

SOUTH PACIFIC COMMISSION  
NINETEENTH REGIONAL TECHNICAL MEETING ON FISHERIES  
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SPC INSHORE FISHERIES RESEARCH PROJECT  
(Paper prepared by the Secretariat)

1. BACKGROUND

a) Definition of research

An appropriate broad definition of 'research' in the context of applied, development-oriented fisheries investigations is given in 'Fisheries Research Needs in the South Pacific' by S.T. Fakahau and M.P. Shepard (FFA/ICOD, 1986): Fisheries research - collection and investigation of facts required to facilitate fisheries management and development.

b) Research requirements of the region

The Fakahau and Shepard report was commissioned in response to a growing awareness among Pacific Island countries that there exist large gaps in the present knowledge of Pacific marine resources and that in many cases these gaps impede effective resource management. The report summarised many of the problem areas in inshore fisheries research in the region, as well as proposing possible solutions to some of them. In general terms, Fakahau and Shepard noted major shortcomings on a regional basis in the communication and dissemination of fisheries information, and urged a more concerted effort by international organisations to overcome them. The report also noted that Pacific Island countries have traditionally relied on external agencies and organisations for many of their research needs, with the result that national fisheries research capabilities are in many cases only poorly developed. Fakahau and Shepard strongly emphasised the need for organisations, including the SPC, to assist member countries in upgrading their own fisheries research capabilities, particularly by the provision of training.

A number of recommendations referred specifically to SPC and to areas in which it was felt that SPC activities should be developed or strengthened. These included: collection of catch statistics on inner reef resources; training in stock assessment techniques; training in computer usage; and population dynamics of selected resources.

2. SPC INVOLVEMENT IN FISHERIES RESEARCH

a) History of SPC fisheries research activities

Since its establishment in 1947, the South Pacific Commission has had a long history of involvement in inshore fisheries research activities, as can be seen from appendix 1. Between its establishment (in 1947) and 1967 the Commission undertook programmes of basic survey and research work, and of progressively collating the then available information on marine resources in the Pacific Islands region. From 1967 to 1973 the SPC carried out more detailed research projects on a number of specific resource issues via the joint

SPC/UNDP funded South Pacific Islands Fisheries Development Agency (SPIFDA). In 1973 the Commission established the Inshore Fisheries Development Project (IFDP) and the Outer Reef Artisanal Fisheries Development Project (ORAFDP), which carried out biological research on selected inshore resources, and economic research on deep-bottom fishing, respectively. In 1978, the ORAFDP was superseded by the Deep Sea Fisheries Development Project (DSFDP), whose directions, in line with the wishes of member countries, were less research-oriented and placed more emphasis on training, demonstration and economic development. In the same year the Commission also established the Skipjack Survey and Assessment Programme (SSAP), a major region-wide research programme which aimed to elucidate the biological characteristics of skipjack, and to a lesser extent, juvenile yellowfin. In 1982 the SSAP, which had completed its specific research task, was replaced by the Tuna and Billfish Assessment Programme (TBAP), via which the Commission established an important research tool, a regional database of industrial and small-scale tuna fishing catch and effort information to be used for research purposes.

#### b) Present-day SPC research capabilities

The Commission today has two fisheries programmes with distinct functions: these are the Coastal Fisheries Programme (CFP), whose activities are development-oriented, and focus principally on inshore resources; and the TBAP, whose mandate is to carry out research on tuna, billfish and associated species (e.g. baitfish) according to a series of 8 priority areas of activity defined and approved by earlier SPC fisheries meetings. Information paper 3 gives a more detailed breakdown of the staff components of the two programmes. In general, the Commission's research resources, in terms of scientific personnel, are concentrated in the TBAP, and their efforts are focussed on tuna-associated research questions. The CFP has no specific mandate to carry out research and has no personnel formally assigned to research work.

The Commission has in recent years received numerous requests from member countries for assistance in the field of inshore fisheries research. These have included stock assessment projects, training courses in aspects of fisheries data analysis and use, and help with the establishment of fisheries statistics collection programmes and the interpretation of the statistics generated. These requests cut across the areas of interest of both the CFP, whose activities focus on the inshore fisheries area, and the TBAP, whose last two priority areas of activity (numbers 7 and 8) relate to the provision of assistance and training in the field of inshore fisheries statistics and quantitative fisheries methods. The Commission has responded to such requests wherever possible, but in some cases this has been hindered by the lack of a formal mechanism for doing so. The CFP has a strong fisheries development team but no scientific or research-oriented positions within its structure; the TBAP has the necessary resources in terms of scientific personnel, but its main priority activities are in the field of tuna research and these take precedence over other fisheries research questions.

The Commission has nevertheless attempted to respond to requests for assistance whenever possible, either by using available staff from existing fisheries programmes, by using outside expertise, or by a combination of both. However, given the increasing frequency of requests for work in the field of inshore fisheries research, it has become necessary to formalise the Commission's commitment to providing assistance in this field. In doing so it is necessary to establish a framework whereby requests can be responded to on an ongoing and not an ad hoc basis. The Inshore Fisheries Research Project is intended to provide this framework, thereby improving the Commission's ability to assist its members.

### c) Development of SPC Inshore Fisheries Research Project

The SPC Secretariat presented its original proposal for this project to the 18th Regional Technical Meeting on Fisheries (RTMF), held in Noumea in August 1986. The proposal suggested a possible structure for an integrated project that would allow the Commission to effectively address inshore fisheries research questions. The proposal suggested the recruitment of additional fisheries staff, including two inshore fisheries scientists and an information officer, a complement that the Secretariat considered appropriate to the amount of work envisaged for the project in its early stages. It was also suggested that the resources of both existing fisheries programmes, and particularly some of the scientific staff of the TBAP, would be involved in the activities of the project.

The 18th RTMF strongly supported the essence of the proposal but there was considerable discussion as to what constituted the most appropriate structure for the project. In particular, lengthy discussions centered around its relationship with the TBAP. The meeting ultimately recommended that the new project be considered an activity of the CFP and that it be kept as distinct as possible from the TBAP and from tuna-oriented research work. The meeting defined appropriate areas of activity for the professional posts involved, and approved its name as Inshore Fisheries Research Project (IFRP). In order to speed up the establishment of the project, the meeting expressed its support for the Secretariat's proposal to redesignate an existing TBAP post which had been unfilled for some time, and urged the Commission to make every effort to locate funds to support the post and to recruit into it as soon as possible. The recommendations of the RTMF, which are listed in working paper 7, were subsequently endorsed by the May 1987 meeting of the SPC Committee of Representatives of Governments and Administrations (CRGA) and the Commission was authorised to proceed with the project's implementation, subject to the proviso that the Secretariat locate extra-budgetary funds to support it. At the same meeting, the United Kingdom Government expressed its willingness to fund some components of the project. Some of this funding has been made available rapidly and as a result the Commission has been able to recruit into one post. The terms and conditions under which the remainder of the funding is to be provided are still under discussion between UK Government representatives and the SPC Secretariat.

The 18th RTMF also directed the Secretariat to produce this paper, outlining progress in developing the IFRP, for consideration by the present meeting. In particular, the paper was required to address the proposed structural arrangements of the IFRP, its relationship with other SPC programmes, and its activities in the foreseeable future. These are dealt with in the following sections.

### 3. IFRP STRUCTURE

#### a) Staffing

The staff of the IFRP consists of the following positions:

Senior Inshore Fisheries Scientist (SIFS)	vacant pending confirmation of IFRP core funding
Inshore Fisheries Scientist (IFS)	Dr. Rex R. C. Edwards
Fisheries Information Officer	vacant pending confirmation of PIMRIS core funding
Project Assistant (PAFS)	vacant pending confirmation of IFRP core funding

Funding for the post of Fisheries Information Officer (FIO) is being sought under the auspices of PIMRIS. The FIO will work closely with the IFRP scientists and will be primarily responsible for IFRP information dissemination functions.

b) Relationship of the IFRP to other SPC activities

The original SPC proposal envisaged a semi-autonomous project with formal linkages to both the CFP and the TBAP. After its deliberations the 18th RTMF recommended that the project be established within the CFP, without formal ties to the TBAP. As a result, the IFRP will be established as a project within the CFP, but as with all SPC programmes, resources will be used in an integrated manner to enable the IFRP to fulfil its objectives effectively. In particular, it is envisaged that the IFRP will have strong links with the South Pacific Regional Environment Programme (SPREP) based at SPC headquarters, with the other projects of the CFP, in particular the DSFD, and with the TBAP, particularly in relation to activities which at present fall under its priorities 7 and 8.

c) Relationship of the IFRP to activities of other organisations

An important aim of the IFRP is to encourage liaison and the interchange of information among the many organisations engaged in inshore fisheries research in and around the SPC region. The staff of the project will be expected to keep in close touch with the work of other organisations and assist the Fisheries Information Officer in ensuring that a flow of information among research workers is encouraged and maintained. A function of high priority will be to encourage and support activities and information exchange among members of specialist working groups on particular research topics of regional importance, as proposed by Fakahau and Shepard. The project staff will liaise closely with the FFA Research Coordinator to ensure that duplication of research effort is avoided and that research techniques and approaches are consistent with those of member countries and other institutions.

4. IFRP AIMS AND ACTIVITIES

a) Overall objectives

- The broad objectives of the IFRP were defined in the original project proposal as:
- coordination and liaison between national officials, SPC staff and outside research organisations
  - evaluation, summarisation and communication of relevant fisheries information from within and outside the region
  - assistance in the design and implementation of appropriate programmes of resource survey, fisheries data collection and data analysis
  - training in survey design, data collection and analysis.

Since these objectives were first broadly stated there have been a number of relevant developments, particularly the PIMRIS proposal and the establishment of a Research Coordinator position at FFA. These will bear on the activities of the IFRP, especially in regard to the first two of the four objectives noted above.

b) Coordination and liaison

A major problem in inshore fisheries research in the region, identified by Fakahau and Shepard and by many other workers, is the isolation in which much work is carried out.

Communication among Pacific Island countries, while improving, is still poor. In many cases research workers do not have access to the results of similar work being carried out elsewhere, and it is not infrequent for research work to be duplicated, either in different countries or localities, or even in the same country at different times. As a result, national research resources are being wasted and the effectiveness of research programmes is being greatly reduced. This situation is not new but is increasing in importance, both with the growing number of research projects being undertaken by Pacific Island countries, and with the ever-increasing amount of resource-related information becoming available.

As a step towards reducing this problem, a two-week workshop will be held in January 1988 (see working paper 9) which will bring together research workers with a common interest in Pacific inshore marine resources. The workshop will focus attention on a number of specified resources and research themes, with the aim of summarising present knowledge of the topics concerned and enabling discussion of specific research questions and case studies from the Pacific Islands region. Representation at the meeting will be sought from all Pacific Island countries, and will also include resource specialists and acknowledged authorities, and institutions with research programmes that are relevant to the subjects under discussion. The workshop will give research workers from all participating SPC countries a complete and up-to-date awareness of present knowledge of, and research into, a wide selection of fishery resources, as well as facilitating contact among workers with like interests. The workshop will also enable the Commission to evaluate more accurately the most appropriate specific areas of activity for the IFRP and refine its programme of in-country activities in discussions with national representatives.

Following the workshop, close contact will be maintained with institutions and individuals carrying out research on Pacific inshore fisheries resources, and with the FFA Research Coordinator, to ensure a continuing exchange of information and coordinated research effort.

#### c) Evaluation, summarisation and communication of information

As noted above, a major problem facing Pacific Island fisheries research workers is the acquisition of relevant and timely information pertaining to their fields of enquiry. The SPC has an important role as a disseminator of information in the region. This role will be strengthened specifically in regard to marine resource information within the IFRP. Funding is being sought as part of the PIMRIS for a Fisheries Information Officer and among the responsibilities of this post will be:

- Actively seek out information on relevant research topics, on a routine basis and on behalf of member countries;
- Assist member countries add to and organise their own fisheries libraries or document collections;
- Liaise with staff members of all SPC fisheries programmes to evaluate and comment on the usefulness and technical accuracy of fisheries documentation and other information;
- Support the activities of special-interest working groups by actively encouraging liaison and information exchange among members;
- Routinely forward appropriate information to individuals or institutions known to be researching specific topics;
- Liaise with staff members of all SPC fisheries programmes to provide a question-and-answer service on specific technical queries.

The information function is considered to be a sub-project of the IFRP proper, but with important overlap with other SPC fisheries programmes and with the SPC library and clearing-house service. With the recent development of PIMRIS and the obvious relationship between its aims and those of the IFRP information sub-project, it has proven opportune to link the Fisheries Information Officer post into this larger-scale multilateral activity.

d) Resource survey and fisheries data collection

The main area of in-country activity for the IFRP is likely to be in the field of resource survey and data collection. Most country requests for assistance with a specific activity in recent years have fallen into this category. Examples of these activities, some of which have been carried out on an ad hoc basis and some of which remain to be completed, are shown in table 1 (opposite).

It is envisaged that a large part of the work of the two Inshore Fisheries Scientist positions will be dedicated to in-country work in response to requests of this nature. In addition, a high proportion of requests for assistance under the auspices of the DSFDP are research-oriented, typical objectives being related to stock assessments or the collection of baseline data on the deep-bottom fish resource. In such cases the work of the DSFDP and IFRP will be closely linked.

e) Training

Training of national research officers by staff of the IFRP is a priority activity and is expected to take place in two ways: by attachment, either during an in-country project, or at SPC headquarters; and by formal training courses in specific topics, either at a national or a regional/sub-regional level.

Attachment training is a standard component of SPC field activities, and will be emphasised during IFRP in-country activities. The precise nature of the training will depend on the specific research project being undertaken. The normal procedure is for one or more counterpart officers to be attached to the research project for its entire duration and to participate fully in all the activities undertaken. If there is likely to be an extended period of data analysis at SPC headquarters after completion of field work, it may be desirable for the counterpart to assist in this also. There is likely to be scope for selected individuals to undertake attachments to the IFRP in general, and to become familiar and assist with a range of research projects or activities, either at SPC headquarters, or on field missions, or both. Finally, there will also be opportunities for skilled nationals of one country to assist with field research activities in another. There is a wide scope for attachment training within the IFRP, but it is not possible to be more specific at this stage in its development.

Training courses are also within the scope of the IFRP, either at a national or an international (regional or sub-regional) level. Indications so far received from member countries suggest that, at least in the initial stages of the project, there will be an emphasis on training in computer use, in specific data processing applications relevant to fisheries work, and in associated topics such as statistics and stock assessment. In the longer term, it is likely that practical training courses in field survey techniques will also be developed.

<u>Requesting country</u>	<u>Nature of activity</u>	<u>When carried out</u>	<u>How carried out</u>
Cook Islands	Assess potential for pearl culture in existing pearl-shell farms	To be completed	
FSM	Survey of seaweed resources	1987	Consultancy
Fiji	Improvement of baitfish statistics system	1987	TBAP
Fiji	Study of deep-bottom fish population dynamics	To be completed	
Kiribati	Improvement of baitfish statistics system	1987	TBAP
Kiribati	Assessment of deep-water prawn resources	1987	CFP/ Consultancy
Kiribati	Assessment of pearl-shell culture potential	To be completed	
Niue	Assist in establishment of long-term fishery research project	To be completed	
Papua New Guinea	Analysis of data on barramundi fisheries	To be completed	
Palau	Set up fishery statistics collection programme	Begins Nov. 1987	TBAP/ Consultancy
Palau	Assess deep-bottom fishing stocks	To be completed	
Solomon Islands	Evaluate possibility of data collection system in Malaita province	1987	TBAP
Tonga	Evaluate possibility of data collection system (FAO funded)	1987	TBAP
Tuvalu	Set up fishery statistics collection programme	1986	TBAP/ Consultancy

## 5. SUMMARY

The foregoing sections outline the main activities anticipated under the auspices of the IFRP. Much development has taken place since this project was initially conceived over a year ago, and further development will probably be equally rapid. It is likely that the specific demands that countries place on the IFRP will change as research needs and priorities evolve. However, the underlying philosophy of the project is to assist Pacific Island countries develop their national fisheries research capabilities to the point where they can satisfy their own research needs with minimum input from external organisations. This will remain the priority of the IFRP irrespective of the specific activities to be undertaken.



**APPENDIX 1. Summary of SPC fisheries research activities, 1947-1987.**

The following is a brief summary of SPC's involvement in fisheries research activities since its establishment in 1947

**1947-1961**

Survey and advisory work was carried out on the following subjects/ areas:

Fishery resources of the Caroline Islands, Tonga, Fiji, French Polynesia, Cook Islands, American Samoa, Tokelau, New Hebrides, Norfolk Island, Solomon Islands, and three regions of Papua New Guinea.

Pond culture of fish (Western Samoa, Cook Islands)

Tuna fishing (American Samoa, Tonga)

Trawl fishing experiments (Papua New Guinea)

Transplantation of, and research on, pearl oysters (Cook Islands)

Research on trochus (New Caledonia, Trust Territories of the Pacific Islands (now Palau and Federated States of Micronesia))

In addition, the following areas were defined as requiring research attention:

Surveys of potential resources for ocean fishing

Ciguatera poisoning

Standardisation of fish nomenclature

Research on pond cultivation of fish

Trials of appropriate deep sea fishing methods

Fish processing and storage trials

Biological research on commercially important species

Collection of basic fishery statistics

Nutritional studies.

**1962-1966**

Research was proposed on a number of specific resources and problem areas, which included the following:

Spanish mackerels

Bigeye scad

Deep-bottom fish

Deep-swimming tunas

Milkfish

Pearl shell

Green snail

Specimen shells

Specimen corals

Ciguatera poisoning

Species introductions

However, little research work was actually carried out during this period due to staff and financial limitations.

APPENDIX 1. Summary of SPC fisheries research activities, 1947-1987 (continued).

1967-1973

The joint SPC/UNDP South Pacific Islands Fisheries Development Agency (SPIFDA) was established and under its auspices research work was carried out in the following areas:

Beche-de-mer industry development

Spiny lobster behaviour, rearing and resource enhancement

Many aspects of aquaculture, including the culture and/or management of oysters, mussels, pearl shell, giant clams, trochus, mud crabs, freshwater and marine prawns, mullet, milkfish and rabbitfish

Marine turtle stocks, culture, ranching and re-stocking

Means of artificially enhancing the productivity of coral reefs and lagoons

Fishing boat development

Ciguatera fish poisoning.

1973-1977

This period saw the establishment of the Inshore Fisheries Development Project (IFDP), which undertook research into spiny lobster biology, turtle biology, and beche-de-mer stock assessment. The Outer Reef Artisanal Fisheries Development Project (ORAFDP) was also established, and provided a vehicle for research into the economics and feasibility of commercial deep-bottom fishing.

Several research-oriented workshops, including one on deep-bottom resources, were also held during this period.

1978-1981

In 1978 the ORAFDP was superseded by the Deep Sea Fisheries Development Project (DSFDP), which commenced a programme of collecting deep-bottom fishing catch and effort statistics that continues today. The projects activities have enabled comparative assessments of fishing potential among a large number of Pacific Islands.

The Skipjack Survey and Assessment Programme (SSAP) was established in 1978 and for three years undertook a region-wide programme of research into tuna and baitfish abundance, distribution and fishing characteristics.

A number of smaller research projects were undertaken during this period, including the collection of statistics from the fisheries agencies of distant water fishing nations operating in the region, a general study of the economics of baitfish culture, and a survey of the specimen shell resources of Fiji. Seminars were also held on skipjack stock assessment using biochemical genetics, albacore, deep bottom fishery research, aquaculture, and marine turtles.

APPENDIX 1. Summary of SPC fisheries research activities, 1947-1987 (continued).

1982-present

The SSAP reached its conclusion and was superseded by the Tuna and Billfish Assessment Programme (TBAP), which undertook to collect fishery statistics from tuna fishing vessels operating in the SPC area and to carry out research on tuna and baitfish stocks in line with a defined set of priorities.

The DSFDP continued its activities but began a gradual shift in emphasis away from economic development, with more and more countries requesting visits that involved stock assessment or gear development components. An analysis of the accumulated mass of fishing data collected during the numerous country assignments (50 to date) undertaken by the project is under way, but is currently hampered by lack of resources.

Numerous smaller research projects have been carried out during this period. These include:

- Deep water shrimp surveys in Papua New Guinea and Kiribati
- Regional study of FAD designs
- Survey of specimen shell resources of Tuvalu
- Surveys of baitfish resources in Kiribati and Tuvalu
- Studies on trochus stocking in Vanuatu and Tuvalu
- Study of small-scale prawn trawling in Papua New Guinea
- Regional survey of fisheries sector refrigeration plant.

Seminars, workshops and training courses on research-oriented topics have been held in growing numbers. Subjects covered have included:

- Observer programmes
- Deep bottom resources
- Fish aggregation devices
- Fish handling and processing
- Small boat design
- Mariculture
- Deep water snapper biology, research and management
- Ciguatera poisoning
- Fish stock assessment
- Fisheries statistics.

In general, the frequency of requests for assistance with research-related projects has increased greatly during this period.