



Loan No. 7221

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## II. SUMMARY OF DISCUSSIONS

### 1. PRELIMINARIES

#### 1.1 Opening Address

1. Mr Josephat Laau of the Vanuatu Department of Agriculture and Fisheries welcomed participants and formally opened the meeting. He provided an overview of the importance of tuna fisheries in the region and the role of the Tuna and Billfish Assessment Programme (TBAP).

2. Mrs Hélène Courte, Director of Programmes, South Pacific Commission, on behalf of SPC and the participants, thanked the Government of Vanuatu for its support and hospitality. She also thanked the outgoing Chairman, Mr Peter Sitan, of the Federated States of Micronesia (FSM) for his contribution to the work of the Standing Committee on Tuna and Billfish.

#### 1.2 Appointment of Chairperson and Rapporteurs

3. Dr Tim Adams, Acting Director of Fisheries, Fiji Ministry of Primary Industries, assumed the Chair.

4. The following Rapporteurs were appointed:

Agenda Items 1–2	Mr Peter Ward, Australia
Agenda Item 3	Mr Albert Caton, Consultant to the South Pacific Commission
Agenda Items 4–6	Mr John Diplock, Federated States of Micronesia
Agenda Item 7	Dr Keith Sainsbury, Australia

5. The draft agenda was adopted with the addition of Item 1.5 (an introduction to the draft Strategic Plan).

#### 1.3 Meeting procedures

6. The agreed report of the meeting would be submitted to the Twenty-third RTMF to be held in Noumea on 4–9 August 1991.

7. Action items and recommendations developed by SCTB 3 are listed in Annex 1. Each action item and recommendation was dealt with under relevant agenda items, as indicated.

#### 1.4 Adoption of the Report of the Third Standing Committee on Tuna and Billfish (Noumea, 6–8 June 1990)

8. The meeting formally adopted the Report of the Third Standing Committee on Tuna and Billfish (Noumea, 6–8 June 1990) with no amendment.

#### 1.5 Brief introduction to the draft Strategic Plan for the Tuna and Billfish Assessment Programme

9. The SPC Chief Fisheries Scientist gave a brief introduction to the draft Strategic Plan for the TBAP for the next five years (1992–96). The draft plan was prepared in response to

Recommendation 1 of SCTB 3, which drew attention to the expiry of the TBAP in September 1991 and recommended the development of a strategic plan for the programme for the next five-year period. The Twenty-second RTMF and the Fourteenth Meeting of the Committee of Representatives of Governments and Administrations (CRGA), endorsed the drafting of a plan by SCTB. A sub-committee consisting of the SPC Chief Fisheries Scientist, an EC-funded consultant, Dr Tim Adams, Mr Peter Sitan (FSM), Dr Talbot Murray (NZ) and Mr Andrew Richards (PNG) developed a draft (Working Paper 5) for consideration by SCTB 4. Participants were urged to consider the draft thoroughly so that detailed review could occur under Agenda Item 7.

10. Mr Transform Aqorau provided a brief outline of developments at the Forum Fisheries Agency (FFA). Member countries had agreed to stabilise or reduce industrial tuna fishing activities in the region. They had emphasised the importance of monitoring fishing activities and had proposed improvements to observer programmes, introduction of electronic surveillance systems and the formulation of management arrangements for the western Pacific tuna fishery. The minimum terms and conditions (MTCs) for access to economic zones by distant-water fishing nations (DWFNs) had been reviewed and were expected to be enforced by all members. FFA felt that it would be in the interests of member nations to rationalise fishing fleet sizes in the near future.

## **2. OVERVIEW OF WESTERN PACIFIC TUNA FISHERIES**

11. Compilation of status reports on western Pacific fisheries was a major action item of the Third Standing Committee (Action Item 7). The Chief Fisheries Scientist summarised developments in western Pacific tuna fisheries for 1990 (WP.3), covering the main species (skipjack, yellowfin, albacore, bigeye) taken in the SPC area, and the common fishing methods (purse seine, pole-and-line, driftnet, longline and trolling). The report included historical data, dating back to 1952 in some cases. The figures were developed as 'best estimates' in the interests of providing SCTB with a report of catch trends that was as up to date as possible. The estimates would be revised as more information came to hand.

12. Where possible, other species of tunas and billfishes and other fishing methods would be included in future status reports. The meeting agreed that SPC should update the status report each year.

13. Approximately 1.2 million mt of tuna were caught in 1990 in the western Pacific and eastern areas of the Philippines and Indonesia. Catch in the SPC statistical area was mainly comprised of skipjack tuna (70%) and yellowfin tuna (24%). The bulk of this catch (about 60%) was taken by purse seiners. SCTB 4 noted the following developments:

- an increase in purse seine activity and catch;
- a significant decrease in driftnet fishing;
- catch rates in the pole-and-line fishery declined.

14. The purse seine fleet increased from about 170 vessels in 1989 to 190 vessels in 1990. Catches increased by about 6 per cent over 1989. While the number of U.S. purse seiners licensed increased to 50, only 41 U.S. vessels were active in the area.

15. Further increases in purse seine vessel numbers were possible given continuing vessel construction by Taiwanese and Korean interests.

16. The Japanese fleet, in particular, reported high catch rates during 1990. Purse seining, particularly by the U.S. fleet, had expanded to the east, and it was speculated that this shift might be related to oceanographic conditions. It was noted that access agreements played a major role in determining purse seine effort distribution.

17. The driftnet fishery had declined significantly in response to the United Nations' resolutions 44/225 and 45/197. Nine Taiwanese vessels were observed operating in the South Pacific during the 1990–91 surface season, and the driftnet catch was expected to be only a few thousand mt.

18. As a result of poor catches early in 1990, the number of Japanese pole-and-line vessels in the SPC area declined more than usual in subsequent months. Due to poor catches and decreasing fishing effort, the estimates of the 1990 catch show a marked decline.

19. While detailed information on catches by longliners was generally lacking, it was estimated that over 80,000 mt of tuna were taken by longline in the SPC statistical area. The longline catch consisted mostly of yellowfin tuna (45%) and bigeye tuna (38%). Targeting of bigeye tuna was believed to be increasing.

20. The meeting called for nations involved in high seas longlining and other forms of tuna fishing to provide information on their catches, including those from high seas areas. The multilateral approach of the U.S. Treaty had proved successful in ensuring the provision of such data. The meeting noted that compliance with the various provisions of the agreed MTCs by distant-water fishing nations would also assist in the collection of high seas data.

21. The over-supply of frozen sashimi on Japanese markets would probably restrict any expansion of conventional longlining for the present. However, small-scale coastal longlining supplying fresh-chilled sashimi had continued to increase in a number of areas, and improved monitoring of these operations was required.

22. Participants were encouraged to update the information presented in Working Paper 3. Catch data had to be comprehensive, authoritative and timely to be useful to fisheries scientists and administrators. The meeting complimented SPC on its thorough work in compiling these statistics. Furthermore, the meeting agreed that member nations should update the information on catches and fishing activities at their earliest convenience.

#### **Action Item 1**

**That the Secretariat identify areas where annual catch estimates given in its Fisheries Status Report (WP.3) were poor, and approach countries for updated estimates where necessary.**

23. The meeting noted that data sources were indicated for each table in Working Paper 3. An assessment of the quality of the estimates was also provided.

24. Participants discussed the issues of by-catch and discards. The meeting devoted considerable time to considering potential problems associated with this issue and to assessing methods of collecting data on by-catch and discards. The meeting agreed that it was an important aspect of the fisheries and should be given proper consideration.

25. The following definitions of the terms 'by-catch' and 'discards' were agreed:

*by-catch*: any catch of species (fish, sharks, marine mammals, seabirds, etc.) other than the target species; 'incidental catch' can be regarded as synonymous.

*discards*: the portion of the total catch not retained, usually because of economic reasons.

26. There were three potential sources of information on by-catch and discarding:

- anecdotal reports from various people associated with the fisheries, such as field officers;
- logbook data; and
- observers.

27. The value of logbook data was discussed. Members felt that where provision of data was perceived by the fishermen to be not in their best interests, they could not be relied on to provide accurate data. The meeting recognised the limitations of logbooks, but encouraged the collection of by-catch data through logbooks as the first step in addressing the problem.

28. As an initial step, logbooks had to be expanded specifically to include by-catch. Although some species identification problems were recognised, it was considered that provision of data on by-catch in logbooks must be mandatory, and columns for common by-catch species should be included in forms to encourage reporting.

29. Currently, observer programmes were likely to provide the most accurate information on by-catch and discards, although it was recognised that the presence of observers on vessels may alter fishermen's behaviour and so the data collected may not be typical of unobserved activities. The meeting agreed that the collection of information by observers should ideally be part of a wider programme to investigate by-catch and discarding practices. However, as a first step, all existing information should be compiled and assessed.

## **Action Item 2**

**That the Secretariat evaluate and report available information on by-catch and discards in western Pacific tuna and billfish fisheries and advise on the need for further action.**

30. In reviewing the issues associated with by-catch and discarding, the Secretariat would need to synthesise information from a variety of sources. For example, FFA should be approached for data on by-catch reported by observers on U.S. purse seiners, and New Zealand and Australia should be approached for data on by-catch reported by observers on DWFN longliners. The review might provide preliminary estimates of by-catches and discards, with particular emphasis on the purse seine and longline fisheries.

31. The meeting commended the Secretariat on the comprehensive approach to assembling the status report. The regular updating of the status report would provide scientists and others with a useful perspective on developments in tuna and billfish fisheries in the region.

32. SCTB 3 had requested that the Secretariat invite FFA to contribute economic and marketing information to the review of western Pacific fisheries (Action Item 8). Discussions with FFA indicated that there may be sensitivities associated with the disclosure of economic data. As an interim measure, the Secretariat had developed a summary of the flow of tuna products from the western Pacific (Working Paper 6). In presenting the information, the Chief Fisheries Scientist explained that the investigation of product flow initially stemmed from the need to identify potential

sources of tag returns from the RTTP. The investigation also gave useful information for validating catches reported in logbooks and interpreting trends in the fisheries.

33. The majority (67%) of tuna caught in the SPC area were canned. Most was canned in the ASEAN region, with Thailand being the major destination (450,000 mt per year). The canning industry was developing rapidly in Indonesia, with 40,000 mt canned in 1990. This was expected to increase to over 150,000 mt in 1991. The increased supply may be sought from eastern Indonesian waters and the Indian Ocean. The apparent increase in number of canneries in the region was noted, as was the expansion in purse seine activity, particularly by Indonesian, Taiwanese and Korean fleets, with the possibility of French, Spanish and Mexican vessels entering the western Pacific fishery in the near future.

34. Preparation of loins in countries with cheap labour was becoming more common. The loins were then transported back to developed countries for canning.

35. The information sources used for investigating the flow of sashimi tuna to Japan was questioned. It was suggested that it would be appropriate to examine the import/export statistics published by the Government of Japan.

### **3. SPC TUNA AND BILLFISH ASSESSMENT PROGRAMME ACTIVITIES**

#### **3.1 RTTP – work programme and progress report**

36. The SPC's Principal Fisheries Scientist presented a progress report of the Regional Tuna Tagging Project (Working Paper 2), highlighting tag releases, tag returns and some preliminary analyses of the data. As at 31 May 1991, the Project had tagged and released 78,923 tuna, consisting of 53,600 skipjack, 24,099 yellowfin, 1,142 bigeye and 82 longtail tuna. The geographical distribution of these releases had, in line with project objectives, been concentrated in the main operational area of the purse seine fishery. Activities for the remainder of 1991 and early 1992 would focus on those areas that had so far received little coverage, particularly at the eastern extremes of the surface fishery.

37. The size distribution of the releases varied according to the types of aggregation fished, but was typical of a pole-and-line vessel operating in the western tropical Pacific. Accordingly, some difficulty had been experienced in tagging large numbers of yellowfin > 60 cm, however experimentation with other fishing methods is continuing to this end.

38. Tag returns had been received from a variety of vessel nationalities and gear types, and as at 12 June 1991, tags from 3,993 skipjack, 1,452 yellowfin and 85 bigeye had been received at SPC headquarters. The co-operation of Mar Fishing Company (Philippines), the Research Institute of Marine Fisheries (Indonesia), the Tohoku National Fisheries Research Institute, the National Research Institute for Far Seas Fisheries (Japan), and the National Marine Fisheries Service (American Samoa), amongst others, was gratefully acknowledged in facilitating the return of tags.

39. Some preliminary analyses of the tagging data highlighted the following points:

- Returns by time at liberty of yellowfin and skipjack showed classical log-linear attrition, with preliminary estimates of total attrition of  $0.19 \text{ mo}^{-1}$  for yellowfin and  $0.37 \text{ mo}^{-1}$  for skipjack.



- Skipjack tended to show more rapid dispersal than yellowfin, with most long-distance displacements of both species being to the east or west of the release point.
- Unedited length increments appeared highly variable, but showed some characteristics of von Bertalanffy growth.
- Preliminary estimates of tag shedding were consistent with tagging experiments elsewhere, but more double tagging was necessary to precisely estimate shedding rates.
- Tag-seeding experiments on Solomon Islands vessels had resulted in 100 per cent recovery, but experiments on U.S. purse seiners had produced variable results, with only 21 out of 71 seeded tags being recovered so far. Comparisons of recovery rates by different fleets within the same area-time strata may shed further light on tag reporting rates.

40. In response to a question on the implications for the tagging vessel cruise schedule in the event of a shortfall in future funding, the Principal Fisheries Scientist advised that the sequence for the remainder of 1991 outlined in section 1.1.1.5 of Working Paper 2 would be maintained regardless of the availability of funds to carry out additional work in 1992. The inclusion of operations in the Coral Sea off north-eastern Australia would not compromise the programme in the major study area. Most of the funding for the Coral Sea work will be provided by Australia, and any unused charter time in 1991 could be carried over to 1992. In addition, releases in the area would contribute to overall RTTP objectives, and timing was suitable.

41. The extent of and results from 'tag seeding' by observers on Japanese purse seiners in FSM waters were not available but generally the response of Japanese fishermen to the RTTP had been very good in terms of number of tags returned and provision of recapture data.

42. Ideally, the geographical coverage of the RTTP should extend over as much of the range of the stocks as possible, however for practical considerations the project had been designed to concentrate on the region from 10°N to 10°S between 120°E and 180°, which was the area of most intense fishery activity. The extent and speed of mixing of tagged tuna throughout the study area would be important aspects to consider in analyses of the data.

43. Preliminary results from the RTTP recoveries suggested more rapid movement of skipjack than yellowfin. This did not imply that yellowfin were not particularly mobile, as 25–30 per cent of recoveries had been made more than 200 miles from the release location, and this percentage would probably increase with time as longer times at liberty were sampled.

44. Japanese studies of the distribution of yellowfin contaminated with radioactivity subsequent to nuclear tests in the vicinity of the Bikini Atoll suggested wide and rapid dispersal in the western Pacific. One problem in interpreting dispersal patterns in general was the effect of effort distribution on the pattern of recoveries.

45. The possible return of tags with fabricated information was discussed. Close liaison with the field personnel facilitating recoveries and careful checks on vessel operational patterns relative to reported tag recapture times and locations were routine procedures. Returns from canneries sometimes presented problems in identification of recovery time and location, but generally it was possible to identify the recovery vessel, and at times, the recovery EEZ.

46. The absence to date of recoveries from longline fisheries was noted. This might be explained if yellowfin and bigeye had not yet recruited to the longline fishery, but recovery of some 20–30 kg fish from purse seine sets suggested that longline recoveries could now be anticipated. Longer duration of fishing trips (albeit not of small longliners) might cause some delay in the return of tags. Special publicity aimed at longliners might be prudent at this stage, and might be reinforced during the new port sampling operations on longline vessels that were in the process of being established. It was noted that repeated publicity was important to ensure that some apparent tag attrition was not in fact due to a decline in interest in the reporting of recoveries.

### **3.2 In-country tagging projects**

47. The Principal Fisheries Scientist reported that the fieldwork of the Solomon Islands project had been successfully completed, with the tagging of 11,180 tuna during five separate cruises. As at 12 June 1991, 1,180 returns had been received. Final analysis of the results of the project will soon begin, and the final report should be available for Solomon Islands Government consideration during the first quarter of 1992.

### **3.3 Assessing and monitoring levels of exploitation of commercially important tuna and billfish species**

48. SCTB 3 had considered documents addressing the stock status of yellowfin, skipjack and bigeye. The meeting was advised that the conclusions in those documents were still relevant.

49. There still appeared to be scope for increased skipjack catch, given the results of the Skipjack Survey and Assessment Programme and the assumption that aspects of skipjack stock dynamics were unchanged. Catch rates had been maintained in the face of increasing overall catches (WP.2, Table 6), suggesting that the fishery was still not having a major effect on stock abundance. The results of the RTTP would enable a reassessment of skipjack exploitation potential next year.

50. There was a decline in pole-and-line fishery CPUE in contrast to stable purse seine CPUE. This may indicate a degree of interaction between the two components, but other factors, such as environmental conditions might also have been important.

51. Recent yellowfin assessments indicated that continued total catches of the order of 200,000–220,000 mt would not be detrimental to the stock or the longline component of the fishery. This conclusion was based on the observation of stable longline CPUE since the mid-1980s. The sustainability of the current estimated catch of approximately 320,000 mt could not be assessed at present. The Yellowfin Working Group, convened in accordance with Recommendation No. 2 of SCTB 3, meeting immediately following SCTB 4 would examine the matter in more detail.

52. Longline CPUE for bigeye during 1990 was high, but it was noted that variable patterns of targeting for yellowfin and bigeye, and the fact that longline gear might not efficiently sample bigeye habitat, meant that CPUE might be a poor indicator of bigeye abundance. The SCTB 3 Action Item 5 requiring compilation of information on bigeye was obviated by the development, for the FAO Interaction meeting, of a review of bigeye biology and fisheries. The draft was currently with members of the meeting's Pacific Bigeye Working Group for consideration.

53. In addition, of a section on the biology of the major tuna species of concern in each country was incorporated in the confidential country reports. This section includes a discussion of bigeye

biology. SPC had developed reports for Papua New Guinea and Marshall Islands in 1988 and 1989, presented a draft report to the Federated States of Micronesia in 1991, and was currently developing Kiribati, Fiji and updated Papua New Guinea reports with the assistance of an AIDAB-funded consultant.

### **3.4 South Pacific albacore**

54. The Chief Fisheries Scientist reviewed the section of Working Paper 2 relating to the TBAP Albacore Research Project, explaining that the work was part of an international albacore assessment study co-ordinated by SPAR, which played the main role in reviewing the work. SPC work had been facilitated by the appointment of an albacore scientist who arrived shortly after the third SPAR meeting, convened by SPC in Noumea.

55. The albacore scientist had co-ordinated an observer programme in collaboration with the New Zealand Ministry of Agriculture and Fisheries during the 1990/91 surface fishery, which continued until mid-May. Port sampling was undertaken at Noumea and catch sampling on a Tongan longliner, to complement sampling by Fiji at Levuka, NMFS at Pago Pago and EVAAM at Papeete. A medium-scale tagging project resulted in the release of 3,000 tagged albacore on the surface fishery grounds, predominantly in the Sub-Tropical Convergence Zone. No tags had been recovered yet, raising the question of the justification of proceeding with the planned second year of releases. North Pacific experience suggested that delays in recoveries might be anticipated, but the limited number of recoveries (7) from previous releases in the South Pacific was not encouraging.

56. SCTB 3 Action Item 1 had led SPC to seek the assistance of Australian observers on longliners in the Australian Fishing Zone in sampling albacore for otolith and gonad studies. Some otolith sampling of domestic catches had been possible, and processed length composition data from observer work would soon be available. However, attempts by observers to arrange samples from Japanese longliners had been generally unsuccessful because of the reluctance of fishing masters to permit cutting of fish that were traditionally frozen whole for canning markets. New Zealand experience suggested that approaches through the parent companies and the Japan Tuna Federation be more successful, provided that sufficient advance notice of requirements was given and that the sampling load proposed was reasonable. It was noted that an offer of compensation for loss of product weight, or for purchase of fish, might be required.

57. Scope for sampling might also arise if experimental Japanese skipjack and albacore pole-and-line fishing activities took place in the New Zealand EEZ next spring and summer.

### **3.5 Oceanography and tuna fisheries**

58. The ORSTOM Tuna Scientist advised the meeting that he had been upgrading the ORSTOM oceanographic database relevant to fisheries studies. The recent expanded availability of fisheries data for the early 1980s, and the advent of a La Niña event since the 1982 and 1987 El Niños would provide scope for a review of the fisheries/oceanography relationships. Since the La Niña of 1988/89, the western Pacific had been subject to a steady warming period, leading to anticipation of a new El Niño, perhaps in late 1991 or early 1992, although ability to predict such events was limited.

### 3.6 Fisheries Statistics Project

59. The SPC Fisheries Statistician discussed the activities of the Fisheries Statistics Project (FSP), with reference to Working Paper 2 and Working Paper 4, the TBAP Data Catalogue.

60. The main activity of the FSP during the current reporting period, had been, as in past years, the maintenance of the Regional Tuna Fisheries Database (RTFD). While the RTFD consisted of several types of data, including tagging data, length frequency data, observer data and trans-shipment data, the principal component was the daily catch and effort logsheet data provided to SPC by member countries. The logsheet data were obtained by member countries either from foreign vessels operating under access agreements or from domestic vessels. During the current reporting period, logsheet data covering over 900 vessels were received from 16 member countries. Almost all logsheet data available through member countries had been incorporated into the RTFD.

61. Notable additions during the current reporting period included data received from Papua New Guinea covering Australian purse seiners and data from Fiji covering domestic longliners. Data aggregated by time-area strata were provided by the American Tunaboat Association covering the activities of American purse seiners in the SPC area during 1981–1984; while the data for 1981 and 1982 were complete, further efforts would be necessary to obtain complete coverage for 1983–1984, and for the period from 1985 until the implementation of the Multilateral Treaty on Fisheries in June 1988. The assistance of the Inter-American Tropical Tuna Commission (I-ATTC) with the provision of these data to SPC was recognised with appreciation.

62. Notable outstanding logsheet data include data covering New Zealand trollers and purse seiners; assurances had been given for some time that these data were forthcoming, but their continued absence was of some concern. Improvements in the coverage of Fijian pole-and-line vessels was hoped for. During the next reporting period, data would be collected for new fleets operating in the region, including six purse seiners from the Federated States of Micronesia and two multi-purpose longline/troll vessels fishing in French Polynesia.

63. While almost all data available through SPC member countries had been provided to SPC, the coverage of tuna fishing activities in the SPC statistical area by the logsheet data remained only moderate due to outstanding data from distant-water fishing nations. Data were missing due to fishing activities on the high seas (which were not required to be reported under most access agreements) and to non-reporting. To resolve this problem, SCTB 2 recommended that a common database be established, containing data provided by the fishing nations, DWFNs and SPC member countries alike, with data aggregated by time-area strata. The Standing Committee Database was implemented prior to SCTB 3.

64. During the current reporting period, notable additions to the SCTB Database included data provided by National Taiwan University covering Taiwanese longliners during 1989, with updated data for 1986–1988, and Taiwanese driftnet vessels during the 1988/89 season. Data had also been received from the National Fisheries Research and Development Agency covering Korean longliners during 1986–1987. Authorisation to transfer data for the single Tongan longliner from the RTFD to the Standing Committee Database was received from the Tongan Ministry of Fisheries.

65. The SPC *Regional Tuna Bulletin* was one of the principal outputs from the RTFD. Previous delays with printing of the *Tuna Bulletin* had been rectified during the current reporting period. During the next reporting period, the *Tuna Bulletin* would be expanded with more detailed reference to historical CPUE and improvements in the mapping of catch and effort.

66. Other outputs from the RTFD included provision of trip reports on a quarterly basis to the countries providing the data. The FSP has established in-country tuna databases in 11 countries. Most of the countries with in-country tuna databases received their daily logsheet data from the FSP on diskette on a quarterly basis. The in-country tuna databases often included other types of data, such as permit applications, EEZ entry and departure reports, trans-shipment packing lists, etc. FSP staff had visited all 11 countries during the current reporting period, with extensive assistance given to the Federated States of Micronesia and Palau. New database systems had been installed in the Cook Islands, New Caledonia and Tonga.

67. The FSP also provided database and programming assistance to other SPC fisheries projects, notably the Tuna and Billfish Research Project, the other primary user of the RTFD, and the Fisheries Training Project, based in Suva, Fiji.

68. In response to an enquiry as to the basis of the data coverage and data quality reports, the Fisheries Statistician explained that historical annual total catch and effort data for various fleets could be compared with aggregations from data on the regional tuna fisheries daily log sheet database to determine coverage rates. Under-reporting could be examined by comparison of reported daily catch rates in areas for various vessel types, recognising that this may not be particularly productive in relation to longline catch rates. Comparison of the numbers of vessels licensed from EEZs relative to the number reporting operations in the zones may also be a useful approach. Broadly, the daily log coverage was good for SPC member country EEZs but poor for high seas areas. Time-area aggregations on a 1° square or 5° square basis were good for some fleets (e.g. SPC member country domestic fleets, Korean and Taiwanese longline fleets) but relatively poor for purse seine and Japanese longline fleets. Annual catch and effort estimates by fleet were poor for some (e.g. Korean and Taiwanese purse seiners). Hopefully the situation could be improved for the next SCTB status report.

69. Action Item 4 from SCTB 3 had required SPC to approach DWFNs to see what prerequisites they would specify for the release of data for the SCTB database. Letters to Japan, Korea and Taiwan had been sent but no replies received. Nevertheless, persistence in the exploration of acceptable aggregations had resulted, in the case of U.S. purse seine data, in the identification of an acceptable arrangement. In that case, 5° square aggregation, confidentiality of vessel name and compilation independently by I-ATTC had been adopted. It suggested that further representations to other DWFNs would be appropriate.

### **Action Item 3**

**SPC to develop a list of data gaps in the SCTB database, identifying the parties holding the missing data, and contact each party to remind them of their responsibility/commitment to providing data for scientific purposes. The SPC should also inform member countries and regional organisations on the status of the SCTB database, the difficulty so far encountered in closing the data gaps and to seek advice on further actions.**

70. It was suggested that the development of stock abundance indices might more logically be incorporated in the Tuna and Billfish Research Project rather than the Fisheries Statistics Project. The Fisheries Statistician explained that it would be a collaborative effort and was proposed as a means of rationalising use of analytical staff of TBAP.

#### 4. PIN/DWFN/ASEAN COLLABORATION ON TUNA AND BILLFISH RESEARCH

71. Reporting on the response to SCTB 3 Action Item 3, the Representative of the Philippines advised that a National Fisheries Information System would be set up. The original data collection system had been suspended from 1988 to 1990, but in 1991 there would be a return to the old system of data collection. It would be a comprehensive system, in keeping with ADB loan requirements.

72. The Representative of Indonesia advised that his country had a co-operative project for tuna assessment especially in the eastern part of the Indonesian region, the Fisheries Research Development Project, which would end in July 1991. Data were collected by landing site and gear type, and used for management purposes. Previously, in material statistics, data had been categorised as 'skipjack' and 'tuna' (including six species of billfishes); tuna was now separated into yellowfin, bigeye, albacore and southern bluefin. IPTP/FAO had been assisting with the statistics collection programme since 1984.

73. The Chief Fisheries Scientist emphasised the valuable contribution that Indonesia, Philippines and Thailand Fisheries Department staff had made to the RTTP. He placed on record TBAP appreciation of the Fisheries Department of Thailand for co-ordinating tag returns from canneries there, an important source of tag returns from the Taiwanese and Korean purse seine fleets.

74. The Chief Fisheries Scientist referred to an informal enquiry as to whether the TBAP might be available to carry out tuna research in the eastern Philippines under contract. It was felt that the TBAP's recent experience in mounting a large-scale tagging programme and the possible availability of the tagging vessel currently under charter to SPC would be most beneficial. He explained that it may be possible for an Indonesian vessel to be chartered and for SPC to provide technical assistance. However he sought SCTB guidance as to how TBAP should respond in future, as the number of requests was increasing.

75. SCTB noted that requests would need to be evaluated on a case-by-case basis taking into account the TBAP workload, its resources at the time and the relevance of the work to TBAP objectives as detailed by the Strategic Plan when that was finalised. There were considerations such as the retention of expertise within SPC when major field work was completed, the link between stocks in the region and in the location where contract work would take place, and the collaborative obligation that SPC/TBAP might have through its association with the activities of organisations such as WPFCC and IPTP. It was noted that the matter would need to be addressed by RTMF when TBAP future directions were clarified.

76. The Representative of Australia advised that the main collaborative activity with TBAP during 1991 would be the RTTP cruise in the Coral Sea near Cairns in October/November. Coincidentally there had been a review of the CSIRO Division of Fisheries Pelagic Resources Programme, which would now assume much higher priority under the supervision of Dr Keith Sainsbury. Population genetics, stock structure, and development of general movement models of yellowfin would be areas of study pertinent to TBAP interests. Otherwise, the previous collaborative activities with TBAP would continue. Observers on longline vessels would continue biological and length-frequency sampling. The recent provision of some high seas data by Australian operators was seen as a positive sign, and efforts would be continued to encourage a 'healthy attitude' towards provision of data by Australian distant-water fishing vessels, augmented, where legislation permitted, by mandatory data provision requirements. In this regard there was some doubt as to whether such requirements would be confined to Australian licensed vessels or could extend to all Australian flag vessels.

77. The Representative of Japan advised that an initial request for release of high seas data had been unsuccessful; however, the recent provision by the United States of high seas data for purse seiners had opened the matter for re-examination. No response was yet available from the Fisheries Agency. The arrangements for a second three-month collaborative SPC/NRIFSF study had not progressed, and a proposal would need to be received before the end of 1991 if funding was to be made available during 1992. Non-availability of data and workload of the scientists involved previously had led to postponement of the development of a new proposal. It was agreed that, in view of the possibility of further availability of data, the action item should be renewed. In the meantime, consideration could usefully be given to the 'ground rules' that should apply in relation to the data made available for and analysed in the course of a study.

#### **Action Item 4**

**SPC and the National Research Institute of Far Seas Fisheries prepare a joint proposal regarding the second three-month period of collaborative study for submission to the Japanese Government for funding approval before the end of 1991. SPC and NRIFSF to develop mutually acceptable ground rules for the exchange of data to be used in the study.**

78. The Chief Fisheries Scientist advised the meeting that a technical officer funded by the Japan Overseas Fisheries Cooperation Foundation would be stationed at SPC for two years and would further facilitate collaboration between SPC and Japan.

79. The Representative from NMFS reported that the secondment of a senior scientist from his organisation to TBAP would probably commence in September 1991. The Chief Fisheries Scientist explained that availability of the scientist, Dr Pierre Kleiber, was especially timely given the analytical load that would face TBAP next year when RTTP analyses commence.

80. Changes to U.S. legislation, bringing tuna under 200-mile zone control, would force the development of management plans. For the Atlantic the plan would come within the responsibility of NMFS, whereas in the Pacific it would rest with the Regional Fisheries Management Councils. For tunas in the central western Pacific region, the Western Pacific Regional Fisheries Management Council would be relying on the results of NMFS for developing a management research plan. The Representative for WPRFMC noted that the Council's management jurisdiction and the SPC's research jurisdiction overlapped significantly, highlighting the need for close liaison. He introduced the role of the Council in U.S. fishery management, and noted that the Council was in the process of developing a five-year research plan for tuna and billfish, similar to the SPC Strategic Plan. He offered to work with SPC personnel to co-ordinate information exchange wherever possible.

81. The Chief Fisheries Scientist expressed his appreciation of the support given by PINs to the work of the TBAP. They had co-operated closely with the RTTP and fostered the return of tags. Their co-operation had also ensured that catch and catch composition monitoring would proceed in landing ports and that the coverage could be increased to new ports. It was already in place in Pohnpei, New Caledonia, Pago Pago and French Polynesia and would soon be in Palau, Chuuk and Yap. The broader adoption through the region of standard MTCs for operation of DWFNs would reduce trans-shipments at sea and increase the opportunity for port sampling. This had staffing and funding implications, which would need to be examined in the context of future work plans. However, it was envisaged that some of the responsibilities for port sampling would ultimately be taken over by PINs. Any sampling at product destinations outside the region would remain a TBAP responsibility, unless some supportive monitoring would be possible by the local fisheries organisations.

82. Observer programmes in the region could be expected to increase, and the cost might be expected to be recovered from DWFNs under access agreements. It would be important to recognise that in addition to the 'enforcement' function of observers that PINs may wish to deploy, there would be a need for scientific observers who should be seen as quite separate, and who would be used solely for collection of scientific data.

83. The Representative of FAO, Dr Jacek Majkowski, advised that subject to securing sufficient funds, FAO planned to redirect IPTP activities from data collection and processing to include assistance to coastal developing countries in data analysis and stock assessment. There was an ongoing need for collaboration with SPC to ensure that the work of both groups was complementary.

## 5. REPORTS BY OTHER ORGANISATIONS

84. The Representative of the United States Agency for International Development (USAID) indicated that his organisation supported TBAP and followed its progress closely, especially the objectives, long-term goals and the Strategic Plan. Funding might not necessarily finish in 1991. There would be a review in August. He acknowledged the timely reporting and improved feedback from SPC. For the longer term, USAID envisage a user pays principal for TBAP, with industry contributing to the costs of the Programme. He noted that this might not be an option for all countries. He indicated USAID's support in principle for the visit of the NMFS scientist to the TBAP in Noumea and that some flexibility in existing financial arrangements would be allowed to support the visit.

85. As the Representative of Papua New Guinea, the country which supplied the immediate past Chairman of the Western Pacific Fisheries Consultative Committee (WPFCC), Mr Andrew Richards informed participants that the 2nd WPFCC Meeting had been from 2 to 3 July 1990 in Port Moresby. Leading the agenda topics was a report by the WPFCC Director, Ms Elvira Baluyut, which summarised achievements since the 1st Meeting. These included a successful tuna research workshop in the Philippines, assistance in arranging entry of the RTTP tuna tagging vessel into Philippine and Indonesian waters, compilation and distribution of a newsletter, and assistance to PIN and ASEAN representatives to attend meetings of fisheries scientists in each other's regions.

86. Other topics included further opportunities for tuna research co-operation between PINs and ASEAN nations and opportunities for co-operation in non-tuna fisheries research and fisheries training. It was agreed at the meeting that Pacific territories and non-sovereign islands be admitted as observers at future Committee meetings.

87. Following the meeting, PINs and Pacific Latin American countries (PLACs) and PLAC fisheries organisations had met from 4 to 5 July in a consultation which led to the formation of the Trans-Pacific Fisheries Consultative Committee (TPFCC). Opportunities for co-operation in post-harvest fisheries technology, tuna management and a possible union of the WPFCC and TPFCC to form a tri-regional Pacific body were discussed.

88. It was noted that Dr Tim Adams, representing Fiji, was elected WPFCC Chairman at the April 1991 meeting of the Forum Fisheries Committee.

89. The Chief Fisheries Scientist pointed out that the achievements of the RTTP in Indonesia and the Philippines would not have been possible without WPFCC support.



## **6. FAO EXPERT CONSULTATION ON INTERACTIONS OF PACIFIC TUNA FISHERIES**

90. The Representative of FAO advised that the Consultation was a part of a three-year project funded by Japan through the FAO Trust Fund. The project's objective was to enhance the capacity of Pacific developing countries, in particular, to address tuna fisheries interaction problems at national and regional levels. The project was operational with formal commitment for funding for the first year.

91. The idea of holding the Consultation had arisen at the 1985 IPTP meeting. The organisation of the Consultation was discussed and endorsed by several previous meetings of SCTB and RTMF. Its objectives were:

- (i) to review tuna fisheries interaction issues, methods and data to address them, and available information and in-progress research on these issues: and
- (ii) to make research recommendations including those for future activities of the project and the activities to be financed by the project.

92. The preparatory work for the Consultation was carried out by ten Working Groups created for that purpose. This work included the preparation of Pacific tuna stock synopses and review papers specifically on fisheries interactions for these stocks and methods of studying them.

93. The Representative from FAO thanked SPC and ORSTOM for co-hosting the Consultation and confirmed that it would be held in Noumea, New Caledonia from 3 to 11 December 1991. Some funding would be available from the FAO Trust Fund to sponsor the participation of scientists, especially from developing countries of the Pacific region (Pacific Islands, South-East Asia and Latin America). Some additional funding for that purpose may also be available from SPC's TBAP, FAO/UNDP South Pacific Regional Fishery Support Programme and IPTP.

94. The Committee was invited by the Representative of FAO to comment on the arrangements for the Consultation, including a draft agenda distributed at the Meeting. The Representatives of Pacific Island Countries confirmed their interest in attending the Consultation.

## **7. CONSIDERATION OF TBAP DRAFT STRATEGIC PLAN**

95. The Chairman reminded the meeting that Recommendation No. 1 of SCTB 3 was for the development of a five-year Strategic Plan for the TBAP. This recommendation was subsequently adopted by the RTMF and the Thirtieth South Pacific Conference.

96. The Chief Fisheries Scientist introduced the draft Strategic Plan by pointing out that the existing mission statement was used as the starting point for the draft, with modifications being made to reflect present and anticipated developments. In particular, consideration was made of trends in fisheries, possible management initiatives (e.g. the possible development of international arrangements that would allow development and implementation of species-specific management plans for tropical tuna in the western Pacific area), and the expectation that it would be desirable for the TBAP to provide ongoing advice related to fisheries management. It was emphasised that the draft was intended to outline broad strategies, rather than provide a detailed work plan.

97. In response to questions about the procedure and subsequent consideration of the draft Strategic Plan, it was pointed out that SCTB was responsible for preparing an agreed draft, and that the draft Strategic Plan would then be presented to RTMF.

98. The meeting held a lengthy discussion of the mission statement and objectives contained in the draft Strategic Plan. There were several concerns raised, including:-

- That the mission statement was not specifically focused on tuna and billfish, and that as written the mission statement could be interpreted to describe an extremely broad role which was not intended.
- That insufficient emphasis was given to the importance of enhancing national capabilities, servicing the needs of member nations, and ensuring that the complementary roles of SPC and FFA be developed and maintained.
- That the objectives provided in the draft described activities and tasks, rather than providing guidance for the assessment of activities and tasks.
- That the Strategic Plan did not appear to place sufficient emphasis on the desirability of ongoing review of activities and examination of the continued appropriateness of activities, although it was also recognised that SCTB did provide a review mechanism and that perhaps SCTB's role in this should be specifically developed.

99. Many alternative definitions of the mission statement and objectives were suggested by the meeting. These suggestions were passed to a re-drafting group (Australia (Chair), New Zealand, the NMFS Representative, Papua New Guinea, Federated States of Micronesia and SPC Chief Fisheries Scientist) to develop a revised Strategic Plan.

100. The re-drafting group's Strategic Plan (Annex 2) was introduced by the re-drafting group Chairman. The aim of the draft Strategic Plan was to make clear the philosophy of the TBAP and to provide objectives that could be used in the evaluation of existing and proposed new activities. An introductory paragraph to the objectives was provided as a framework within which the five specific objectives should be interpreted. The strategies were then addressed separately for each objective.

101. There was initially some concern from the meeting that the new objectives gave too much emphasis on simply providing information, rather than providing a mandate for research. However, it was emphasised by the Chairman of the re-drafting group and the Chief Fisheries Scientist that no diminution of the research role was intended in the draft. Rather the draft pointed out that the research had a specific purpose, which was to allow provision of the advice required by member nations.

102. The members of SCTB adopted the mission statement, objectives and proposed objectives.

103. Members recommended that the draft Strategic Plan be presented to RTMF by a member of SCTB other than an SPC representative. Because the Strategic Plan is an important output of SCTB it was thought appropriate that the Chairman of the redrafting committee present the Strategic Plan to RTMF.

104. The draft Strategic Plan provided to RTMF would now deal only with the strategic aspects of the mission statement and objectives, and would not include specific activities or operational considerations at this time. It was agreed that SCTB's role in providing a technical review of the work of TBAP would be greatly facilitated if each year the TBAP provided SCTB with:

- Descriptions of proposed new activities, and
- A detailed workplan for the year.

105. These documents should be circulated to members prior to the meeting of SCTB, and reviewed by SCTB at the meeting. Members saw this as enhancing the ability of SCTB in its review capacity and providing a mechanism for ongoing assessment of the activities of TBAP in terms of the Programme's Strategic Plan.

106. The RTMF was therefore invited to *review* the draft Strategic Plan, as contained in Annex 2, with a view to its guiding the activities of the TBAP over the next five-year period.

107. The RTMF was also invited to consider the following recommendations:

#### **Recommendation No. 1**

**In order to facilitate the role of SCTB in providing technical review of the work of the Tuna and Billfish Assessment Programme, it is recommended that the Tuna and Billfish Assessment Programme prepare and distribute to Standing Committee on Tuna and Billfish members prior to each meeting:**

- A detailed description of any proposed new activities
- A projected work plan for the year.

#### **Recommendation No. 2**

**That a detailed operational plan for 1992–1996 be developed by the Tuna and Billfish Assessment Programme and distributed in advance of the Fifth Standing Committee on Tuna and Billfish for evaluation by that meeting.**

### **8. ADMINISTRATIVE MATTERS**

108. The meeting cleared the draft report as amended.

109. The Chairman thanked the participants, rapporteurs and Secretariat for their contributions to the meeting. After acknowledging a vote of thanks for his guidance of the meeting, and expressing thanks to the Vanuatu Department of Fisheries for hosting the meeting, the meeting closed at 18.30.

### III. RECOMMENDATIONS

#### **Recommendation No. 1**

In order to facilitate the role of SCTB in providing technical review of the work of the Tuna and Billfish Assessment Programme for the RTMF, it is resolved that the Tuna and Billfish Assessment Programme prepare and distribute to Standing Committee on Tuna and Billfish members prior to each meeting:

- A detailed description of any proposed new activities
- A projected work plan for the year.

#### **Recommendation No. 2**

That a detailed operational plan for 1992–1996 be developed by the Tuna and Billfish Assessment Programme and distributed in advance of the Fifth Standing Committee on Tuna and Billfish for evaluation by that meeting.

**IV. LIST OF WORKING PAPERS PRESENTED AT THE MEETING**

- WP 1. Report of the Third Standing Committee on Tuna and Billfish (Noumea, New Caledonia, 6–8 June 1990)
- WP 2. Report on the South Pacific Commission's Tuna and Billfish Programme Activities for 1990–91
- WP 3. Status of Tuna Fisheries in the SPC area during 1990, with annual catches since 1952
- WP 4. TBAP data catalogue – April 1991
- WP 5. The South Pacific Commission's Tuna and Billfish Assessment Programme Draft Strategic Plan (1992–1996)
- WP 6. Product flows of tuna in the western Pacific.

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## REVIEW OF 1990 RECOMMENDATIONS AND ACTION ITEMS

### RECOMMENDATIONS

#### Recommendation 1

The Standing Committee on Tuna and Billfish, noting that the present Tuna and Billfish Assessment Programme technically expires in September 1991, strongly recommended its continuation on a longer term basis. It further recommended that a strategic plan for the next five-year period (1992–96) be prepared to guide the future direction of this programme, and proposed that the Standing Committee on Tuna and Billfish be authorised to develop a draft document for consideration by the 1991 Regional Technical Meeting on Fisheries. It was emphasised that the draft plan should reflect the current programme directions and initiatives, and use, as a starting point, the existing Tuna and Billfish and Assessment Programme mission statement.

#### Recommendation 2

The Standing Committee on Tuna and Billfish, in recognising the increasing need for a comprehensive assessment of yellowfin stocks in the Western Pacific region, proposed a scientific workshop on yellowfin, tentatively scheduled for 1992, and recommended that a special working group, operating on a similar basis to the South Pacific Albacore Research workshop and fostering collaborative research action among group members, be established to develop a work plan and arrangements for the workshop.

### ACTION ITEMS

- Action Item 1: SPC to approach the Australian Government requesting the assistance of Australian observers on longliners in the Australian Fishing Zone in the sampling of albacore for ageing and gonad studies.*
- Action Item 2: SPC and the National Research Institute of Far Seas Fisheries to prepare a joint proposal regarding the second three-month period of the collaborative study for submission to the Japanese Government for funding approval before the end of 1990.*
- Action Item 3: The Chairman, on behalf of SCTB, to point out to the Philippines Government the inadequacies of the present fisheries data collection system, and stress the desirability of a return to the previously more comprehensive data collection system under BFAR direction.*
- Action Item 4: SPC to approach DWFNs to determine the best means to facilitate the provision of data to the SCTB Database.*

*Action Item 5: SPC to compile available information on Pacific bigeye tuna and make this available in an appropriate form on a timely basis.*

*Action Item 6: SPC to submit to FAO for funding a proposal to study western Pacific skipjack movement and fishery interaction, noting the support of SCTB for the proposal.*

*Action Item 7: TBAP to compile fisheries status reports, by gear type and species, for consideration at the next meeting of the SCTB. SCTB member countries and all fishing nations are urged to provide these catch estimates when requested by the TBAP.*

*Action Item 8: FFA to be invited to contribute economic and marketing data to an annual review of western Pacific tuna fisheries by SCTB.*

**TUNA AND BILLFISH ASSESSMENT PROGRAMME DRAFT STRATEGIC PLAN**  
(revised 19 June 1991)

**MISSION**

To provide member countries with the scientific information and advice necessary to rationally manage fisheries exploiting the region's resources of tuna, billfish and related species.

**OBJECTIVES**

The TBAP embraces all the principles of the South Pacific Commission. In promoting the rational exploitation of the tuna and billfish resources of the region, the TBAP will foster both regional and national capabilities to assess and manage those resources, maximise scientific co-operation for the benefit of all members, and maintain a commitment to high standards of fisheries science.

The TBAP objectives are:

- To ensure that member countries receive the best available scientific advice.
- To provide member countries with accurate assessments of tuna and billfish stocks and the effects of fishing on the stocks.
- To provide member countries with timely reports from an accessible, high quality fishery database encompassing the activity of all domestic and DWFN fleets in the region and adjacent areas.
- To enhance the national and regional awareness of fisheries issues through reporting research results and fisheries developments throughout the region.
- To maintain a commitment to developing national and regional capabilities in fisheries science.

**STRATEGIES**

To ensure that member countries receive the best available scientific advice, the TBAP will

- Maintain and enhance capabilities to monitor fisheries exploiting tuna and billfish stocks in the region.
- Liaise with member nations to determine national requirements.
- Establish research and monitoring programmes which are well designed and peer reviewed.
- Communicate the results of research and review to member countries.

- Facilitate programme evaluation and review of research directions and progress.

**To provide member countries with accurate assessments of tuna and billfish stocks and the effects of fishing on the stocks, the TBAP will**

- Attract and retain highly motivated and well-trained fisheries scientists.
- Develop and apply fisheries assessment techniques appropriate to the region's stock assessment needs.
- Contribute to and collaborate in complementary stock assessment activities elsewhere.
- Conduct research to improve knowledge of the biology of the region's major tuna and billfish species in support of stock assessment.

**To provide member countries with timely reports from an accessible, high quality fishery database encompassing the activity of all domestic and DWFN fleets in the region and adjacent areas, the TBAP will**

- Collaborate with member countries and other regional organisations to acquire comprehensive statistical data sets on fisheries exploiting the region's tuna and billfish stocks.
- Produce a range of fishery reports in support of national and regional requirements.
- Maintain and enhance in-country database capabilities for timely national fishery reports.

**To enhance the national and regional awareness of fisheries issues through reporting research results and fisheries developments throughout the region, the TBAP will**

- Produce briefings, newsletters, research reports and other publications on research findings and fishery developments.
- Organise meetings and workshops on key fisheries issues relevant to national and regional needs.

**To maintain a commitment to developing national and regional capabilities in fisheries science, the TBAP will**

- Assist in the development of national capabilities in the compilation of fishery statistics.
- Facilitate staff attachments in the TBAP and other appropriate training opportunities for Pacific Island nationals in TBAP research projects.

## **IMPLEMENTATION**

These strategies will be implemented through activities in four programme areas

- Statistics and monitoring  
Database maintenance, development and reporting.

- Biological research  
Population biology of tunas and billfishes; age, growth, migration, stock structure.
- Stock assessment and modelling  
Data analysis and modelling of the status and impact of fishing on the major tuna stocks of the region.
- Reporting and liaison  
Interaction and reporting to member countries; promoting collaborative research towards TBAP objectives.

Operational plans for 1992–1996 will be developed by TBAP and distributed in advance of the next SCTB for evaluation by that meeting.

**1991 ACTION ITEMS**

- Action Item 1: That the Secretariat identify areas where annual catch estimates given in its Fisheries Status Report (WP 3) were poor, and approach countries for updated estimates where necessary.*
- Action Item 2: That the Secretariat evaluate and report available information on by-catch and discards in western Pacific tuna and billfish fisheries and advise on the need for further action.*
- Action Item 3: SPC to develop a list of data gaps in the SCTB database, identifying the parties holding the missing data, and contact each party to remind them of their responsibility/commitment to providing data for scientific purposes. The SPC should also inform member countries and regional organisations on the status of the SCTB database, the difficulty so far encountered in closing the data gaps and to seek advice on further actions.*
- Action Item 4: SPC and the National Research Institute of Far Seas Fisheries to prepare a joint proposal regarding the second three-month period of collaborative study for submission to the Japanese Government for funding approval before the end of 1991. SPC and NRIFSF to develop mutually acceptable ground rules for the exchange of data to be used in the study.*