of at least 100,000 pearl oysters to be operated each year. With first and second re-seeding of oysters and collection of spat in preparation for future seeding, this could result after five years in an extra 500,000 farmed oysters in the lagoon, over and above the wild stocks. If such numbers are handled correctly, this could result in a revenue of $5 million annually after a few years.

(iv) Palau - In December 1987, the Tuna and Billfish Assessment Programme, in response to an offical request from the Government of Palau, assigned a staff member to review the commercial fisheries data collection and statistical system of the Palau Marine Resources Division, (MRD). Part of this assignment was to establish basic methods and provide recommendations on collecting subsistence and artisanal fisheries information. Subsequently, SPC funded a two-week consultancy to initiate and assist with MRD's subsistence fishery survey project which commenced in June 1988. Mr Dave Hamm of the National Marine Fisheries Service was released to carry out this work. The project's main objective is to obtain production estimates from subsistence fisheries throughout the 16 States of Palau.

Appendix I

STAFF STRUCTURE - SPC FISHERIES PROGRAMME

Staff in post or under recruitment as of 31 July 1988 are listed below by project and post title.

1. Programme management and support

Fisheries Coordinator (Bernard Smith)
Secretary (Helen Wolfgram-Page)
Computer Systems Manager (Geoffrey Stander)

2. Tuna and Billfish Assessment Programme (TBAP)

Fishery Statistics Project (FSP)

Fisheries Statistician (Timothy Lawson)
Assistant Fisheries Statistician (Peter Williams)
Programmer/Research Officer (Samuela Taufao)
Data Entry Technician (Helene Hnepeune)
Data Entry Technician (Nathalie Baillon)

Tuna and Billfish Research Project (TBRP)

Chief Fisheries Scientist (under recruitment)
Senior Tuna Scientist (John Hampton)
Senior Fisheries Research Scientist (James Ianelli)
Fisheries Research Scientist (Richard Farman)
Consultant - SPC/ORSTOM Tuna Environment Study (Renaud Pianet)
Documents Officer (Veronica van Kowen)

3. Regional Fisheries Training Project (RFTP)

Fisheries Training Officer (Alastair Robertson)
Assistant Fisheries Training Officer (seeking extra-budgetary funding)
Project Assistant (Johanne Benoit)

4. Fish Handling and Processing Project (FHPP)

Fish Handling and Processing Officer (Stephen Roberts)

5. Deep Sea Fisheries Development Project (DSFDP)

Fisheries Development Officer (under recruitment)
Master Fisherman (Paul Mead)
Master Fisherman (Lindsay Chapman)
Master Fisherman (Paxton Wellington)
Technical Writing Consultant (temporary) (Peter Cusack)

6. Inshore Fisheries Research Project (IFRP)

Senior Inshore Fisheries Scientist (Garry Preston)
Inshore Fisheries Scientist (under recruitment)
Fisheries Information Officer (under recruitment)
Project Assistant (Kay Legras)