

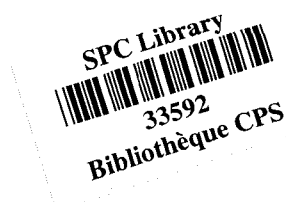
SOUTH PACIFIC COMMISSION

FISHERIES TECHNICAL MEETING

Nouméa, New Caledonia

5th - 13th February, 1962

REPORT



South Pacific Commission
Nouméa, New Caledonia
February 1962

This Report is published without prejudice to the
Commission's consideration of the Resolutions and
Recommendations of this Meeting.

26 APR 1965

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I N T R O D U C T I O N

Appended to the 1947 "Agreement Establishing the South Pacific Commission" was a list of "projects" to which this Organization should give early consideration as they were considered to be of great importance for the economic and social welfare of the South Sea Islanders.

Fisheries were mentioned among these "projects" in the following terms:

" Fisheries research, including surveys and the testing of methods of catching and of processing fish and other marine products with the special aim of improving the nutrition of the local inhabitants".

This was considered a project "which called for early action and showed promise of early results" and information was to be collected on the various fisheries investigations being conducted in the area while contacts were established as early as 1949 with the Indo-Pacific Fisheries Council.

The preliminary activities led to the holding of a Fisheries Conference in 1952 at the Commission headquarters, Nouméa. Out of its recommendations was born the South Pacific Commission's fisheries programme. Implementation of this programme was commenced in 1954 by the appointment of the late Mr. Hubertus van PEL as Fisheries Officer. In 1957 Mr. Louis DEVAMBEZ of the Commission's staff was appointed as Assistant Fisheries Officer.

At its Twenty-second Session held in Nouméa in October 1961, the South Pacific Commission directed the Secretary-General:

" to convene at the Commission's headquarters early in 1962 a fisheries technical meeting for:

- (i) members of the Technical Advisory Committee on Fisheries;
- (ii) representatives of territorial fisheries departments and research institutions within the area."

The Meeting was requested "to study the Commission's activities in the fisheries field and to make recommendations on future activities taking into consideration:

- (i) the progress already made since 1952;
 - (ii) the organization by some territories of their own fisheries departments;
 - (iii) the interest shown recently by some territories in the development of commercial fisheries in the area;
- and (iv) the question of technical training in the fisheries field."

Mr. T.R. SMITH, Secretary-General of the South Pacific Commission, officially opened the Meeting on Monday 5th February 1962 at Nouméa, New Caledonia.

The Meeting unanimously elected Mr. Vernon E. BROCK and Dr. G.L. KESTEVEN, members of the South Pacific Commission Technical Advisory Committee on Fisheries, as Chairman and Vice-Chairman, respectively.

Mr. J.A. TUBB, FAO Observer and Mr. L. DEVAMBEZ, the Commission's Assistant Fisheries Officer, were designated as co-rapporteurs.

At the invitation of the Chairman, the Secretary-General of the Commission and the Executive Officer for Economic Development, Dr. J. BARRAU, addressed the Meeting.

In his address the Secretary-General paid glowing tribute to the services rendered to the Commission by the late Hubertus van PEL, the Commission's first Fisheries Officer.

After a short address by the Chairman, the Meeting proceeded to deal with the subjects set before it.

OPENING ADDRESS BY MR. T.R. SMITH,
SECRETARY-GENERAL OF THE SOUTH PACIFIC COMMISSION

Before the real work of this Meeting begins I should like to take a little of your time to thank you all on behalf of the South Pacific Commission for coming here, and to welcome you all most warmly to Commission headquarters.

We have benefited many times from our association in different ways with the Food and Agriculture Organization of the United Nations and I am particularly pleased this morning to welcome Mr. Tubb, F.A.O. Regional Fisheries Officer and Secretary to the Indo-Pacific Fisheries Council. The members of the Commission's Advisory Committee, Dr. Brock, Dr. Kesteven, M. Legand and Dr. Rapson have been patient with many requests for advice and we are happy to welcome them in person. There are seven territories represented here by eight members of territorial fisheries services and that is an encouraging indication of the increasing recognition by territorial governments of the valuable work that can be done in the Pacific by fisheries experts.

When we look around here at these who are present, it is impossible to forget one who should have been here but who, unfortunately, is not. Bert van Pel, the Commission's late Fisheries Officer was, I think, known to all of us. With his untimely death we lost a good friend and the South Pacific lost the services of a man who was in the best sense of the word a practical expert on fisheries. We mourn his passing.

The South Pacific Commission has been concerned with fisheries for 12 or 13 years now, but one continuing problem has been how best to use its relatively quite slender resources in the interests of fisheries improvement. It was told in 1950 that the problem of fisheries was one of the most intricate, diverse and costly with which it had to deal. It has to choose what parts of that intricate and diverse problem it could afford to attempt.

We have been concerned with small-scale surveys, with training of fishermen, with the introduction of new species of freshwater fish, with advice on the establishment of territorial fisheries services, with some problems of the pearl oyster and other shell fish, even with training in boat building and maintenance for the benefit of native fishermen, and with a host of smaller enquiries. During that time there have been fundamental changes in methods of fishing and in the outlook for fisheries in the South Pacific. Nearly sixty years ago a German scientist, Dr. Kramer, wrote of the Samoans that they had a hundred different ways of catching fish, but if they had one good method they would have abandoned the other 99. They had probably been using all these methods for centuries, but I notice now Ron Powell's statement in relation to the Cook Islands that: "in subsistence fishing it is difficult to suggest anything new although it is interesting to note that every method in use today was unheard of less than twenty years ago".

We welcome to this meeting today men with a wealth of varied experience. We hope that you yourselves will benefit from a pooling of your combined knowledge and we hope that the Commission will be given your expert advice as to whether it should continue, abandon, or change all or any of its activities in relation to fisheries. Specifically, the Commission in a resolution passed at its 22nd Session last October "requests the Meeting to study the Commission's activities in the fisheries field and to make recommendations on future activities, taking into consideration:

- (i) the progress already made since 1952;
- (ii) the organization by some territories of their own fisheries departments;
- (iii) the interest shown recently by some territories in the development of commercial fisheries in the area; and
- (iv) the question of technical training in the fisheries field.

While we ask for recommendations for the benefit of the Commission, we hope also that your recommendations will give valuable guidance to territorial governments in the South Pacific area and to the many thousands of people on many islands who must catch fish to live.

On behalf of the Commission, I wish you a successful meeting and good fishing.

ADDRESS BY Dr. J. BARRAU

Executive Officer for Economic Development
South Pacific Commission

Ten years ago we held a Fisheries Technical Meeting, similar to the one which is bringing you together to-day. The Commission's Fisheries programme was based on the recommendations of that Meeting, and was carried out from 1954 to 1961 under the competent guidance of the late Hubertus van Pel assisted by Mr. Devambeze.

I truly believe that this first stage of our activities in the field of Fisheries has been most useful and given positive results.

We have conducted a preliminary survey of available resources, of existing problems and of possible developments. Recommendations have been made to territorial administrations to help them work out their own development programmes under the best possible technical conditions. The Commission has prepared and published extension brochures. With the generous assistance of FAO we have been able to organize two Fisheries Training Courses, the first one in 1957 and the second in 1961; finally, with the assistance of the United Nations Technical Assistance Bureau we organized a Boat Building Course at Auki in the British Solomon Islands Protectorate.

Populations in the area have become more and more interested in Fisheries activities, and this is undoubtedly due to the untiring efforts of the late Mr. van Pel.

Thus there have been many developments since the 1952 Meeting: at that time only one territory had a Fisheries Department. To-day seven territories are represented here while others are at present setting-up such Departments or considering doing so.

This fact alone indicates that conditions are very different from those obtaining when we worked out our first Fisheries programme.

The services that territories in the area may expect from the Commission in the field of Fisheries are not necessarily the same as those that were required from 1954 to 1962.

In other words, the time has come to review the position, to assess the results at territorial level as well as at regional level, and to determine what remains to be done.

That is the purpose of this Meeting. Needless to say that we are expecting much guidance from the discussions you will have during the next few days.

It is up to you as technicians to recommend the steps which you consider necessary at territorial level as well as at regional level to further the development of Fisheries in our area. The problem has many aspects, which you will be considering: research and experimental work, training and extension, organization of marketing, and administration.

As you can see, there will be plenty to do during the next few days.

In respect of the future work of the Commission in the field of Fisheries, we will ask you to reply to two main questions:

- 1/ What kind of assistance can the Commission offer to territories in the area to be of practical use in the development of Fisheries?
- 2/ What do you consider should be the broad lines of our programme in this field?

I am confident that your recommendations will enable us to define our future work and I thank you for your co-operation.

ADDRESS BY MR. VERNON E. BROCK, CHAIRMAN OF THE MEETING

My election to serve as Chairman of the Meeting is, I assure you, a completely unanticipated honour. I had noted on the provisional agenda, which we have agreed to follow, that the Chairman had to give an address at this opening session of the Meeting, and I have been reminded of this by the Secretary-General following my election. All this is simply by way of explanation that, in spite of being aware of the Chairman's responsibility in this regard, I do not have a prepared address, and, frankly, my thoughts on the subject matter for this address are scattered.

We are assembled here as a group of technical experts on the fisheries of the Commission's area. We have a responsibility to provide the Commission with sound and adequate advice concerning the Commission's rôle, in the development of the fisheries of the area, in so far as we are able. This advice should be based on our collective knowledge of fishing and of the area and the discussions that develop during the course of the Meeting.

There are certain obvious elements in the fisheries, the geographic and the economic situations of the area that will determine to a major degree the pattern of our recommendations to the Commission. I should like to mention a few of these and to point out the likely consequence of their influence on the conclusions that may result from our Meeting.

First, I will discuss the fisheries. From the point of view of habitats and magnitude of stocks, it may be convenient to consider them in terms of three categories: reef and inshore or shallow water fisheries, bottom fisheries and the fisheries of the open sea.

The first of these provides a basis for a very large portion of the fish for subsistence use, some for the fish markets and shell products for export. The second, the bottom or demersal fisheries, provide fish for both subsistence and market purposes, whilst the third is the only one of sufficient productivity to supply fish for major processing and export purposes.

The geographic situation can best be considered on the basis of three major subdivisions of the area, that for our purposes can be reduced to two. These subdivisions are Melanesia, Micronesia and Polynesia. The Melanesian region includes the larger islands, the largest of which is New Guinea. In general, this region has a low population density with adequate land resources at present. Both Micronesia and Polynesia, in contrast, are composed of numerous small islands with high population densities and also a high rate of population growth. The land resources are inadequate at present for the people of some islands and promise to become so for many others. These small bits of land are scattered over enormous stretches of tropical ocean and it is obvious that the major living resources of the area are in the sea.

I find it more difficult to categorize the economic situation in short compass, both because I am not an economist and because I suspect the situation may be quite complex. However, with quite limited land resources and a rapidly expanding human population, one can anticipate the growth of the population possibly exceeding that of the growth of wealth-producing activities since the latter may suffer constraints from shortages of land. Hence, the per capita wealth may not improve, and as land is absorbed in food production, may actually decline.

The sea holds promise both as a supplier of additional food resources and as a source of new wealth. It is likely that the pelagic or high seas fisheries resources can provide the greatest contributions in this regard, and so they should receive careful consideration at this Meeting.

I have referred to my own deficiencies as an economist. It seems to me that the economic aspects of the fisheries of the Commission's area are vital

elements in plans and programmes and are elements which are not presently well enough known to provide a basis for such planning and programming.

In addition to the matters that I have mentioned, we may wish to consider the rôles of the Territorial Fisheries Officers, the Fisheries Advisory Committee and the Food and Agriculture Organization of the United Nations in our development of programme recommendations to the South Pacific Commission. The substantial increase in the number of territories with Fisheries Officers since the last fisheries conference here gives an indication of the increasing realization of the importance of fisheries in the area by the member governments and is, I think, a tribute to the effectiveness of the Commission's own programme and to the late Hubertus van Pel, the Commission's first Fisheries Officer.

Nearly ten years have elapsed since my last visit here. In spite of the passage of time I am pleasantly surprised to find some old friends with whom I can share memories of that first Meeting. Nouméa seems yet like the pleasant, hospitable place it was ten years ago and somehow time seems to have touched it with a tender hand.

I thank you.

I. PRESENT STATUS OF FISHERIES
IN THE SOUTH PACIFIC COMMISSION'S AREA

A. STATUS OF FISHERIES AND FISHERIES SERVICES

1. The Conference convened by the Commission in 1952 prepared a brief review of the fisheries of the area at that time. That review was exceedingly sketchy because relatively little work in the sense of fisheries science as it is now understood had been done and because few of the territories had fisheries services.
2. Since then most territories have set up their fisheries services and the late Mr. van PEL, assisted by Mr. DEVAMBEZ compiled useful information on the area. In order to establish a more complete review of the current situation, the Commission, in inviting territories to be represented at the present Meeting, requested each territory to furnish information along the lines indicated in an appropriate questionnaire.
3. The replies to this questionnaire were presented in documents SPC/FTM/WP.1 to 5 and are supplemented by information in the documents SPC/FTM/Tech.2, 4, 5, 9 and 10. At the Meeting, the information contained in these papers was supplemented by the fisheries officers of the various territories. These papers and van PEL's "A Guide to South Pacific Fisheries", were taken into consideration by the Meeting.
4. From the sources above indicated, the salient features of the present situation may be summarized roughly under the main headings under which the Meeting considered the problems of the area.

(a) RESOURCES

5. At this stage little can be said about the condition of the resources of the area. Several instances are known of reef and inland water stocks having been further depleted during the past decade and since these support the bulk of the subsistence operations of the area, this situation must cause the governments some concern.
6. Another change which must be noted is the introduction to the area of Tilapia mossambica; certain other introductions have also been made - Cyprinus carpio, Gambusia affinis, Helostoma temminckii, Ophiocephalus striatus, Osphronemus gouramy, Trichogaster pectoralis.
7. Knowledge of the resources of the area has been added to as a result of development of fishing operations in certain localities and as a result of some research and of some exploratory operations. In the main this work has related to the pelagic stocks except research on pearl-shell undertaken in the Northern Cook Islands by Mr. J.S. HYND of the C.S.I.R.O. at the request and with the assistance of the Commission, and by Monsieur J. DOMARD in French Polynesia, on trochus, by Dr. J. MCGOWAN in the Trust Territory of the Pacific Islands and by Messrs. R. GAIL and M. ANGOT in New Caledonia.

(b) FISHERY INDUSTRIES

8. Subsistence operations in the area have undergone some development as a result of introduction of certain new gears and boats. Most notable in this respect was the use of synthetic material in fishing gear throughout the area.
9. Significant development of commercial fisheries has been achieved in Pago Pago and Santo. A tuna cannery was established at Pago Pago, but initially provisions for tuna for canning proved completely inadequate. Subsequently substantial quantities of tuna were obtained for processing through landings from Japanese longline fishing vessels.

10. Fisheries co-operatives have been formed in several territories and appear to have significant advantages. Cases in point are the British Solomon Islands Protectorate, New Caledonia and the Trust Territory of the Pacific Islands.

11. Markets and shore facilities have been or are being provided at certain localities: British Solomon Islands Protectorate, Fiji, Netherlands New Guinea, New Caledonia, Territory of Papua and New Guinea, Trust Territory of the Pacific Islands.

(c) FISHERIES SERVICES

12. In addition, several territories have organized fisheries departments on which details will be found in the following tables.



STATUS OF FISHERIES DEPARTMENTS IN THE SOUTH PACIFIC COMMISSION AREA - FEBRUARY 1962

BRITISH SOLOMON ISLANDS PROTECTORATE

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Shore facilities
		Expatriate	Local			
Honiara	1961	1	nil (2 budgeted for)	3 x 25' cutters	Nets, lines, bottom traps, flagline gear (10 baskets)	Office, gear shed, moorings, in process of installation

Summary of Programme

- Improvement of subsistence fishery and promotion of simple fish curing
- Organization of local market (Honiara) on modern lines
- Promotion of commercial fishing through co-operative organization
- Introduction of refrigeration
- Survey of resources
- Training of fishermen
- Motorization of canoes & Improvement of fishing craft

COOK ISLANDS

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Shore facilities
		Expatriate	Local			
Rarotonga	1957	1 full time 2 part time	2 full time 5 part time	one half decked power launch (hired) and various small craft shared with other departments.	Bait nets, 20 baskets flagline gear, droplines, traps	Storage shed, workshop, net repair shop, office

Summary of Programme

- Research on Blacklip pearlshell
 - Development of bait resources for flaglining
 - Experimental flaglining
 - Improvement of fishing gear at the subsistence level.
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F I J I

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Storage facilities
		Expatriate	Local			
Suva	Proposed	1 - 2	+ 10	One 50-60' One outboard powered punt	Nets, lines, line hauler, etc...	To be established. Fish market exist in all main centres

Summary of Programme

- Development of marine fisheries at all levels
- Inland fisheries including fish culture
- Enforcement of Fisheries Legislation
- Organization of marketing
- Research limited to inshore fisheries.

FRENCH POLYNESIA

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Shore facilities
		Expatriate	Local			
Papeete	1958	1	2	six boats of 16'-18'	Ten SCUBA equipments Two compressors (3 & 7 HP)	Office.

Summary of Programme

- Organization & Supervision of diving for MOP shell
- Improvement of lagoons (establishment of reserves and breeding beds)
- Regulations & Statistics in connection with MOP fishery
- Inventory of fish cultures - Survey of fishing craft, methods & gear
- Regulations concerning fisheries.

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Shore facilities
		Expatriate	Local			
<u>SEA FISHERIES</u>						
Hollandia	1948	4	8	one 32' steel launch one 40' wooden vessel six 25' " "	Lines, ring nets, trawls, miscellaneous nets	Fully equipped stations at Hollandia, Seroei, Manokwari, with stores, repair shops, slips & training facilities.
Summary of Programme		<ul style="list-style-type: none"> - Survey of fishing grounds and resources - Experimental fishing - Extension work - Training - Development of transport & marketing. 				
<u>INLAND FISHERIES</u>						
Sentani	1958	2	4 assistants 4 trainees	one 15' fiberglass runabout with 22 HP outboard one catamaran with 5½ HP outboard	fykes, trammel nets, misc. nets, 1 D.C. Electro fishing unit, Plankton nets and limnological equipment.	Laboratory, quarters, warm water hatchery (Sentani), cold water hatchery (Wamena) 5 stocking stations.
Summary of Programme		<ul style="list-style-type: none"> - Survey of potential and existing resources in fresh and brackish waters - Training of extension personnel - Development of fish culture - Distribution of fry - Experimental fishing - Improvement of subsistence fishing gear. 				

TERRITORY OF PAPUA NEW GUINEA

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Shore facilities
		Expatriate	Local			
Port Moresby	1954	5	40 including trainees	one 60' vessel one 40' " one 30' " two 16' inboard powered four 16' outboard powered one 40' double canoe misc. small craft.	Beach seines, gillnets, flagline gear, trawls, misc. traps.	Office, workshop, 3 field stations at Daru, Yule Island, Lopon. One district base at Madang with field stations.

Summary of Programme

- General development of selected fisheries
- Direct assistance to fishing groups and co-operatives
- Assistance in village fisheries
- Survey of unexploited resources
- Research in transport, packaging & marketing.

TRUST TERRITORY OF THE PACIFIC ISLANDS

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Shore facilities
		Expatriate	Local			
Koror, Caroline Islands	1956	1	19 10 trainees	one 58' longliner two 16' plastic skiffs and 3 outboard motors	120 baskets of flagline gear, bait nets, live- bait fishing gear, misc. nets, lines, 3 SCUBA equipments, one compressor.	Repair shops, freezing plant, ice plant, unloading facilities, wharf fuelling and watering installations, warehouse, office, training school.

Summary of Programme

- Development of skipjack live-bait fishery
- Training Micronesians in commercial tuna fishing
- Establishment of refrigeration plants ashore
- Establishment of subsistence fishery in Truk
- Fisheries school
- Experimental fishing with live-bait
- Experimental processing (smoking, canning)
- Assistance to Palau Fishermen's Co-operative and
to recently formed Palau Boatbuilding & Drydocking
Association.

T O N G A

Headquarters of Department	Established in	Permanent staff		Vessels	Equipment & Gear	Shore facilities
		Expatriate	Local			
Nuku'alofa	1953	1	5	one 20 tons wooden vessel	Flagline gear	Cold storage installations, Government market, office, workshop and wharf facilities

Summary of Programme

- Development of flaglining
A steel longliner of approximately 150 tons is expected in the near future and a monthly production of 60 to 80 tons of tuna is anticipated.
- Pearl culture project (Vava'u)
- Gillnet fishery, smoking plant and cold storage plant (Ha'apai)
- Construction of 15 tons refrigerated boat (Ha'apai).

B. PAST ACTIVITIES OF THE SOUTH PACIFIC COMMISSION IN THE FIELD OF FISHERIES

13. The Meeting reviewed in detail the work of the Commission during the period from the appointment of Mr. H. van PEL as Fisheries Officer in 1954 to the present.

14. The discussion centred around the recommendation of the conference of experts convened at Nouméa from 14 to 22 May 1952, that a fisheries specialist be appointed to the Commission with the following terms of reference:

- " (a) compiling and collating information on the fisheries and fisheries programme of the area;
- (b) providing a channel through which information on fisheries matters would be conveyed to fisheries workers of the region;
- (c) providing co-ordination of fisheries developmental projects in the region;
- (d) advising on the prosecution of governmental fisheries programmes;
- (e) at the request of member Governments, carrying out specific survey and other tasks;
- (f) watching closely the results of tests of equipment for commercial fishing in the region with a view to the guidance of other territories. He should note especially the acceptability of new gear and methods by the local people, and the practicability of means of distributing the increased production;
- (g) supporting and encouraging measures for the standardization of the scientific nomenclature of the most important fish species of the region, and promoting uniformity, where possible, of research methods in common use. "

15. In reviewing the Commission's activities according to these terms of reference, the Meeting bore in mind that the activities of the Commission should perhaps not be appraised simply in terms of the number of things done but rather of:

- (i) the proportion of recommendations made by the Commission's Fisheries Officers which had been implemented and the results derived therefrom;
- (ii) the actual effect in practice of the Commission's work in the dissemination of information particularly through pamphlets and articles in the South Pacific Bulletin;
- (iii) the actual effect of fisheries training, to what extent the services of the fisheries trainees had been utilized either in government or in the industry, and what proportion remained in the territories of people in need of training.

16. The Meeting recorded its high appreciation of the work of the Commission in compiling and collecting such information on the fisheries of the area as was available and particularly in providing a channel through which information on fisheries matters had been conveyed to fisheries workers and other interested persons in the region.

17. The view was expressed that co-ordination of fisheries development projects throughout the region was not yet practicable, but the dissemination of information by and through the Commission was providing a background for such co-ordination in the future.

18. The Commission had been frequently called upon for advice concerning the formulation and implementation of governmental fisheries programmes and the reports issued from time to time in relation to specific areas were being used by governments as bench marks in implementing fisheries policy.

19. The Meeting therefore agreed that the Commission's fisheries officers had exerted themselves to the full extent of the facilities available to them in observing and reviewing the results of experimental and exploratory fishing and wherever practical, transmitting conclusions from these reviews to other interested parties.

20. The Meeting noted that the Commission had been unable to take any action in relation to standardization of scientific nomenclature of the important fish species of the region but felt that this particular subject could not reasonably be included in the terms of reference of the Commission staff.

21. The Meeting discussed at great length the Commission's efforts in respect of fisheries training and felt that while valuable results had been achieved, these results were hardly commensurate with the effort and expenditure involved. There was need for a critical review of this matter.

22. During the course of the discussion, it became clear that in view of the changing circumstances in the fisheries of the region there were grounds for a re-appraisal of the validity of the Commission's present programme and a need for the revision of the actual terms of reference of the fisheries officers to ensure that their work in the future might be directed to deal more specifically with problems common to all or large parts of the area, and particularly to ensure that while assisting established fisheries departments, the fisheries officers of the Commission avoided duplication of work and activities being undertaken by these departments.

C. FISHERIES IN THE ECONOMY OF THE SOUTH PACIFIC AREA

23. The Meeting feels that in the South Pacific area, there is a major deficiency with respect to economic information concerning both subsistence and commercial fisheries and that a basic requirement for any development policy is a knowledge of what has to be developed.
24. Statistics, of the kinds normally used by fishery departments, are virtually unavailable within the area and comprise, inter alia, inventories of the craft and gear used, manpower employed, and shore facilities and establishments at the disposal of the industry, and records of catch taken, effort expended, landings made, quantities handled, processed and sold, prices at various levels, and expenditures made in each sector of the industry.
25. This schedule of statistics is less relevant, of course, to subsistence operations than to highly organized commercial operations; nevertheless, some array of statistics should be sought at each level of operation. For subsistence operations use can be made of sampling methods, whilst at other levels the statistics can be extracted from currently entered records.
26. In addition to data of this quantitative type, each government requires descriptive statements on the structure, organization and operation of its industry. Such descriptions also must establish the place of the industry in the general economy of the country; they should show the importance of the industry as an avenue of employment, as a market for producer goods, and as a contributor to national income; they should also show how much of the community is dependent upon the industry.
27. Still further, these descriptions should show the place of a local industry in a wider economy of the fisheries it shares: e.g. how a local tuna industry stands in the context of world tuna industries. The descriptions will then need to be extended by supplementary studies in adjacent fields, for example, by nutritional surveys (generally of a sampling nature) to ascertain the place of fish in local diets.
28. In the absence of quantitative and qualitative material of these kinds, governments will find difficulty in formulating fisheries policy and in planning and implementing developmental programmes.
29. The Meeting recommended that the South Pacific Commission draw the attention of the territorial administrations to Appendix 7 of the Report of the Fisheries Conference, 1952 (SPC Technical Paper No. 25) and that the South Pacific Commission consult the Food and Agriculture Organization of the United Nations to obtain advice on steps which might be taken in setting up programmes for the collection of these essential statistics by sampling and other methods.
30. Whilst the Meeting would not undertake to lay down, in detail, a programme of economic research of the kind described here, it most strongly recommended to the Commission that it promote the conduct of research in this field, that it assist and co-ordinate such research and carry out whatever part of it may be appropriate to an international organization.
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II. FISHERIES DEVELOPMENTAL PROSPECTS
IN THE SOUTH PACIFIC COMMISSION'S AREA

A. APPRAISAL AND INVESTIGATION OF RESOURCES

31. In reviewing research needs in the region, the Meeting recognized that this activity falls into three categories:

- (i) research designed and implemented with a view to direct and early economic benefit and which might be regarded as having a favourable cost/benefit ratio;
- (ii) research undertaken on humanitarian grounds and in general directed towards the maintenance in perpetuity of the essential material needs of the local population;
- (iii) research of a long-term nature and of very wide scope directed towards closing the larger gaps in scientific knowledge, and leading eventually to the provision of information upon which long-range national and international planning could be based.

32. The Meeting was of the opinion that the pattern of research might be expected to develop along the lines described in the following paragraphs.

33. Research, where undertaken at individual territory level, should be directed upon immediate local problems, and might be expected to have a high favourable cost/benefit ratio.

34. Metropolitan governments might be in a position to take action in a much wider field and should be interested in research in each of the three categories. However, they might be expected to assume major responsibility for research in categories (ii) and (iii).

35. Research might also be undertaken by existing or proposed international organizations, but it would be expected that work of this kind would be within categories (ii) and (iii) more especially with regard to problems of regional importance.

36. In that respect, the rôle of the South Pacific Commission, assisted by its Technical Advisory Committee on Fisheries should be:

- (i) to define, or assist in defining, research needs;
- (ii) to assist in meeting these needs either by providing direct financial or technical assistance, or in obtaining such assistance from other agencies;
- (iii) to take the initiative in fostering the interest of international agencies or research organizations as well as of the governments and territorial administrations concerned in this research.

37. The Meeting drew the attention of the Commission to the fact that the above principles, whilst drawn up initially with regard to resources research, have application also to other fields of research.

38. Although detailed information concerning the actual extent of the total aquatic resources of the region is lacking in most cases, there is good reason to believe that the existing resources are capable of much greater exploitation than has at present been attempted.

39. The Meeting accepted a classification of the resources on an ecological basis, dividing them into 6 main categories:

- (i) Resources of the reefs and lagoons;
- (ii) Resources of in-shore areas (particularly in relation to the major islands);
- (iii) Resources of the sea bottom to depths of about 200 fathoms;
- (iv) Pelagic resources including surface shoaling and mid-water species;
- (v) Estuarine and inland water resources;
- (vi) Other resources including invertebrates, turtles, crocodiles and mammals.

40. It was realized that these categories cannot be precisely defined as there may be, and frequently is, extension of the range of various species from one ecological zone to another.

41. The subsistence and market fisheries were largely dependent upon the coral reef and coastal shelf stocks, whose exploitation involved special techniques incorporating a wide variety of methods and equipment.

42. The reef stocks support subsistence fishing throughout the South Pacific Commission area and are invariably of limited potential; they cannot support industrial (processing) operations; only exceptionally do they support market fisheries; and for various reasons they are extremely vulnerable to exploitation, even of rational form, whilst if poison, dynamite and other indiscriminate and destructive forms of fishing are used, the stocks decline rapidly. The attention of the Meeting was drawn to some particular cases in which these malpractices had almost completely destroyed the stocks of fish on certain shallow reefs.

43. Considering the importance of subsistence fishing to local populations, the Meeting expressed the view that Governments and administrations should place themselves in a position to manage the use of these resources so as to ensure that the local native populations would be able to draw the best possible yields from these stocks; this would mean that the fishing operations would have to be managed in accordance with established principles, based on careful research. At the same time the Meeting recognized that since local peoples have little interest in conservation schemes, steps would have to be taken to educate them to recognize the advantages of these schemes.

44. The Meeting therefore recommended:

- (i) that the South Pacific Commission explore the possibility of securing the establishment of an institute to carry out research on the fishery resources of reefs in the South Pacific area; the programme of this institute should include study of the ecology of reefs, the structure and dynamics of populations of species of economic importance, reef fishing methods and of the possibility of developing these resources;
- (ii) that the Commission consider whether an approach should be made to the Food and Agriculture Organization of the United Nations for assistance from that agency and from the Expanded Programme for Technical Assistance and the United Nations Special Fund, for this project;
- (iii) that special attention be given to forming management plans acceptable to local populations and to developing extension programmes to educate local populations in the advantages of these plans; material or conservation practices, designed for use in schools, were regarded as having particular importance.

45. The Meeting also designated other special areas in which research was

required and urged that governments and the South Pacific Commission should take urgent steps to set up facilities for research into the biology and potential productivity of the stocks of spanish mackerel (Scomberomorus spp.) in the waters within and adjoining the reefs and coasts, since this species was in high demand in both local and regional markets.

46. During discussion attention was drawn to the occurrence in various parts of the region of large and numerous shoals of the big-eyed scad (Selar crumenophthalmus) and it was considered that this species also should be the subject of a research project.

47. Evidence accumulated to date indicated that there was much room for the expansion of fisheries to exploit the stocks of deep-water fish to be found on the outer face of the reefs and on the ocean bottom in depths of up to 200 fathoms. The Meeting recommended the establishment of a project to develop more efficient fishing gear and methods to ensure higher and more economical exploitation of these stocks together with biological research designed to determine the characteristics of the populations and the biology of the species concerned.

48. The Meeting stressed the need for further information concerning the two groups of tuna, those forming surface schools and those deep swimming forms upon which the flag-line fishing industry depended. In connection with the exploitation of the surface schools, there was need for a study of the bait-fish resources.

49. The attention of the Meeting was drawn to the recent recommendation adopted by the 1961 Pacific Science Congress held in Hawaii for increased research on the milkfish (Chanos chanos) and to the fact that there was in existence a special sub-committee of the Indo-Pacific Fisheries Council concerned with this subject.

50. Native fisheries for adult milkfish occur in several parts of the Commission's territory and interest in the possibility of collecting and rearing fry was growing.

51. The Meeting recommended that the South Pacific Commission, through its Fisheries Officers, should keep in close touch with the Indo-Pacific Fisheries Council and other organizations or institutions directly concerned with investigations into this species to ensure that all available information could be provided to fisheries officers within the area. The Commission might also examine the possibility of promoting, if appropriate, a research programme on the biology and distribution of the milkfish paying particular attention to the definition of areas in which large concentrations of larvae or young fish might be found.

52. It was realized that problems of development and exploitation of inland fish stocks in the South Pacific Commission's area were restricted to a few particular cases.

53. The Meeting, whilst recognizing that fish production from inland waters of various countries has often been greatly increased by the introduction of non-indigenous species, recalled that some non-indigenous organisms introduced into certain countries had become pests. The Meeting was convinced that introductions should be made only when the nature of the habitat and the characteristics of the species proposed for introduction were sufficiently well known to ensure that the introduction would be beneficial and not produce undesirable effects.

54. The Meeting knew of many species, which had been introduced in the South Pacific area or whose introduction was contemplated, against which various objections could be made. However, the Meeting felt obliged to recognize that available information was insufficient to permit objective conclusions as to the advisability of making such introductions, and expressed a wish for an authoritative statement on these matters.

55. The Meeting therefore recommended that the South Pacific Commission request the Food and Agriculture Organization of the United Nations to make a study,

of introductions throughout the world, that would constitute an authoritative guide for those who contemplate making introductions; this study would list species whose introduction had met with approval as well as those species whose introduction had been disapproved, showing for both the grounds (ecological and other) for the views indicated.

56. The South Pacific Commission should also seek and disseminate any information available through the current programme of the special committee recently appointed in Australia to study the problem of controlling the introduction of exotic species.

57. The Meeting expressed the opinion that the expansion and utilization of the mother-of-pearl shell resources depend to a large extent on the progress in breeding techniques which are impeded by very special technical problems, the solution of which could be sought through the assistance of overseas experts in this field. This problem is felt particularly in the collecting of spat.

58. Methods of harvesting the shell should be such as to ensure a continuing supply insofar as this industry provides cash incomes for the native people of some islands.

59. The Meeting felt that the market for trochus no longer offered reasonable returns to the industry under present conditions. It was noted that comprehensive reports on the trochus industry had been prepared and of particular interest at this stage were the reports of economic studies prepared by the Australian Government.

60. The Meeting noted that a steady demand persisted for green snail shell and that some further attention to the status and development of this fishery was warranted.

61. The Meeting also recognized that under certain conditions, particularly in the more isolated inhabited islands and atolls, small cash incomes for the local populations might be developed through the marketing of a number of minor items such as coral specimens, sea shells, both complete and carved, carved or polished trochus, and similar products. The attention of the Meeting was drawn to the recent marked increase in the number of amateur shell collectors and the growth, particularly in Europe and America, of small commercial organizations trading in conchological material. The Commission was requested to seek information on potential and existing markets for this material.

B. CONSERVATION OF MARINE AND INLAND WATER RESOURCES

62. In recent years the exploitation of marine and inland water resources in the Pacific area has increased considerably and in certain stocks significant decreases are already observed.

63. For instance, turtles, due to their great vulnerability, particularly at the breeding season, and dugong, a slow breeding and relatively rare species, are in danger of extermination in some territories and the Meeting felt that close attention should be given to the conservation of these and other species where the situation warrants it.

64. The Meeting wished to reiterate its warning concerning malpractices, such as the use of poison or explosives, in the exploitation of marine and inland water resources.

65. The Meeting felt it necessary to emphasize that conservation should not be limited to prohibition measures but should be based on rational methods of exploitation designed to ensure maintenance and harvesting of stocks at optimum level.

C. FISHING CRAFT AND GEAR

(a) PROCUREMENT OF GEAR AND MATERIAL:

66. The attention of the Meeting was drawn to the very real difficulties being experienced by fisheries officers throughout the region in the procurement of fishing equipment. The specific requirements of the various types of fisheries rendered it most important that very precise specifications should be given, when ordering gear.

67. The Meeting requested the South Pacific Commission to approach commercial suppliers of fishing gear with a view to obtaining samples and catalogues in sufficient numbers for distribution to the various fisheries agencies so that in the placing of orders accurate catalogue references could be made.

68. This was particularly important in relation to nets and twine since there existed no satisfactory conversion table relating the products of the various twine and netting manufacturers to one another.

69. It was agreed that the fisheries officers in the various territories should, in the first instance, provide the Commission with information leading to the preparation of a catalogue of information giving the precise specifications of fishing gear of all classes suitable for use in tropical waters.

(b) PREPARATION OF A HANDBOOK AND CIRCULARS ON FISHING CRAFT, GEAR AND METHODS:

70. Arising from this preliminary listing, the Meeting recommended that the South Pacific Commission should undertake the compilation of a handbook of fishing craft, gear and methods in use in the South Pacific area. In compiling this work use should be made of existing publications and contributions should be requested from territorial fisheries services. Standardized forms should be established as far as possible for each major category of craft and gear; the handbook should be illustrated in detail in order that the text and illustrations would be adequate to guide fishermen in the construction and use of fishing gear. The handbook should be printed and published in suitable form.

71. Realizing that the preparation of such a handbook would take a considerable time, the Meeting requested the South Pacific Commission to take immediate steps to compile and distribute a circular giving a description, precise specifications and illustrations, of the following:

- (i) Hawaiian night "akule" fishing gear;
- (ii) "Opelu" net;
- (iii) Deepsea dropline gear (Australian and Hawaiian);
- (iv) Gillnets;
- (v) Small purse seines (to 100 fathoms length);

and to include reference to sources of supply and costs of these gears or of the components used in their construction. This circular should also contain descriptions and other necessary illustrations of equipment ancillary to the fishing gear itself.

(c) IMPROVEMENT OF GEAR AND METHODS:

72. The Meeting recognized that there was a grave need for the improvement of existing fishing gear and for the introduction of new and more modern fishing gear and methods and that this could only take place by a series of steps. The first step would be to test the efficiency of the suggested gear under the particular conditions pertaining in a given area.

73. Should the gear prove effective, the second step would be to demonstrate its use to the native fishermen with a view to stimulating their interest.

74. The third step would be to organize facilities for such operations and to conduct training courses to familiarize local fishermen with construction and use of the new equipment.

75. The Meeting recommended that in each case where a territory recognized the need for the introduction of improved gear or of new methods of fishing it should seek the direct advice of the Commission's Fisheries Officer. The Commission's officer would be in a position to recommend to governments the type of vessel, equipment and shore facilities essential for the attainment of reliable results.

76. The Meeting urged territories to ensure that all preliminary arrangements be made and equipment obtained before the further step of recruiting a suitable expert was made and further urged that the appointment of the expert and his arrival in the territory concerned should not be effected until the preparatory arrangements had been substantially completed.

77. The Meeting noted particularly that there might be need for minor or major modifications of any gear selected for testing and introduction in order to adapt it to local conditions.

78. The Meeting drew attention particularly to two special cases of immediate interest and which it was believed could contribute materially to increased production. These were the deep-sea dropline for exploiting the stocks of demersal fish in the deeper waters surrounding the reefs and the modified or reduced flag-line for mid-water fish designed for use on relatively small vessels.

(d) DESIGN AND CONSTRUCTION OF FISHING BOATS:

79. On the question of the design and construction of fishing boats, the Meeting emphasized that there was a need for a careful review of tropical Pacific ocean fishing and sea conditions both in general and in particular areas in order to define the requirements for the design of fishing boats for use in the Commission's area.

80. The Meeting requested the South Pacific Commission to examine the possibility of organizing, through the Food and Agriculture Organization of the United Nations, facilities by which the FAO Naval Architect could meet directly and discuss with fisheries officers their basic problems in design and construction.

81. In this connection, the Meeting was informed that a proposal was under consideration by the Australian Government that Mr. Jan-Olof Traung should be invited to Australia to advise on the existing fishing boats and the design of new boats and the Meeting felt that the Commission might make this visit an opportunity to convene a meeting of fisheries officers to which Mr. Traung would be invited.

82. Recognizing the importance of crew efficiency, the Meeting urged that in the design of fishing boats, special attention be paid to crew accommodation.

83. Due to the nature of some of the fisheries in the area, the Meeting felt that the mechanization of native fishing craft was the most practical and immediate way to increase their efficiency. The Meeting urged, therefore, that the Commission compile and disseminate as much information as possible on methods for altering the design of native craft employed in these fisheries with a view to mechanization.

84. The Meeting requested the Commission to obtain and distribute plans and specifications of small and medium sized fishing craft, particularly those which it was considered could be constructed with the facilities presently available in the region and recognized that details of inboard structure and deck layout would depend on the particular services the vessel was required to provide.

85. Of particular interest in this connection were Queensland prawn trawlers of 30-55 ft. length and Hawaiian sampan-type vessels 48-55 ft. length. Information distributed should include detailed drawings and photographs.

86. During discussion on the general subject of fishing boats, the Meeting noted the value for safety purposes of a radio telephone network from ship-to-shore and ship-to-ship, particularly having in mind the immense distances over which fishing boats might be expected to travel.



D. MARKETING, DISTRIBUTION AND TECHNOLOGY:

87. The Meeting considered the various problems associated with the handling and processing of catches following their landing. The character and scope of these problems were determined by the nature of the fishery and the uses made of its landings. These could be conveniently considered under three heads:

(i) SUBSISTENCE FISHING:

88. Subsistence fishermen ordinarily take fish for their own consumption. The magnitude of the fishing operation is usually small, and the fish taken is normally consumed in the fresh state.

(ii) FISH FOR LOCAL AND REGIONAL MARKETS:

89. The fish taken are sold or bartered, often fresh, and in general processing is limited to cold storage or to the preparation of a product for local or regional consumption. Fish are frequently landed at or near established marketing centres or transported to such centres.

90. Problems requiring solution involve the provision of suitable facilities for the cleaning and icing of fish and its handling in a sanitary manner. Also of importance in some territories are requirements for facilities for providing ice for fishing boats and for the land transport of fish.

91. In some instances the necessity of holding the fish for considerable periods of time and its transport for considerable distances suggests the need for its conversion to a form suitable for prolonged storage without refrigeration.

92. The conversion to fish meal or fish flakes appears as a possible solution; however, the willing acceptance of these products by the native peoples constitutes problems requiring solutions in some cases at least, as well as those of transport and packaging.

93. In areas where the supply of fish is permanently or periodically limited, as for example due to the lack of adequate transport, the production of fish in fish ponds may provide a more rational approach, especially where dietary protein deficiencies are common among the native people.

(iii) FISH FOR INDUSTRIAL MARKETS:

94. Fish for these markets must be available in large quantities and are frozen or processed for overseas markets. The fish is sold on the basis of world prices and local or regional outlets are of minor importance. Significant species in this category are the various tunas (and possibly shrimps and crayfish in the future in some limited areas).

95. While the most important of these, the tunas, are landed and processed in some places in the Commission's area, their fisheries are largely pursued by fishermen from outside of this area.

96. The Meeting was of the opinion that there were a number of serious problems which impeded the effective development of both market fishing and that for industrial processing, at least by fishermen of the area. Whilst some of these problems concerned the fishing operations at sea, many related to the inadequacies of facilities ashore.

97. Conditions within the Commission's area of responsibility were so various as to make it difficult to set forth obvious recommendations, but the further development of co-operatives could, to a degree, provide solutions to some difficulties; the solution for others may depend upon specific remedies determined by the particular circumstances involved.

E. CO-OPERATIVES AND OTHER SUPPORTING MEASURES

98. Concerning the rôle of co-operatives in the fishing industry in the Commission's area, the Meeting had available several examples which indicated the contribution that co-operatives can make to fisheries development in appropriate circumstances.

99. In recognizing the assistance to such development given by co-operative departments in some territories, the Meeting felt that the growth of co-operatives could be stimulated to some degree by action taken by fisheries officers and recommended that such officers should establish contact with co-operative departments or sections to investigate the possible encouragement of co-operative organizations of fishermen for the provision of various services and facilities.

100. In those instances where the establishment of co-operatives does not seem practicable the Meeting recommended that governments, if necessary, consider alternative ways of assisting in the provision of those services and facilities.

101. Appreciating that the introduction of simple but adequate accounting systems for newly developing co-operatives was a problem in some territories, particularly where no co-operative section has so far been established, the Meeting recommended that the South Pacific Commission continue to provide assistance in devising systems suitable for the particular circumstances when requested.

F. FISHERIES TECHNICAL TRAINING

102. The Meeting studied the organization, work and results of the fisheries training courses organized by the South Pacific Commission with the assistance of the Food and Agriculture Organization of the United Nations in 1957 and 1961; it also considered the experience gained in such training in some territories of the area.

103. It appears that formal training, as organized in many instances since the last war, has not been satisfactory in one important respect, namely the pedagogic qualifications of the training staff. Acceleration of training is possible only by the use of highly skilled teaching techniques.

104. The Meeting felt that it was important to underline that technical training applies to three categories of personnel:

- (i) the expatriate professional staff of the fisheries departments;
- (ii) the intermediate local staff of these fisheries departments; and
- (iii) the fishermen themselves and other operatives in the industry.

105. It was the feeling of the Meeting that the South Pacific Commission can be of assistance in the training of these three categories of personnel by assisting inter-territorial study tours or visits to some countries outside the South Pacific Commission area, in view of acquiring the knowledge of a new technique, method or the use of a new type of gear.

106. Furthermore, the Meeting considered that the South Pacific Commission assisted by other agencies such as the Food and Agriculture Organization of the United Nations might provide, particularly at the level of the intermediate local staff, formal courses of instruction adapted to special needs; these needs being designated by way of detailed job descriptions prepared by the territorial fisheries departments.

107. It would seem that such formal courses should be generally limited to some urgently needed specializations such as: proper handling of marine products for preservation by icing and freezing including plant sanitation; proper maintenance of fishing and vessel equipment; maintenance of basic management records and statistics; proper use of basic navigational aids and basic navigation; and proper operation and maintenance of marine engines.

108. The Meeting felt that, for such formal courses, full use should be made of modern educational techniques and that the course should be of sufficient duration to cover the curriculum properly.

109. The Meeting suggested that the South Pacific Commission should also organize for the intermediate local staff of fisheries departments, occasional refresher courses on specialized subjects.

G. FISHERIES DEVELOPMENTAL PROSPECTS AND STEPS TO BE TAKEN FOR THEIR REALIZATION

110. To this point the Meeting had considered separately the various elements of developmental situations. It had considered the resources from which increased catches might be taken, the modifications of fishing gear and operations and of boats that could lead to improved and expanded operations, and the modifications in organization (e.g. co-operatives), shore facilities and markets that would support development of these industries.

111. At this point the Meeting then turned to a broad consideration of developmental situations. Attention was directed first upon the situations where foreign enterprises had set up operations within the area, or contemplated doing so. Whilst recognizing that high seas fishing within the area was open to any nation that chose to do so, the Meeting considered that the peoples of the region were unlikely to remain content to leave exploitation of those resources to people of other countries.

112. In addition, there are the cases where foreign enterprises have established bases on territories within the region; these cases have socio-economic and political aspects which, in the view of the Meeting, should be closely scrutinized.

113. The Meeting recognized that most of the Governments of the region, holding trusts with respect to the territories they govern, will wish, in considering proposals for the entry of foreign enterprises, to ensure that no action of theirs with respect to these proposals should in any way endanger those trusts; their attitude in this matter is likely to be especially strong with respect to industries, such as fisheries, concerned with the use of natural resources; they are likely to be reluctant to agree to a course of action that might result in the exclusion of local populations from a field of economic activity, entry into which is their natural right.

114. Moreover, even if assurances could be given with regard to this problem, the entry of foreign enterprises possibly brings some socio-economic problems with it. The Meeting would have liked to have had information on the economic and social effects in the local community of the enterprises at Pago Pago and at Santo, and since this was not available, it requested the South Pacific Commission to undertake, or arrange for, a study of this particular case.

115. The Meeting wished especially to know the effect of the presence of such foreign enterprises on local fishing industries and expressed a hope that the study of the Pago Pago and Santo situation, if made, should pay particular attention to this aspect of the question.

116. However, the Meeting recognized that the problem of foreign enterprises was only one in an array of problems concerning development of fisheries over the range from simplest subsistence fishing, to highly organized commercial operations.

117. The Meeting recognized that the administration of economic and industrial development had in recent years become a science in its own right, developed especially by the exigencies of the various international (including bilateral) technical assistance programmes.

118. The Meeting felt that fishery programmes of the region might very well benefit from a knowledge of this new science and expressed a hope that the South Pacific Commission could take steps to make available to fishery officers some of the literature in this field, and opportunities for participating in training programmes dealing with economic and industrial development.

119. Furthermore, the Meeting emphasized that certain unique features of fisheries industries (common property resource, high risk element, low integration), require a special treatment in the theory and practice of development.

120. The Meeting discussed at length the processes by which individual fisheries have developed and the course that events follow in such situations; in the Twentieth century there have been many examples of quite dramatic creation of new fisheries; there have been many more examples of attempts to initiate fisheries that have failed.

121. The Meeting considers that fishery workers of the region would be greatly assisted if a study could be made of at least representative examples of such developments. Such a study should present a detailed account of the history of development (or failure) of each fishery and should seek to identify the characteristics of a fishery situation that permit or frustrate development; the study should seek to generalize the conditions and events of development.

122. Workers associated with each fishery would wish to prepare accounts of these developments, but the Meeting considered that some competent authority, such as the Food and Agriculture Organization of the United Nations, should design a standard plan for the preparation of such accounts, should co-ordinate this work, compile the account and prepare a supplementary document adducing the significant generalities.

123. The Meeting felt that the South Pacific Commission could make a notable contribution to the development of fisheries in various ways:

- (i) It could assist governments and territorial administrations in selecting developmental projects and in preparing the ground in anticipation of the work of an expert of such projects; the Meeting emphasized that although availability of a resource may be readily apparent, a choice of means of exploitation may not be easy; and even when a fishing method has been decided upon, there is considerable work to be done in:
 - (a) assembling information on fish behaviour and distribution;
 - (b) procuring gear and supplies;
 - (c) providing and fitting a boat;
 - (d) arranging shore facilities for gear stowage and repair, engine and other equipment servicing, as well as fish handling and disposal.
- (ii) If the South Pacific Commission could be kept informed of all developmental projects under contemplation or in progress, it should be able to indicate occasions where a single expert might assist a number of territories in the course of a single tour of duty; inter-territorial collaboration in planning projects, as above described, could add greatly to the efficiency of the work whilst offering opportunities of economy.

124. The Meeting also emphasized that plans for such a project must be flexible. The local staff, who may be assisted by the South Pacific Commission, prepares plans and may execute them. In some cases they may require the services of an expert who may find it necessary to modify to some extent the original plan.

H. FISHERIES SERVICES

125. The Meeting, noting the existence of fishery services in several of the territories, expressed the hope that the fullest use would be made of these services in achieving, with respect to fishery industries, the general objectives of the South Pacific Commission.

126. However, the Meeting could not fail to observe that none of the services is at present staffed and equipped to carry out a full range of activities such as envisaged in the preceding chapters.

127. The Meeting urged the Governments and the territorial administrations to augment the staff and equipment of their fishery services.

128. The Meeting stressed that the activities of these departments can be effectively planned and carried out only on the basis of a declared policy of the Government, or the territorial administration concerned. The Meeting recalled a declaration of this kind, clearly made by the United States Government.

129. However, the Meeting is aware, as already indicated, that the essential economic information, on which to base such a policy, is lacking in the area.

130. The Meeting while reiterating its recommendation that this information be collected, nevertheless recommended most strongly that Governments or territorial administrations formulate policy with respect to those industries, in detail commensurate with the information presently available.

I. ROLE OF THE SOUTH PACIFIC COMMISSION IN FISHERIES DEVELOPMENT

131. The Meeting made a number of recommendations for action by the South Pacific Commission in the field of fisheries development. From these recommendations it can be seen that the activities of the Commission fall into four categories:

- (i) the collection, analysis and dissemination of technical and scientific information and the liaison between fisheries departments;
- (ii) the provision of a channel for assistance by other agencies to the benefit of the territories and the region;
- (iii) the provision of direct technical assistance when required and feasible;
- (iv) the undertaking of research or studies such as for instance in the field of the fisheries economics of the area.

132. The Meeting held the view that a consultative machinery would be required by the South Pacific Commission for the prosecution of a programme in the field of fisheries development.

133. In the opinion of the Meeting, the Commission should be able to draw on expert advice of an objective kind from outside the region, and to fuse this with the knowledge and experience of fisheries officers of the region.

134. In the view of the Meeting, this could be achieved by a plan such as the following which the Meeting recommends to the attention of the Commission:

(a) Structure:

- (i) An Advisory Committee composed of 4 or 5 members, representatives of as wide a range of specialization as possible, not from services of the South Pacific territories;
- (ii) A Panel of experts available for consultation; the Panel should be assembled gradually, on the advice of the Advisory Committee and according to the character of the questions on which technical help was sought from the Commission;
- (iii) A regular meeting of fisheries officers of the territories if possible at intervals not exceeding two years.

(b) Arrangements:

- (i) The Advisory Committee should be consulted by correspondence and should be convened at irregular intervals according to decision of the Secretariat in consultation with the Committee's Chairman in the light of developments, but especially with regard to the nature of matters on which consultations by correspondence have taken place;
- (ii) Certain members of the Panel would at times be invited to participate in Advisory Committee Meetings according to matters to be discussed;
- (iii) Advisory Committee Meetings would coincide with Meetings of Fisheries Officers, but would be less frequent;
- (iv) Individuals of Advisory Committee and Panel might be invited to attend Meetings of Fisheries Officers, from time to time, for special consultations;
- (v) In due course both Advisory Committee and Panel may become unnecessary.

J. OTHER ACTIVITIES OF THE SOUTH PACIFIC COMMISSION RELATED TO FISHERIES DEVELOPMENTS

135. The Meeting wished to support the initiative taken by the South Pacific Commission in assisting the research undertaken by the Hawaii Marine Laboratory on the problems of fish toxicity in the tropical Pacific.

136. These problems are of importance not only in the field of health but also in the economic field, as the frequent occurrence of fish toxicity in some territories limits to some extent the use of local marine resources.

137. The Meeting has studied the programme of the South Pacific Commission in the field of Health Education as well as its projected home economics activities.

138. The Meeting felt that, in both fields, these activities can result in a better use of fish and marine products in the food economy of the South Pacific islands.

139. Attention was particularly drawn to the importance of studying, in relation to such education projects, simple methods of fish preservation acceptable by the islanders as well as ways of generalizing the use of marine products as food, particularly in the areas where protein deficiency problems occurred - especially in the case of infants at the weaning period.

K. ACKNOWLEDGEMENTS

140. The Meeting desires to express its real appreciation for the effort of the staff of the South Pacific Commission beyond the requirements of normal duty that made possible a more rapid completion of the work than had been originally scheduled.

III. RECAPITULATION OF RECOMMENDATIONS

<u>1) For the South Pacific Commission:</u>	<u>Paragraphs</u>
General	131 - 139
(a) Clearing house and liaison functions	{ 51, 56, 61, 67 - 68, 70 - 71, 83 - 84, 118, 123
(b) Channels for assistance from other agencies	{ 36, 44(ii), 55, 80 - 81, 106
(c) Direct assistance	{ 36, 75, 78, 101, 105, 106, 109, 124
(d) Research or economic studies	{ 29 - 30, 36, 44(i), 45-48, 51, 57, 61, 114, 123
<u>2) For the Territories and Governments</u>	{ 29, 43 44(iii), 64 - 65, 69, 76, 99, 100, 113, 125 - 130
<u>3) For other Agencies - particularly FAO</u>	{ 29, 44(ii), 49, 55, 80 - 81, 122

SOUTH PACIFIC COMMISSION

FISHERIES TECHNICAL MEETING

A G E N D A

- I. Present status of fisheries and fisheries departments within the South Pacific Commission's area.
 - II. Review of the Commission's activities in the field of fisheries.
 - III. Survey of the knowledge of the fisheries resources in the South Pacific Commission's area.
 - IV. Problems in the improvement of methods, craft and gear for subsistence fishing and for commercial fishing.
 - V. Supporting measures for fisheries with particular reference to co-operatives.
 - VI. Fisheries services.
 - VII. Fisheries technical training.
 - VIII. Fish marketing and technology including health, nutrition and home economics aspects.
 - IX. Prospects for fisheries improvement and development in the South Pacific Commission's area.
 - X. Research and fisheries development.
 - XI. Rôle of the South Pacific Commission in fisheries improvement and development, including the rôle of the Fisheries Advisory Committee.
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SOUTH PACIFIC COMMISSION

FISHERIES TECHNICAL MEETING

Chairman: Mr. Vernon E. Brock
Vice-Chairman: Dr. G.L. Kesteven
Rapporteurs: Mr. J. A. Tubb
Mr. L.C. Devambe

LIST OF PARTICIPANTS

(a) Members of the Fisheries Advisory Committee

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(b) Members of Territorial Fisheries Services

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Mr. W.A. MACKENZIE Director, Division of Sea Fisheries,
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Mr. R. POWELL Fisheries Officer,
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Mr. Yutaka SAWAMURA Fisheries Officer,
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Mr. J. de VRIES Chief Inland Fisheries Officer,
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Mr. P.T. WILSON Fisheries Management Biologist,
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Trust Territory of the Pacific Islands.

(c) Observer from the Food and Agriculture Organization of the United Nations and the Indo-Pacific Fisheries Council

Mr. J.A. TUBB	FAO Regional Fisheries Officer and Secretary to the I.P.F.C., FAO Regional Office, Bangkok, Thailand.
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(d) South Pacific Commission

Dr. J. BARRAU	Executive Officer for Economic Development.
Mr. L.C. DEVAMBEZ	Assistant Fisheries Officer.
Mr. R.H. BOYAN	Co-operatives Specialist.

Also present at some of the meetings were Monsieur R. Cassier, Registrar of Co-operatives in New Caledonia; Monsieur Y. Magnier, Océanographe of l'Institut Français d'Océanie; and from the South Pacific Commission - Dr. R. Seddon, Executive Officer for Social Development; Dr. G. Loison, Executive Officer for Health; and Miss L. Geissler, Health Education Officer.

Present at the opening meeting were Monsieur J.-P. Tonnier, Director of l'Institut Français d'Océanie and Monsieur P. Martin, Chief of the Service de l'Elevage et des Industries Animales of New Caledonia.

SOUTH PACIFIC COMMISSION

FISHERIES TECHNICAL MEETING

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- WP.2 Cook Islands
- WP.3 New Caledonia and New Hebrides
- WP.4 Trust Territory of the Pacific Islands
- WP.5 Fiji

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- Tech. 5 The Fisheries of Tonga by Y. Sawamura.
- Tech. 6 The Activities of the South Pacific Commission in the Field of Fisheries by L.C. Devambe.
- Tech. 7 Basic Research and the Development of Commercial Fishing in the Pacific by M. Legend.
- Tech. 8 Fishermen's Co-operatives by R.H. Boyan.
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- Tech.10 Commercial Species of Fish in New Guinea Waters by A.M. Rapson.
- Tech.11 Improved Boats for Fishing in the Pacific Islands by R. Powell.
- Tech.12 The Nouméa Fishermen's Co-operative by R. Cassier.

