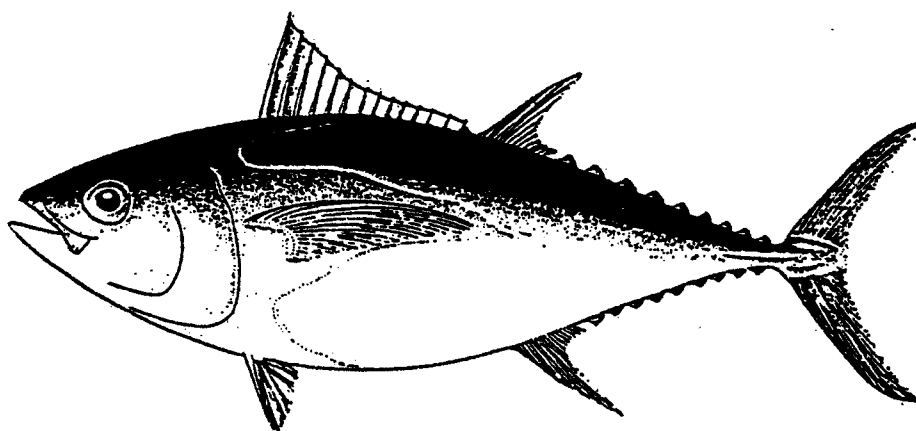


# **EIGHTH STANDING COMMITTEE ON TUNA AND BILLFISH**

16-18 August 1995  
Noumea, New Caledonia

## **WORKING PAPER 9**

### **OCEANIC FISHERIES WORK PROGRAMME PRIORITIES: REPORT OF THE SUB-COMMITTEE**



Oceanic Fisheries Programme,  
South Pacific Commission  
Noumea, New Caledonia

## **1. INTRODUCTION**

The 7th Standing Committee on Tuna and Billfish (Palau, 5-6 August 1994), in considering an Operational Plan for the OFP for the period 1994-98 (WP 6), noted that funding to support the central administrative and scientific advisory functions of the OFP could not be assumed, even in the short to medium term; this was despite the apparently successful implementation of the large five-year EU-funded South Pacific Regional Tuna Resource Assessment and Monitoring Project (SPR TRAMP). It was also noted that the current review (at that time) of institutional arrangements in the marine sector of the South Pacific may have a significant impact on future funding options for the OFP. Notwithstanding, SCTB 7 endorsed the Operational Plan for 1994-98 as presented.

SCTB considered that, should funding become limiting, it could usefully assist the OFP by developing a strategy for scaling down its activities. It recommended that :-

"A small group comprising the Oceanic Fisheries Coordinator, Mr. Kevin McLoughlin (Australia), Dr. Pierre Kleiber (USA), Mr. Craig Heberer (FSM), and Mr. Joel Opnai (PNG) prioritize the activities in the work plan of the SPC Oceanic Fisheries Programme. The impact of various options on the work of the OFP and the provision of services to member countries (as outlined in the Strategic Plan) should be considered. The group will report to the SCTB Chairman, who will in turn report the findings to the next RTMF".

The small group, known hereinafter as the Priorities Sub-Committee, met informally following SCTB 7 on August 10th 1994 in Palau, and after some discussion, agreed to continue its work by correspondence. Dr. John Sibert, a former TBAP Coordinator, offered to assist the Sub-Committee in its work, an offer which was gratefully accepted. Since that time however, several of the Committee have either moved on (Craig Heberer), or been reassigned to other tasks (McLoughlin), and there had been considerable uncertainty regarding the position of Oceanic Fisheries Coordinator, a situation which was resolved only in mid-June 1995. In addition, the report of the Institutional Review, regarded as crucial by SCTB, had yet to be completed by the end of June 1995, although an interim report has been the subject of considerable regional discussion.

The only available option for the Sub-Committee has been to undertake some work by correspondence, and to have most members of the Sub-Committee (Lewis, Opnai, Ward (for McLoughlin), Kleiber, Sibert and Thoulag (for Heberer) meet just prior to SCTB 8 to prepare this report.

## **2. BACKGROUND**

Much of the necessary background to the Sub-Committee's work is contained in WP6 from SCTB 7. Also to keep in mind are respectively, the outline Strategic Plan for the OFP, as amended by SCTB 4, and the benchmark objectives drawn from SCTB 7, WP 6. Reference is also made to WP 5 of this SCTB, where the 1994-95 Work Plan is reviewed, and the 1995-96 Work Plan outlined. There have also been a series of recommendations from various RTMFs impacting the OFP and its predecessor, the TBAP. These can be supplied or made available.

The following section outlines various developments on a regional and international scale which might be expected to impact the work and functions of the OFP, and to shape work programme priorities, in accordance with member country needs.

### 3. FACTORS POTENTIALLY IMPACTING THE OFP.

Relative to the SPC/OFP mission statement ie *"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"*, developments in three areas may influence the work priorities of the OFP - developments within the fishery itself and needs which may arise relative to the provision of scientific advice to management; "political" developments, such as the establishment of a regional management regime for oceanic fisheries, regional institutional restructuring, binding outcomes of international conferences eg the UN SFSHMFS Conference; and thirdly, financial considerations which may affect the OFP capability to undertake an agreed work plan. The second and third of these areas are dealt with in WP 7 and WP 6 respectively. The work of the Sub-Committee has focussed on the first impact area ie fishery-related factors which might influence work programme priorities in the short to medium term. Whilst these may not be entirely predictable, they are within the scope of the region to understand and even influence.

Some assumptions regarding developments in the WCPO tuna fishery are as follows :-

- \* total catch (all species combined) unlikely to increase beyond 125% of present catches before 2000.
- \* total catch to continue to be dominated by purse seine catches, with certain Asian fleets becoming more competitive.
- \* greater targetting on yellowfin in purse seine catches, increasing the potential for direct interaction with longline fisheries.
- \* increases in bigeye catch to continue; albacore catches stable
- \* modest growth in sashimi longline fisheries, at the expense of large vessel operations; differential growth of operations based in the region, and continued growth of Chinese fleets, unless capped.
- \* pole-and-line fishing further declining in importance.
- \* environmental concerns assuming greater importance, and by-catch issues emerging.
- \* increasing utilization of by-catch species
- \* domestic fishery development increasing, and local interaction issues emerging
- \* allocation questions becoming more important
- \* adoption of agreed requirements for management regimes necessitating significant changes in the WCPO structure.
- \* real time monitoring introduced as a requirement of access
- \* other ?

### 4. NEEDS ASSESSMENT

Given the above developments, work programme activities of the OFP are identified as below, expressed as tasks, with possible appropriate action to be undertaken. This needs assessment, whilst not an exhaustive list, follows the operational areas identified for the OFP by the SCTB. The

identified tasks have then been ranked by the Sub-Committee (see later) and further prioritized at three levels. The funding status of individual tasks is also considered.

#### **4.1 STATISTICS AND MONITORING**

**Task 1.** Long term commitment to the maintenance of a catch and effort logbook database of all industrial and domestic tuna fleets in the region, achieving representative coverage of all fleets.

**ACTION:** This was the primary original mandate of the TBAP, and has been maintained as a high priority activity. Considerable progress has been made in this area, but continuing commitment to this task is required; includes primary data entry, verification and data quality control. This database is the primary monitoring tool, and will remain important even with the advent of "real time monitoring", which will initially improve time/location recording of catches only.

**Task 2.** Maintenance of aggregated databases where this may improve the availability of data, and enhance its access to third parties.

**ACTION:** Whilst theoretically unnecessary where complete or representative logbook data coverage can be achieved by a central body, in practice this may be some way off, and in any case issues of industrial sensitivity will always arise where third party access is involved. May also be important in obtaining data from adjacent areas not within the regional mandate eg ASEAN. The SPC/OPF currently maintains the SCTB and SPAR databases.

**Task 3.** Use of databases to produce regular statistical summaries, primarily for the use of member countries.

**ACTION:** The SPC Tuna Fishery Yearbook and the quarterly Regional Tuna Bulletin have been produced now for some years; the value of the Yearbook as a statistical reference is undoubted, and was in fact originally produced at the direction of SCTB; the Bulletin, inter alia, produces more timely information and allows the extent and timeliness of logbook coverage by fleet to be monitored. Production of other types of summaries could be considered, particularly at the national level.

**Task 4.** Promote the development of, and provide support for, national oceanic fishery databases, to facilitate timely delivery of reports at the national level.

**ACTION:** Considerable effort is devoted to this activity (by both SPC/OPF and FFA); in nearly all cases, primary entry and verification of logbook data is carried out by SPC; such centralized data processing is the most efficient and cost effective approach, as well as guaranteeing better data quality. At the national level, more effort needs to be directed to improved collection of data from artisanal/small scale fisheries; these are often the source of debate/speculation in interaction issues, and need to be better documented from a purely national viewpoint.

**Task 5.** Greater cooperation/exchange of information with other agencies holding oceanic fisheries data.

**ACTION:** Oceanic fisheries issues are increasingly becoming global in nature, and such exchange of aggregated data should be promoted, subject to appropriate protocols being developed.

**Task 6.** Catch sampling programmes to characterize the species and size composition of the catch, and to verify logsheet data.

**ACTION:** Well designed port sampling programmes to provide cost effective representative sampling of the catch by all gears and species are required. This is a major and ongoing task, particularly as

much of the catch may not be landed in the region, and as not all the catch may be retained; even where the catch of a given species is retained, "high grading" and other practices may occur. Necessary if assessment is to progress to age-structured approaches; some observer corroboration will probably also be required (see later).

**Task 7.** Scientific observer programmes to provide direct observation of a variety of fishery issues, some of which are still evolving.

**ACTION:** Ideally, coverage of all fleets/all gears active in the region should occur, but in practical terms, some focussing on selected fleets/gears/areas will be required. Expensive to mount and maintain, and some form of "user pays" approach must eventually be required. The development of effective observer programmes at the national level and their integration with regional programmes will be important. Database support for such programmes will be required initially. Observer programmes will also provide a vehicle to collect various biological data, not only on tunas, but including that on by-catch species (see later).

**Task 8.** Maintenance of tagging and biological databases

**ACTION:** These are regional assets which need to be supplemented, maintained and made available. Data quality checks will be an ongoing commitment.

#### **4.2 BIOLOGICAL RESEARCH**

Biological research needs are considered in terms of the main tuna species, billfish and secondary/by-catch species. In the long term, it may be necessary to take all removals from the oceanic epipelagic ecosystem (ie the catch of all species) into account in the determination of management strategies.

**TUNA SPECIES** (primarily yellowfin, bigeye, albacore and skipjack)

**Task 9.** Understanding basic biological parameters of exploited tuna populations.

**ACTION:** Discrete, but possibly ongoing (in the case of age sampling) biological studies on age and growth, reproduction and stock structure for all species. This potentially large range of tasks may need to be prioritized, with estimation of age-dependent natural and fishing mortality of a priori importance. Bigeye, as the least understood species, may initially assume priority, but current knowledge may still not be adequate for all species. The SPC/OFP may not always have the capability to undertake basic biological work, which might more appropriately be undertaken elsewhere eg under contract, or by tertiary institutes. Small scale OTC tagging, to validate otolith growth rings, might be undertaken. Similarly, the rapid advances made in the utility of archival tags provide a powerful tool for behavioural studies of tropical tunas. Migration, movement and schooling as biological process are also in need of study and understanding.

**Task 10.** Fishery-independent analyses (tagging)

**ACTION:** Although it is unlikely that the large-scale tagging experiments of the past, which form the basis of much of the present understanding of the population dynamics of tropical tunas will be repeated (unless possibly as ten year events), smaller scale experiments, possibly including archival tagging, may be useful for parameter estimation, in elucidating understanding of movements for some species, and assessing interaction effects on a local scale. In part, a subset of Task 9.

**Task 11.** Environmental determinants of tuna fishery production

**ACTION:** The relationship between fishery production and environmental parameters (productivity, thermal structure etc) may be fundamental to the interpretation of spatio-temporal distribution of catch/effort data and CPUE time series. With the improved availability of a variety of global historical and real time oceanographic databases, such work, at least in terms of surface fisheries, is constrained mainly by the level of resolution of the statistical data. It remains to be seen if sub-surface (longline) fishery performance can also be predictively linked to environmental parameters.

#### **BILLFISH SPECIES (Swordfish, marlins, sailfish, spearfish)**

##### **Task 12. Understanding basic biological parameters of billfish populations.**

**ACTION:** Billfish biological parameters remain even less well understood than those of tuna species, and understanding these should be a valid longer term goal, given fishery interaction issues which will inevitably arise. As there are however other agencies with specific vested interests in billfish, and as basic biological research can be undertaken equally well by outside organizations, the SPC/OFP role may be one of support and collection of material, particularly for studies of stock structure. It appears that billfish stock structure will vary greatly from species to species, with important implications for management. In fisheries where mandatory release of billfish is required, tagging may be a possibility.

##### **Task 13. Estimation of actual billfish catches by species.**

**ACTION:** Due to combination of species mis-identification and discarding, the actual catch of billfish by species/time/area is not known with any certainty. Although a monitoring problem, it is likely that its resolution will depend on information gathered by observers.

#### **BY-CATCH SPECIES (including scombrids, sharks and a great variety of other species)**

##### **Task 14. Determine levels of by-catch by gear and species (including billfish in this context).**

**ACTION:** Although the subject of by-catch and discards in regional tuna fisheries has recently been reviewed by the SPC/OFP, it is clear that logsheet data are completely inadequate, and that with the number of species involved, only careful observer work on a large scale will provide the necessary information.

##### **Task 15. Biological studies of key or indicator by-catch species.**

**ACTION:** Biological studies of representative components of the open ocean ecosystem, including prey species, may provide insights into ecosystem dynamics. Estimation of fishery effects on by-catch species and possibly trophic interactions among species is the longer term goal.

**NOTE:** Previous OFP/TBAP work has included tuna baitfish and stock assessment, tuna behaviour in association with FADs etc. Such research activities are now assumed to be low priority, and are not included here.

### **4.3 ASSESSMENT AND MODELLING**

##### **Task 16. Refine, as needed and possible, existing stock assessments for yellowfin and skipjack tuna, based on tagging data.**

**ACTION:** Although these assessments refer to a particular period and set of prevailing conditions, they remain the basis of current understanding of stock condition. It is valuable to refine them as far

as possible by improving parameter estimates, and they will be completed in the short term. In the longer term, predictive models incorporating both age and spatial structure should be developed for the larger tunas (see later).

**Task 17.** Development of movement models for all tuna species, based on tagging and other data.

**ACTION:** The tagging-based assessments are spatially aggregated, and description of movement patterns will be required not only for integrated models, but also for interaction studies and other uses. Initial priority for skipjack, then yellowfin; with the latter species, for incorporation in an integrated model. Environmental influence on movement and distribution will also need to be considered. There may be insufficient tagging data at this time to extend the work to bigeye and albacore.

**Task 18.** Development of integrated models for stock assessment of tuna species.

**ACTION:** In progress for yellowfin tuna, this data-intensive but potentially very valuable approach may be extended to bigeye and albacore as the necessary data are acquired. Designed to extract the maximum amount of information from the data and to express uncertainty in a realistic way. The holy grail, perhaps.

**Task 19.** Estimation of optimal fishing levels under various regimes, using bioeconomic models.

**ACTION:** Collaborative development of bioeconomic models, according to need, technical and funding support. Directly addresses the management objectives of island countries.

**Task 20.** Studies of interaction in tuna fisheries

**ACTION:** Interaction between gears and fisheries on various scales may be important questions in fishery management. The output of other areas of OFP work provide the means to assess interaction. Issues at the national level should perhaps be accorded priority, but necessary data are often lacking.

#### **4.4 REPORTING AND LIAISON**

**Task 21.** Provision of scientific advice on the status of stocks on a regular basis to member countries and/or an appropriate management body

**ACTION:** Existing capacity to produce annual status reports could be upgraded.

**Task 22.** Regular peer review of OFP activity

**ACTION:** This currently occurs in technical detail through SCTB and also RTMF (biennially), and in policy terms through CRGA and Conference. Could also occur in part through publication in non-grey literature for research topics.

**Task 23.** Support collaborative research efforts on issues of regional interest and organize meetings/workshops on key fisheries issues.

**ACTION:** The SPC/OFP serves as Secretariat to SCTB and SPAR, as well as playing an important role in WPYRG. Input is also provided to a range of regional fora. A greater educational role could be envisaged.

**Task 24.** Production of National Fishery Assessments

**(2) Important, but possibly not continuous**

\* Task 2 (maintenance of aggregated databases)<sup>N</sup>

\* Task 3 (statistical summaries)<sup>N</sup>

\* Task 4 (national databases)<sup>N</sup>

\* Task 6 (catch sampling)<sup>F</sup>

\* Task 7 (scientific observers)<sup>F</sup>

\* Task 8 (database maintenance)<sup>F</sup>

\* Task 9 (biological parameters)<sup>F</sup>

\* Task 10 (fishery-independent analyses)<sup>F</sup>

\* Task 11 (environmental determinants)<sup>F</sup>

\* Task 14 (levels of by-catch)<sup>F</sup>

\* Task 22 (peer review)<sup>N</sup>

\* Task 24 (NFAs)<sup>N</sup>

\* Task 26 (training)<sup>F</sup>

Of these thirteen (or half of the total tasks), eight enjoy funding support (as indicated by the superscripts), mostly through the implementation of the SPRT TRAMP, which will guarantee funding support until 1998/99.

**(3) Useful (these could be undertaken as resources allow; in some cases, necessary work might equally be undertaken by other agencies or organizations)**

\* Task 5 (information exchange)<sup>N</sup>

\* Task 12 (billfish parameters)<sup>N</sup>

\* Task 13 (billfish catch)<sup>N</sup>

\* Task 15 (biology of key species)<sup>N</sup>

\* Task 20 (studies of interaction)<sup>N</sup> (implicit in other areas of work)

\* Task 23 (collaborative research, meetings)<sup>N</sup>

Of these six, none are currently funded with certainty.

In terms of allocating priorities should resources prove limiting, tasks not funded with certainty would enjoy priority according to the terms of this review. The established tasks can then be summarized in the six levels as attached.



**ACTION:** Six of these comprehensive reports have been completed; they are very well received, but require periodic updating and are manpower-intensive if the present high standard is to be maintained. A key product of the present OFP, but a full-time task for at least one person if 22 countries are to be adequately catered for.

**Task 25.** Maintain collaborative links with regional and international organizations involved in oceanic/tuna fishery matters.

**ACTION:** Regular and in-depth dialogue with FFA; good links with appropriate international organizations. Various joint research projects already carried out. Includes participation in global/regional fisheries consultations and management fora.

#### **4.5 TRAINING**

**Task 25.** Provide training opportunities for Pacific Island nationals in OFP research and other activities.

**ACTION:** Organize attachment training or longer term studentships.

### **5. PRIORITIZATION OF IDENTIFIED TASKS**

The tasks identified were then classified in three priority categories, as follows :-

**(1) Essential, ongoing, of fundamental importance**

**(2) Important, but not necessarily continuous** (Such tasks could be of relatively high priority, but could be addressed on a periodic rather than continuous basis)

**(3) Useful; undertaken as resources allow**

The funding status of the ranked tasks were then considered, with a five year assured funding horizon regarded as adequately funded. (This is arbitrary, but the OFP in fact has no mandate beyond 1998). Priority 1 projects without assured funding would then assume highest priority in this exercise, which sought to identify those activities which should continue to be funded if financial became limiting. This then produces six priority categories (3 x 2).

The 26 tasks were initially ranked as follows :-

**(1) Essential, ongoing and fundamental**

\* Task 1 (maintenance of c/e logbook database)

\* Task 21 (provision of scientific advice)

\* Task 25 (maintain collaborative links)

In addition, the related tasks 16,17 and 18, in combination, would also be placed in this category.

Of these four activities, the first (Task 1) and the third (Task 25) do not have guaranteed funding, although Task 1 has been supported on a regular but year-to-year basis.

**ACTION:**

SCTB, in considering the work of the Priorities Sub-Committee, is invited to :-

- (1) comment on the appropriateness of the range of tasks/activities identified for the OFP
- (2) consider the priorities as developed, and structure as seen necessary.

**SUMMARY OF OFP PRIORITIES**

	NOT FUNDED	FUNDED
ESSENTIAL	1, 25	21, {16,17,18
IMPORTANT	2, 3, 4 22, 24	6, 7, 8, 9, 10 11, 14, 26
USEFUL	5, 12, 13 15, 20, 23	-