SPC/Coastal-DWFNS/WP.4
18 April 1984

ORIGINAL : ENGLISH

SOUTH PACIFIC COMMISSION

MEETING OF COASTAL STATES AND DISTANT-WATER FISHING NATIONS
(Noumea, New Caledonia, 18 - 22 June 1984)

THE FUTURE REQUIREMENTS FOR THE CONSERVATION OF THE TUNA RESOURCES OF THE REGION AND THE ROLE OF THE TUNA AND BILLFISH ASSESSMENT PROGRAMME

(Previously presented as WP.9 at the Twenty-Third South Pacific Conference)

SPConf.23/WP.9
23 August 1983

ORIGINAL : ENGLISH

SOUTH PACIFIC COMMISSION

TWENTY-THIRD SOUTH PACIFIC CONFERENCE
(Saipan, Northern Mariana Islands, 1 - 7 October 1983)

THE FUTURE REQUIREMENTS FOR THE CONSERVATION OF THE TUNA RESOURCES OF THE REGION AND THE ROLE OF THE TUNA AND BILLFISH ASSESSMENT PROGRAMME

Introduction

The Commission's Tuna and Billfish Assessment Programme, as approved by the Twentieth South Pacific Conference, is scheduled for completion on 30 September 1984. Recognising this, government representatives reviewed the region's future requirements for the survey and assessment of oceanic fisheries resources at the May 1983 Planning and Evaluation Committee Meeting. As a result of this review, the Planning and Evaluation Committee directed the Fifteenth Regional Technical Meeting on Fisheries to make specific recommendations to Conference on this matter by passing the following resolution.

> The Committee recognised the importance to the region of the activities of the SPC Tuna and Billfish Assessment Programme and requested the 1983 SPC Regional Technical Meeting on Fisheries to consider alternatives for the continuation or otherwise of such activities in their present or a modifified form with a view towards making detailed and specific recommendations for consideration by the Twenty-third South Pacific Conference. To assist the Technical Meeting on Fisheries in its deliberations the Committee directed the Secretariat to submit alternatives to the Technical Meeting in consultation with the FFA.

In response to this directive the Fifteenth Regional Technical Meetig on Fisheries considered the technical aspects of the region's requirements for tuna and billfish resource evaluation and the available alternatives for meeting these requirements. The Technical Meeting passed the following recommendations on oceanic fisheries for consideration by the Twenty-Third South Pacific Conference.

Recommendation No.4

> The meeting commended the work carried out by the Tuna and Billfish Assessment Programme and strongly recommended its continuation for two years in the first instance, with priority accorded to the collection and evaluation of catch and effort data and assessment of interaction between fisheries.

Recommendation No.5

The meeting recognised that there are substantial gaps in the catch and effort data available to the Programme, but was unable to identify methods of obtaining the information required. Accordingly, the meeting recommended that the Twenty-third South Pacific Conference explore ways and means of obtaining input from the distant-water fishing nations in pursuing the objectives of the revised work programme. The meeting suggested that this include the convening of a meeting of coastal states, distant-water fishing nations, and international organisations with an interest and experience in this field, such as the Forum Fisheries Agency (FFA), FAO, IATTC and ICCAT, to identify methods of collection, integration, and analysis of statistical and other scientific data on highly migratory species in the region. The meeting understood that the information generated from the Programme would be used to identify issues relating to the conservation of highly migratory species in the region. The suggested meeting would therefore need to explore possible structural arrangements which might be required for the conservation of tuna stocks of the region.

The Need for Regional Tuna Resource Assessment and Possible Conservation

In considering the region's requirements for resource assessments and, if necessary, conservation, it has been assumed that the national interests of the various countries of the region dictate the reasons for regional tuna resource assessments. The role of any international organisation(s) is merely to co-ordinate these assessments and to provide information in an appropriate form to the respective countries for which they work. National objectives are therefore fundamental to evaluation of the region's requirements.

When evaluating their individual alternatives, countries need to consider that even though the total resources may indeed be great, they are not infinite and catches in any one fishery will interact to varying degrees with other fisheries exploiting the same population of the same species. They therefore need to consider, in combination, their involvement or possible participation in the numerous types of fisheries which exploit tuna. These can be broadly classified into the following categories:

1. Subsistence fisheries. These have been of great traditional significance in many developing countries, particularly small Island states, and continue to be of immense social importance.

2. Artisanal fisheries. There is a great diversity of activities in this field, but skipjack and yellowfin tuna play an important role in small-scale fisheries of many countries.

3. Local commercial fisheries and joint-ventures. In many developing countries these are dominated by pole-and-line fisheries for skipjack which constitute major sources of employment and often represent a primary source of export earnings and foreign exchange.

4. Licensing of foreign fishing vessels. Since the acceptance of the principles of 200-mile zones of extended jurisdiction, license fees have become a major potential or actual source of income in many developing states. For example, in the zones of several Pacific Island states, the value of catches by distant-water fleets exceeds the gross national product of the Island state.

Distant-water fishing nations are of course involved only with the last two categories and primarily the last one. Their interests differ from those of coastal states in being directed towards obtaining access to the resource and in maximising, or at least optimising, total yields. They do, however, share the same basic interest of coastal states in the conservation of the total resource.

When evaluating the interests of coastal states in these various types of fisheries, it is necessary to take account of the gross changes which continue to occur in tuna fisheries in the Pacific. In the 1950s, the only tuna fisheries in the area of the South Pacific Commission were the traditional subsistence fisheries and a few small-scale artisanal fisheries. Longlining was then introduced by Asian fleets, but these operated only on larger tuna species caught far from shore and there was therefore no detectable interaction between the longline fisheries and fisheries of Island states. In the 1960s came the distant-water pole-and-line fleets from Japan and in the early 1970s local pole-and-line fisheries began to develop, largely on a joint-venture basis. In the late 1970s, purse-seining techniques improved dramatically and fishing effort increased to such an extent that by the early 1980s the tuna catch by purse-seining in the central and western Pacific exceeds that by all other gear types. As concluded by the South Pacific Commission Skipjack Programme, interaction amongst the various fisheries increases as catches increase.

Countries are therefore faced with the evaluation of three basic types of interaction:

1. Amongst the various types of fisheries within individual countries; for example, between the large distant-water purse-seine and pole-and-line fleets, and the subsistence fisheries in the waters of any one country.

2. Amongst countries; this problem increases as fisheries cover more and more of the 200-mile zones of the various coastal states, therefore bringing vessels of neighbouring countries closer together.

3. Between gear types; this is most obvious for yellowfin tuna, where the purse-seine and longline fisheries compete for the same resource, yet yield products which sell at totally different prices.

There is no doubt that evaluation of the various forms of interaction will dominate scientific discussions of optimal deployment of tuna fisheries in the western Pacific for some time to come. Problems will increase if catches continue to increase and will inevitably lead to various forms of tuna resource allocation, both between gear types within countries and amongst countries. In fact, many examples of such allocations already exist (e.g. the restriction of purse-seining in certain areas of the Northern Marianas, Solomon Islands and Fiji).

The Present Status of the Stocks

In view of dramatic changes in tuna fisheries which have occurred in the central and western Pacific in recent years, and the paucity of the available statistics, it is difficult to accurately evaluate the impact of the fisheries on the stocks. However, work by the Commission's Skipjack and Tuna Programmes has provided estimates for at least the major species. Skipjack resources have been estimated to be extremely large and considerable potential exists for increasing total yields, even though there is evidence of heavy localised exploitation in some areas. Interaction between existing fisheries has been shown to increase as total catches increase and fishing areas expand and grow closer together.

Preliminary evaluation of the yellowfin tuna resources suggests that the standing stock is greater than previously estimated from longline catch and effort statistics. However, there have recently been phenomenal increases in purse-seine catches of this species, and at the same time a decline in total catches by longline vessels. There have also been reports of declines in catches of yellowfin by subsistence fishermen in some areas. As yet the relationship amongst the catches of this species by purse-seine, longline and subsistence gears is poorly understood. It should be noted, however, that the purse-seine catch alone of yellowfin tuna in 1982 from the area of the South Pacific Commission was approximately equal to previous estimates of the total maximum sustainable yield of this species from the total central and western Pacific. Figures 1, 2 and 3 in Appendix 1 were presented to the Fifteenth Regional Technical Meeting on Fisheries, to indicate recent changes in the status of the stocks of yellowfin tuna.

Largely because of the lack of differentiation between juvenile yellowfin and bigeye tuna in purse seine catches, the available statistics on bigeye tuna are too poor to allow reliable resource evaluation. It should be noted that surface catches of this species have increased dramatically with the recent increase in purse-seining.

Total effort on albacore and billfish in the central and western Pacific has decreased with the decline in longline fishing, suggesting that the resources of these species may now be underexploited.

Future Requirements for Resource Assessment

Evaluation of interaction amongst the various fisheries exploiting tunas is now a key requirement for resource evaluation, perhaps even more

important than assessments of the resource's ability to support total sustainable catches. Proper evaluation of interactions will need to take account of the status of the resources being exploited and the social, economic and political objectives of the countries involved. History suggests that there will be constant changes in the nature of the fisheries operating throughout the vast area of the tropical Pacific and that evaluation of fishery-to-fishery interaction will require ongoing assessment. Certainly the social, economic and political objectives of coastal states and foreign fishing nations can be anticipated to change.

Because of the complexity of the many 200-mile zones which collectively span the central and western Pacific, and the natural variability apparent in resource abundance and distribution, precise evaluation of fishery interactions will always be extremely difficult. Furthermore, the highly migratory nature of the species being exploited necessitates that realistic resource evaluation take into account the effects of fishing over a much greater area than just the 200-mile zones of Pacific Island states. For example, little more than half of the 550,000 tonnes of skipjack taken from the total western Pacific in 1982 was from the area of the South Pacific Commission (accurate statistics available to countries in the SPC area cover only approximately 95,000 tonnes (17%) of the total catch).

The need to obtain input from nations additional to Pacific Island coastal states in evaluating the total resources, estimating fishery- to-fishery interactions and in formulating conservation policies, is therefore obvious. Wider involvement in resource evaluation issues should in no way detract from the ability of coastal states to act in concert when formulating management decisions arising from consideration of the comprehensive resource evaluations.

Consideration of Action Implied by the Recommendations from the Fifteenth Regional Technical Meeting on Fisheries

Action by the Secretariat on the first of these recommendations, subject of course to Conference endorsement, necessitates firstly a review of the priorities of the Tuna Programme to accommodate the new direction given in the recommendation. The collection of statistics is covered under priority No.1 of the existing Programme (see Appendix 2). Evaluation of catch and effort data gives increased emphasis to parts of what were priority items Nos.6 and 11, and absorbs what was item No.12. The assessment of interaction between fisheries incorporates previous items Nos.5, 10, 2 and part of 4, and as noted by the Technical Meeting, necessitates tagging work further to that completed by the Skipjack Survey and Assessment Programme. There is also need to modify parts of other existing priority items.

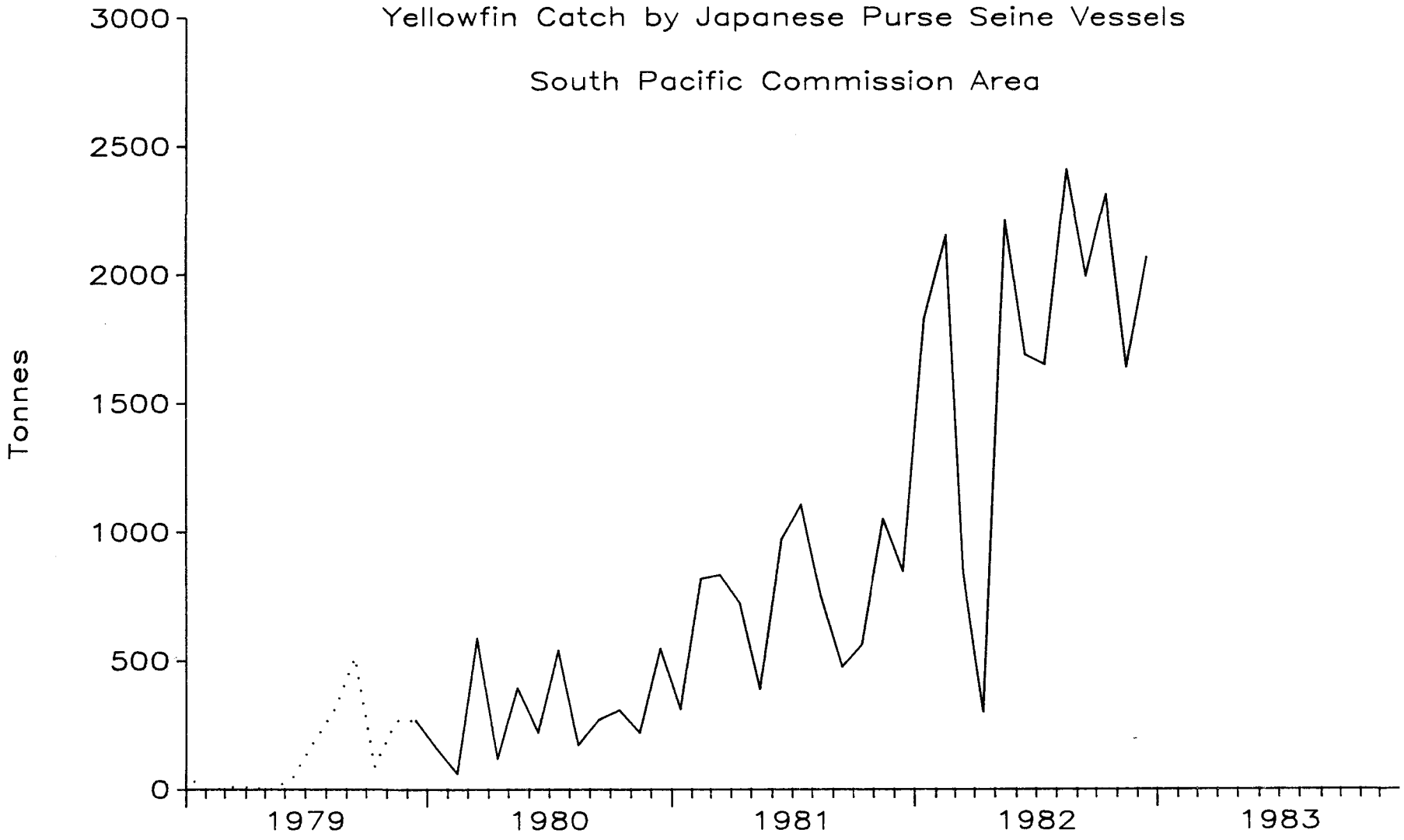
Details of the new priorities for the Tuna Programme from 1 October 1984 are given in Appendix 3.

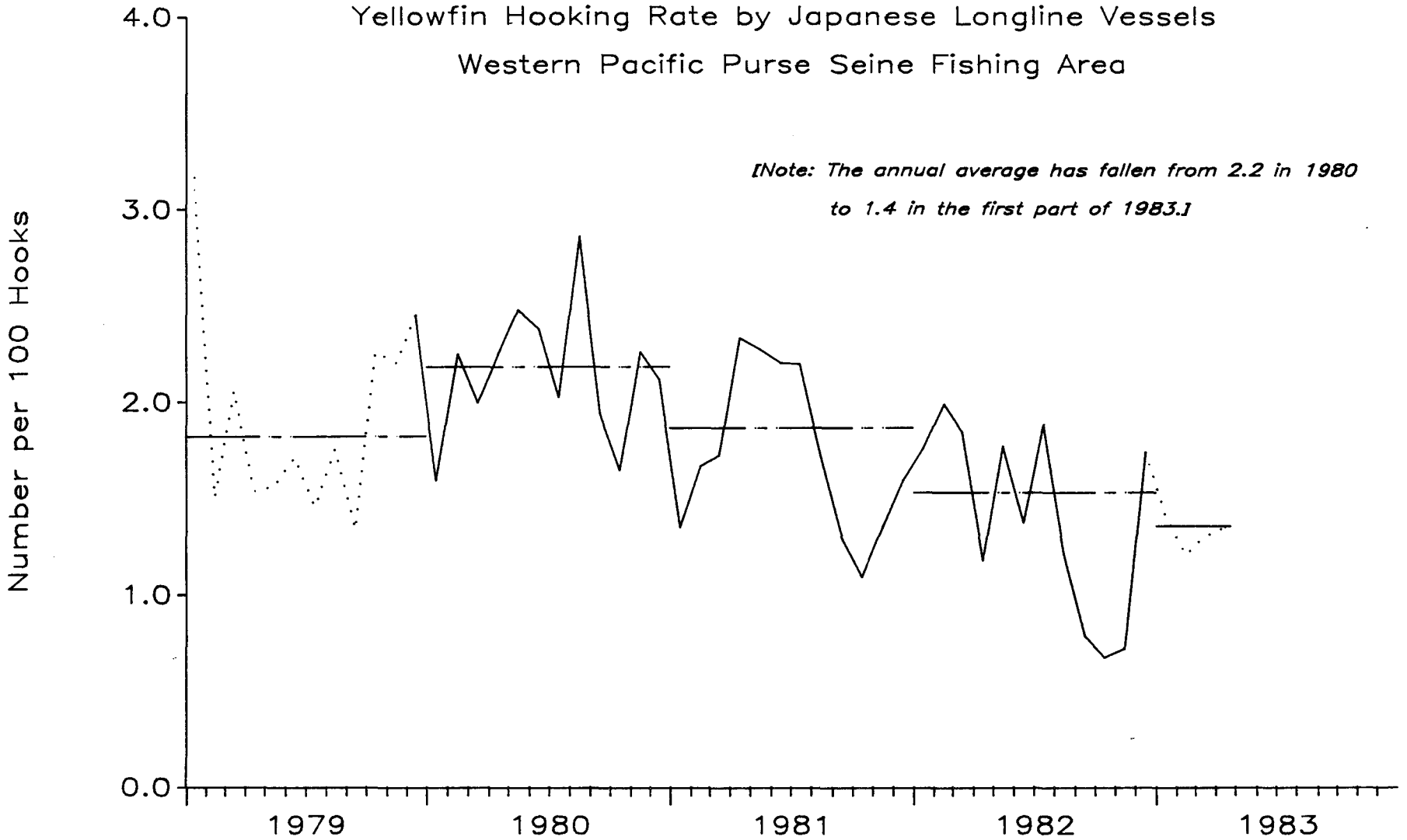
These new priorities would form the basis of a programme document to be used as a proposal for extra-budgetary funding. Because of the high cost of the field work component of the two-year extension, funding should be sought separately for the core programme and the field work component. The budget (as attached) for both aspects has been drawn up under the assumption that salaries will be brought into line with present Commission emoluments in French Pacific Francs.

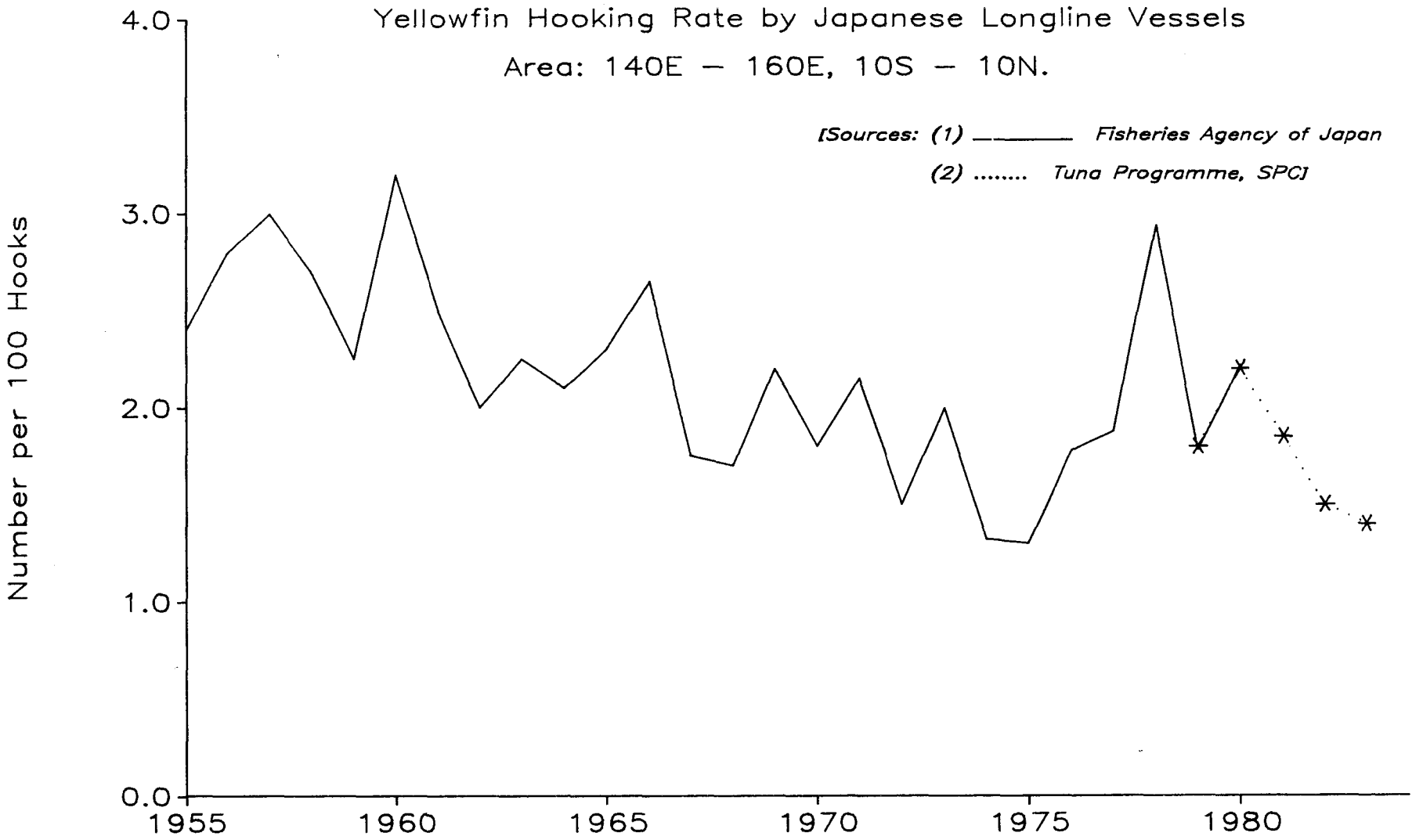
Action by the Secretariat on the second of the two Technical Meeting's recommendations is far more dependent upon specific direction from Conference. In effect, this recommendation suggests that the Conference explore ways and means of obtaining the necessary input from distant-water fishing nations. Some of the alternatives for pursuing this objective, such as the convening of a meeting, would obviously involve action by the Secretariat at the direction of the Conference.

APPENDIX I

GRAPHICAL SUMMARIES OF CHANGES IN THE COMMERCIAL FISHERIES FOR YELLOWFIN TUNA IN THE CENTRAL AND WESTERN PACIFIC


Yellowfin Catch by Japanese Purse Seine Vessels
South Pacific Commission Area
Tonnes
3000
2500
2000
1500
1000
500
0
1979
1980
1981
1982
1983


Yellowfin Hooking Rate by Japanese Longline Vessels
Western Pacific Purse Seine Fishing Area
[Note: The annual average has fallen from 2.2 in 1980
to 1.4 in the first part of 1983.]
Number per 100 Hooks
4.0
3.0
2.0
1.0
0.0
1979
1980
1981
1982
1983


Yellowfin Hooking Rate by Japanese Longline Vessels
Area: 140E – 160E, 10S – 10N.
[Sources: (1) _____ Fisheries Agency of Japan
(2) ..... Tuna Programme, SPC]
Number per 100 Hooks
4.0
3.0
2.0
1.0
0.0
1955
1960
1965
1970
1975
1980

APPENDIX II

PRIORITY ITEMS IN THE EXISTING TUNA AND BILLFISH ASSESSMENT PROGRAMME 1 OCTOBER 1981 TO 30 SEPTEMBER 1984

1. Development of a regional statistical programme.

2. Estimation of the degree of interaction between pole-and-line and purse seine fisheries and assessment of each on tuna resources, principally of skipjack and yellowfin tuna.

3. Assessment and monitoring of the levels of exploitation of the stocks of the commercially important billfish species, especially black marlin, blue marlin, striped marlin, sailfish and swordfish.

4. Continued analyses of the data generated by the Skipjack Programme and evaluation of the impact of this data on resource assessment.

5. Assessment and monitoring of the levels of exploitation of the stocks of the commercially important tuna species, especially yellowfin tuna, bigeye tune and albacore.

6. Assessment of the biological information necessary for the study of population dynamics of the dominant species.

7. Studies of the biology and ecology of the most important baitfish species used for catching tunas.

8. Comparison of the biological data on major species with relevant oceanographic and environmental information, with a view to obtaining a description of the habitat available to each species, and hopefully predicting abundance in certain areas.

9. Evaluation of the use of anchored rafts as tuna aggregating devices.

10. Estimation of the degree of interation between surface and longline gears exploiting yellowfin tuna, bigeye tuna and albacore, and assessment of optimal exploitation of each species by gear type.

11. Co-ordination of observer programmes on distant-water fishing vessels.

12. Assessment of the impact on the stocks of changes in the type of longline gear used especially the trend towards gear which fishes at greater depth.

13. Evaluation of alternative fish attraction devices.

APPENDIX III

PRIORITY ITEMS FOR THE TUNA AND BILLFISH ASSESSMENT PROGRAMME
1 OCTOBER 1984 TO 30 SEPTEMBER 1986

1. Collection and evaluation of catch and effort data

This includes the maintenance and updating of the regional statistical programme (previous priority item No.1) which has now been established. The data base will be improved by evaluating and upgrading the accuracy of the available statistics and by incorporating new catch, effort and biological data from catch sampling and observer programmes (previous priority item No.11).

2. Assessment of interaction between fisheries

This would include: assessment and monitoring of the levels of exploitation of the commercially important tuna species, especially yellowfin tuna, skipjack and bigeye tuna (previous priority items Nos.5 and 4); evaluation of interaction amongst the various types of fisheries for tuna within individual countries (i.e. subsistence, artisanal, local commercial or foreign operated); evaluation of interaction amongst tuna fisheries in different countries; evaluation of interaction amongst gear types, principally purse-seine, pole-and-line and longline (previous priority items Nos.2 and 10).

3. Assessment and monitoring of the levels of exploitation of the stocks of the commercial important billfish species (previous priority item No.3)

4. Comparison of the biological data on major species with relevant oceanographic and environmental information with a view to obtaining a description of the habitat available to each species, and possibly predicting abundance in certain areas (previous priority item No.8).

   Collection of the oceanographic and environmental data is left to other interested organisations, such as ORSTOM and IATTC, and the Programme's involvement therefore entails provision of biological data and dissemination of the results to the countries and territories of the region.

5. Studies on the biology and ecology of the most important baitfish species used for catching tunas (previous priority item No.7)

   Action on this item will remain in the form of responses to requests for assistance from individual countries.

6. Monitoring of the use of anchored rafts and/or other fish attractants as fish aggregation devices (previous priority items No.9 and 13)