APPENDIX 1

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APPENDIX 2

OPENING STATEMENT

BY

MR YVES CORBEL, DEPUTY DIRECTOR, SPC

Ladies and gentlemen,

It is my great pleasure to welcome you to SPC, on behalf of the Director General who is currently away on duty travel, for the Nineteenth Session of the Coordinating Working Party on Fishery Statistics. I note that the CWP has had a relatively long history, dating back to 1960, when the Working Party was primarily concerned with the North Atlantic area and then, in 1969, when it became concerned with the whole Atlantic Ocean. SPC first became involved in the CWP nine years ago, at the Fifteenth Session held at NAFO in 1992. FAO invited SPC to the Fifteenth Session in part to explore the possibility of expanding the mandate of the CWP beyond the Atlantic, to encompass all ocean areas. By the time of the Seventeenth Session, which was held in 1997 at CCAMLR headquarters in Hobart, Australia, the mandate had indeed been expanded and SPC, along with IWC, became the first "new" members of CWP. It is a particular honour for SPC to host this Session as it is the first to be held by one of the "new" CWP members, which now also includes IOTC, CCSBT and IATTC.

SPC has been concerned with fishery statistics since the inception of the Tuna and Billfish Assessment Programme in 1981, which was the predecessor to SPC's Oceanic Fisheries Programme. Over the past 20 years, SPC has endeavoured to compile catch and effort data, and other types of data, covering the tuna fisheries in the SPC region. Unlike most other fisheries statistics programmes, the statistical work of the OFP has been accomplished without the support of a fisheries management organization for the tuna fisheries in our region. Therefore, the data compiled by SPC have been provided on a completely voluntary basis, both by its member countries and by non-member countries — that is, the distant-water fishing nations. There have been certain advantages and disadvantages to this situation. The main advantage has been that SPC has been free to compile data and estimate catches without being constrained by the bureaucratic procedures that can sometimes create problems for fisheries management organizations. The main disadvantage has been that certain distant-water fishing nations have, in the past, withheld data because they are not members of SPC.

The situation regarding a fisheries management organization for the tuna fisheries in the region has changed considerably since your last meeting in 1999 at Eurostat headquarters in Luxembourg. Since that time, the negotiations to establish the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean were concluded and a preparatory conference has been convened to implement the new Convention. The "PrepCon", as it is known in the jargon, will be concerned with the rules of procedure for the Commission; the rules and regulations concerning the financial management and internal administration of the Commission; the location of the headquarters of the Commission; and the provision of interim scientific advice. The first meeting of the PrepCon took place last April in Christchurch, New Zealand, and the next meeting should take place in early 2002 in Papua New Guinea. It is not expected that the Commission itself will be fully operational for at least another two or three years. However, when it does, the

SPC Oceanic Fisheries Programme will almost certainly play a key role in the compilation of data and the provision of scientific advice.

On a broader level, fisheries management, in general, and fisheries statistics, in particular, have been affected in recent years by other international initiatives, such as the Code of Conduct for Responsible Fishing and the Implementing Agreement that was negotiated at the Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. As a result, fisheries agencies around the world have become increasingly concerned with such issues as:

- bycatches, particularly of protected species or other species of special interest, such as sharks, birds, turtles and marine mammals, and observer programmes to collect data on bycatches and discards;
- illegal, unreported and unregulated, or "IUU", fishing, and the use of flags of convenience; and
- monitoring of fishing on the high seas and the general use of vessel monitoring systems, or "VMS".

These new issues are in addition to the many other issues that have concerned CWP continuously since the early meetings in the 1960s. Thus, it is apparent that at the same time as the geographic mandate of the CWP has expanded, the agenda has also expanded considerably. Both of these trends point to the importance of the work that you will undertake during the next four days, which will have an impact not just on the work of the regional fisheries agencies and on FAO, but on the work of the national fisheries agencies around the world.

I wish you all the best for your discussions and I hope that you will enjoy your stay in Nouméa and New Caledonia. And if there is anything whatsoever that SPC can do to improve your meeting, please do not hesitate to let us know.

I hereby declare the Nineteenth Session of the Coordinating Working Party on Fishery Statistics open.

APPENDIX 3

AGENDA

1. Opening of session and adoption of agenda

2. Appointment of Chairperson

3. Changes in membership of CWP

4. Review of recommendations from CWP-18

5. Reports of Inter-Sessional Meetings
   - CWP Inter-Sessional WG on Publication of Integrated Catch Statistics for the Atlantic
   - CWP Iner-Sessional WG on Precautionary Approach Terminology
   - Meeting of Tuna Agencies
   - Meeting of Agencies Participating in FIGIS/FIRMs (9 July 2001)

6. Reports on Inter-Sessional developments in Agency programmes in fishery statistics

7. STATLANT issues

8. Elasmobranch statistics

9. Data implications of Illegal, Unreported and Unregulated (IUU) fishing and Agency catch certification schemes

10. Discard data availability and dissemination

11. Integration of fishery statistics and joint dissemination

12. Charging and dissemination policies for supply of data

13. Record of vessels fishing on the high seas (Compliance Agreement)

14. Statistical Classifications:
    - Fishing-related activities (e.g. ISIC)
    - Vessels (e.g. ISSCFV)
    - Species (e.g. ISSCAAP and ASFIS)
    - Statistical area boundaries

15. Coordination of descriptions of national statistical methodologies

16. Role of the CWP in relation to statistical development

17. Handbook of Fishery Statistics – completion and revisions

18. Any other business

19. Arrangements for the 20th Session of the CWP

20. Adoption of the Report

APPENDIX 4

LIST OF DOCUMENTS

Document Number	Originator	Title
CWP/19/A	Secretariat	General Announcement
B	Secretariat	Provisional Agenda
C	Secretariat	Provisional Annotated Agenda and Timetable
D	Secretariat	Provisional List of Documents
E	Secretariat	Provisional List of Participants
F	Secretariat	CWP Sessions: Dates, venues, etc.
G	Secretariat	List of Acronyms

Documents from the Secretariat addressing agenda items 3-5

CWP/19/1	Secretariat	Report of the 18th Session of the CWP (6-9 July 1999, Luxembourg)
2	Secretariat	Reports of Inter-Sessional Meetings:
2(A)		WG on Publication of Integrated Catch Statistics for the Atlantic
2(B)		WG on Precautionary Approach Terminology
2(D)		Meeting of Agencies Participating in WG on FIGIS/FIRMS
3	Secretariat	Changes in Membership of CWP
4	Secretariat	Review of Recommendations from CWP-18

Documents from Participating Organizations addressing agenda items 6-20

CWP/19/CCAMLR		Paper from CCAMLR
CWP/19/Eurostat	Eurostat	Paper from Eurostat
CWP/19/FAO	FAO	Paper from FAO
CWP/19/FAO/Sup.1	FAO	Supplementary Paper from FAO
CWP/19/IATTC	IATTC	Paper from IATTC
CWP/19/ICCAT	ICCAT	Paper from ICCAT
CWP/19/ICES	ICES	Paper from ICES

CWP/19/IOTC	IOTC	Paper from IOTC
CWP/19/NAFO	NAFO	Paper from NAFO
CWP/19/OECD	OECD	Paper from OECD
CWP/19/SPC	SPC	Paper from SPC
CWP/19/FFA	FFA	Paper from FFA

CWP-19 INFORMATION DOCUMENTS

CWP/19/Inf.1	FAO	Report of the Meeting of FAO and Non-FAO Regional Fishery Bodies or Arrangements. Rome, Italy, 20-21 February 2001.
CWP/19/Inf.2	SPC	Observer data held by the Oceanic Fisheries Programme covering tuna fishery bycatches in the Western and Central Pacific Ocean
CWP/19/Inf.3	FAO	Draft International Plan of Action for Status and Trends Reporting on Fisheries
CWP/19/Inf.4	FAO	Status and Trends Reporting in Fisheries: a review of progress and approaches to reporting the state of world fisheries
CWP/19/Inf.5	FAO	The Consequences of Illegal, Unreported and Unregulated Fishing for Fishery Data and Management
CWP/19/Inf.6	SPC	Agriculture and fishing activities in the Pacific – the special classification needs of small island economies

APPENDIX 5

LIST OF ACRONYMS USED IN THIS REPORT

ACFR	Advisory Committee on Fisheries Research (FAO)
AIDCP	Agreement on the International Dolphin Conservation Program (IATTC)
APFIC	Asia-Pacific Fishery Commission
ASFA	Aquatic Sciences and Fisheries Abstracts
ASFIS	Aquatic Sciences and Fisheries Information System
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CECAF	Fishery Committee for the Eastern Central Atlantic (FAO Regional Body)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CWP	Coordinating Working Party on Fishery Statistics
EEA	European Economic Area
EEZ	Exclusive Economic Zone
EPO	Eastern Pacific Ocean (IATTC)
EU	European Union
Eurostat	Statistical Office of the European Communities
FAO	Food and Agriculture Organization of the United Nations
FFA	South Pacific Forum Fisheries Agency
FIDI	Fishery Information, Data and Statistics Unit (Fisheries Department, FAO)
FIGIS	Fisheries Global Information System
FISHDAB	Fishery Statistical Database (Fisheries Department, FAO)
FIRMS	Fishery Resources Monitoring System
GFCM	General Fisheries Commission for the Mediterranean (FAO Regional Body)
GRT	Gross Registered Tonnage
GT	Gross Tonnage
HSVAR	High Seas Vessel Authorization Record
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea
IOTC	Indian Ocean Tuna Commission (FAO Regional Body)
ICSEAF	International Commission for the Southeast Atlantic Fisheries (ceased: 1990)
ISIC	International Standard Classification of All Economic Activities (UN)
ISSCAAP	International Standard Statistical Classification of Aquatic Animals and Plants
ISSCFV	International Standard Statistical Classification of Fishing Vessels
IUU	Illegal, Unreported and Unregulated Fishing
IWC	International Whaling Commission
NAFO	Northwest Atlantic Fisheries Organization (previously ICNAF – International Commission for the Northwest Atlantic Fisheries)
NASCO	North Atlantic Salmon Conservation Organization
NewCronos	Eurostat Database (previously known as CRONOS)
OECD	Organisation for Economic Cooperation and Development
OFP	Oceanic Fisheries Programme (SPC)
RFB	Regional Fishery Body
SEAFDEC	South-East Asian Fisheries Development Center
SEAFO	South East Atlantic Fisheries Organisation (currently being formed)

SPC	Secretariat of the Pacific Community
STACREC	Standing Committee on Research Coordination (of Scientific Council of NAFO)
STATLANT	STATistical Programme for the ATLANTic Fisheries (previously STANA)
TAC	Total Allowable Catch
TIS	Trade Information System (CCSBT)
VMS	Vessel Monitoring System
WCPO	Western and Central Pacific Ocean (SPC)

APPENDIX 6

REVIEW OF FOLLOW-UP TO CWP-18 ITEMS REQUIRING ACTION

The main follow-up actions taken in response to recommendations from CWP-18 (in italics) are as follows:

Para. 81 of CWP-18 Report

In conclusion, CWP recommended that its members should in general regard as the most reliable source of data those held by the regional body which has assessment responsibility for the stock. It also recommended that FAO should introduce a more systematic way of adopting such data in its data set, automating the process as much as possible. To establish this process, lead agencies need to be identified on a species and area basis. CWP recommended that FAO, in consultation with the regional fishery agencies, develop a table for this purpose. The table of lead agency designations should then be circulated to all agencies and finalized, if possible, at an inter-sessional meeting.

FAO has made efforts to include in its database the fishery statistics provided by the regional bodies as much as possible. Data for Antarctic fishing areas are regularly taken from those assembled by CCAMLR. Regarding the data disseminated by the four regional tuna agencies (IATTC, ICCAT, IOTC and SPC), in the last year FAO has replaced the tuna data provided by several national correspondents with those of the tuna agencies. However, after careful consideration FAO has decided that it is not appropriate to implement at this time a system of blanket replacement of statistics reported by countries to FAO with regional agency statistics, as envisaged in the CWP recommendation. This is discussed further in document CWP/19/FAO. There was no intersessional CWP Agency Consultation.

Para. 89 of CWP-18 Report

CWP found good grounds for further exploring the proposal of a single publication in electronic form of the entire database of North Atlantic catch statistics. CWP therefore recommended that Eurostat, FAO, ICCAT, ICES and NAFO investigate the possibility for producing a publication following the ICES proposal. ICES undertook to take the lead on this issue.

This was completed and followed up by Eurostat and agencies which provided the statistics. See CWP-19 Report paragraph 10.

Para. 105 of CWP-18 Report

Based on the Eurostat proposal (Doc. CWP-18/8-Eurostat) concerning the FAO major fishing area 07 (the former USSR) inland fisheries statistical data, CWP observed that it would not be possible to break down the USSR data for marine fisheries and reassign them to individual republic States before the breakup of the USSR. Looking to the future, CWP agreed that disaggregation of data, particularly for the Baltic States, would be valuable. CWP recommended that FAO and regional organizations should look into the possibility of undertaking this disaggregation during the inter-sessional period.

There was little progress to report on the disaggregation of inland production of the former USSR area into catches from freshwaters of individual Republics. Contacts have been established with a prospective consultant but work is not yet under way.

Para. 106 of CWP-18 Report

NAFO inter-sessionally had proposed a new definition for the measure of effort for boat seines. CWP noted responses from regional organizations had suggested minor editorial changes. Accordingly, NAFO presented to CWP the new definition for adoption. CWP recommended acceptance of the new global definition which should read as follows: "Boat seines (Danish etc). Effort measure: hours fishing per day. Definition: number of times the gear was set or shot per day, times the estimated mean set or shot duration."

Changes to the STATLANT 21 B to reflect a new effort measure for Boat Seines have been implemented.

Para. 111 of CWP-18 Report

CWP noted that regular archiving is an essential action for all fishery data sets and databases and recommended that the relevant section in the capture Guidelines should be supplemented with further advice and direction in this regard. Individual agencies should take all due measures to ensure that archiving occurs on a regular basis and in the most contemporary format available. Agencies should also give consideration to the formal drafting of a 'Doomsday' plan to secure their data from permanent loss should circumstances destroy the on-site repository for such data.

Several agencies reported that they had taken action in this regard.

Para. 113 of CWP-18 Report

CWP commended the new Guidelines on the Routine Collection of Capture Fishery Data and recommended that FAO provide copies to all agencies and distribute the publication as widely as possible.

The Guidelines on the Routine Collection of Capture Fishery Data have been widely distributed at workshops, seminars and regional meetings; they have also been translated into French.

Para. 119 of CWP-18 Report

CWP recommended the revised formulation for determining the nationality of catch data, as follows:

> *The flag State of the vessel performing the essential part of the fishing operation shall be responsible for the provision of catch and landing data.*
>
> *Where a foreign flag vessel is fishing in the waters under the national jurisdiction of another State, the flag State of the vessel shall have at all times the responsibility to provide relevant catch and landing data. The only exceptions to this shall be:*
>
> > *(a) where the vessel undertakes fishing under a charter agreement or arrangement to augment the local fishing fleet, and the vessel has become for all practical purposes a local fishing vessel of the host country;*
> >
> > *(b) where the vessel undertakes fishing pursuant to a joint venture or similar arrangement in waters under the national jurisdiction of another State and the*

vessel is operating for all practical purposes as a local vessel, or its operation has become, or is intended to become, an integral part of the economy of the host country.

In any situation where there is uncertainty as to the application of these criteria, any agreement, charter, joint venture or other similar arrangement shall contain a provision setting out clearly the responsibility for reporting catch and landing data, which shall be reported to the flag State, and, where relevant, to any coastal State in whose waters fishing operations are to take place or competent sub-regional, regional or global fisheries organization or arrangement.

FAO has adopted the revised definition, but retained the chapeau from the original definition.

Paras. 121 and 123 of CWP-18 Report

121: Applying these criteria, CWP-17 recommended changes in relation to four major fishing area boundaries: (1) between Areas 47 and 51, (2) between Areas 51 and 57, (3) between Areas 57 and 71 and (4) between Areas 57 and 81, subject to the agreement of national fisheries statistical authorities of the countries fishing these waters and assurances that historical time series can be adjusted. The inclusion of industrial tuna catches in these areas into the appropriate FAO statistical area aggregates is possible as data are available by 5° x 5° (and sometimes 1° x 1°) grid areas. Maps showing the proposed changes are provided in Annex 5 of the CWP-17 Report.

123: CWP-18 recommended that the modification to the boundary between major fishing areas south of Australia should be implemented immediately as Australia (the only major country affected) has agreed. CWP also recommended that FAO should follow up the recommendation concerning modification to the boundary between areas 51 and 57 between India and Sri Lanka in order to have this implemented as soon as possible.

On changes to four major area boundaries, action has varied. See CWP-19 Report paragraphs 174 to 178.

Para. 145 of CWP-18 Report

CWP recommended that a table of terminology relating to the Precautionary Approach used by different organisations should be prepared by FAO based on input from the regional organisations. This document should be available for the Expert Consultation on Implications of the Precautionary Approach: Tuna Biological and Technological Research. This meeting is planned in March 2000.

An intersessional meeting was held to discuss this, hosted by ICES and the report (CWP/19/2(B)) was provided to the Expert Consultation. See CWP-19 Report paragraphs.

Para. 161 of CWP-18 Report

Despite trends in the opposite direction, CWP recommended that efforts should be pursued with classification maintenance agencies to make the classification more detailed, especially for species of little volume of trade, but for which there are conservation concerns.

FAO and Eurostat discussed with the World Customs Organization the mechanism for revising trade classifications but no initiative has yet been taken in order to develop a more detailed classification for fishery commodities .

Para. 162 of CWP-18 Report

Although some of the possible reasons for discrepancies among fishery trade data of CWP agencies were identified, CWP recommended that Eurostat, FAO and OECD should investigate the causes of discrepancies in published data and should attempt to eliminate these discrepancies or, where the differences were due to the use of differing concepts in the compilation of the data, provide adequate documentation in the publications explaining the concepts used.

Due to late recruitment in 2000 of commodities statistician in FAO, there has been no intersessional action to report on the resolution of trade discrepancies in databases of FAO, OECD and Eurostat.

Para. 163 of CWP-18 Report

CWP noted the usual absence of data on foreign landings and trans-shipments from official foreign trade data and recommended the CWP agencies publishing fishery trade data to intensify their efforts to obtain the foreign landings and trans-shipment data from the national authorities.

The Secretariat is not aware of any developments.

Para. 170 of CWP-18 Report

The CWP agreed that there is an urgent need for an international standard format which accommodates the reporting of position, fishing activity, catch and other data through VMS. The format should allow very extensive flexibility in the data elements to be included. One such possible standard which seemed to meet these criteria is the "Danish standard" adopted by many agencies in the Atlantic, but there may be other candidates. The CWP strongly recommended that an international standard be developed and promoted, and that FAO consider facilitating this process as a matter of urgency. Presentation of the "Danish standard" and other candidate standard formats on the FAO Web site would assist this process.

The "Danish standard" is gaining wider acceptance. FAO has published technical guidelines on the application of VMS and has been developing a VMS strategy document in consultation with IMO. A VMS web site is also being developed.

Para. 171 of CWP-18 Report

An inter-sessional meeting is proposed to finalize the table designating lead agencies for catch statistics (and effort, if available) for particular species in particular areas, as recommended in paragraph 81. It would also be desirable to consider the methodology and logistics of adopting data from the lead agencies. The CWP Secretary should take the lead in arranging this meeting, which could possibly be held in conjunction with the FAO ACFR Working Party on Status and Trends of Fisheries which will meet in November 1999.

See notes under Para. 81 of CWP-18 Report above.

Para. 172 of CWP-18 Report

An inter-sessional meeting of agencies concerned with dissemination of North Atlantic catch statistics (Eurostat, FAO, ICCAT, ICES and NAFO) as recommended in paragraphs 88 and 89 is also proposed. ICES will take the lead in arranging this meeting, which will probably take

place in the first quarter of 2000. The same meeting may also be an appropriate occasion to consider historical statistics of the former USSR, and particularly the Baltic States, as recommended in paragraph 105.

This was completed. See CWP-19 Report paragraph 10.

Para. 174 of CWP-18 Report

CWP-18 recommended that the title of the STATLANT Newsletter be changed to the CWP Newsletter and that it be made available on the Web with links from the CWP site on the FAO Fisheries Web site. CWP-18 recommended that Eurostat and FAO should cooperate to implement this.

There have been no issues of the Newsletter during the intersessional period. The next issue will be renamed as recommended.

Para. 175 of CWP-18 Report

CWP recommended that the Handbook of Fishery Statistics be also made available as a CD ROM and on the CWP Web site when it has been completed in the revised version. Consideration should also be given to renaming it, possibly as the "CWP Compendium on Fisheries Statistics".

Work on the revision and completion of missing chapters of the Handbook has progressed, but is not completed and therefore the recommended dissemination on CD ROM is postponed. The title proposed for the revised edition is "CWP Handbook of Statistical Standards".

Para. 176 of CWP-18 Report

The table prepared at the Ad Hoc Consultation on the Role of Regional Fishery Agencies in Relation to High Seas Fishery Statistics (La Jolla, California, 13-16 December 1993), summarizing the statistical programme of each agency, has been extensively quoted and is generally considered to be useful. CWP-18 recommended that it should be modified and updated and that each agency should provide by 30 October 1999 to the CWP Secretary a brief description for each of following attributes for each agency to be included in a revised version of the table:

- *Main purpose and usage of statistics*
- *Catch and effort data structure, geographical and temporal resolution and length of time series*
- *Are catch data available by EEZ?*
- *Data source (e.g. official report, scientists' estimates, agency observer programme, agency port sampling programme)*
- *Availability of retained fish by-catch (non-target) species data*
- *Availability of discard data (including birds and mammals)*
- *Availability of biological data (including size)*
- *Availability of economic data*
- *Availability of environmental data*
- *Catch data verification methods (e.g. trade data)*
- *Usage of fishery-independent data*

- *Reporting policy in relation to nationality of catch*
- *Are countries obliged to report data?*
- *Do all member countries report data?*
- *What is included in catch statistics? (e.g. discards, recreational, fish on-grown in pens, experimental fishing)*
- *Observer programmes*
- *Vessel monitoring systems*
- *Restrictions on access to data*

Eight agencies provided this information to the Secretary (see Appendix 8 of CWP-19 Report). In addition, tuna agencies developed more detailed tables describing their data sets on a species basis (see Appendix 9 of CWP-19 Report).

APPENDIX 7

REPORT OF THE MEETING OF AGENCIES PARTICIPATING IN FIGIS[1]/FIRMS[2]
Nouméa, New Caledonia
9 July 2001

Taking advantage of their participation in the CWP-19 Session, a meeting of the agencies involved in the FIGIS-FIRMS project was held in Nouméa on 9th July 2001.

David Cross (Eurostat) was appointed Chair of the meeting with Mr Taconet and Mr Roux as Rapporteurs. The participants are listed in Annex 2.

The agenda was agreed (Annex 1). The major document presented to the participants was a FIGIS Project Progress Report (ftp://ftp.fao.org/fi/document/cwp/cwp_19/cwp-19-2d.pdf).

1: Introduction:

The development of FIGIS, a project in support of the FAO Fisheries Department's regular programme, began on January 1999 and has a 5-year duration. In addition to the Department's regular programme budget, it is being developed in collaboration with the FAO World Agricultural Information Centre (WAICENT), and financially supported by two donors, Japan and France. The FIGIS development includes the development phase of FIRMS as a co-operation between FAO and the Regional Fisheries Bodies (RFBs).

It was noted that this meeting might be considered as the forerunner to describing and setting up of a Steering Committee for the development of FIGIS/FIRMS.

2: Background information on FIGIS and FIRMS.

Mr Taconet explained that FIGIS is a tool or mechanism to exchange, manage and disseminate information on global fisheries and comprises a number of information domains. From an operational point-of-view, FIGIS will be operated and fed by a number of sub-systems, corresponding to such institutionalized inter-connected networks as Globefish, ASFA, SIPAM, and FIRMS. FIRMS represents the family of partners (Regional Fishery Bodies and National Centres of Excellence) sharing the same concerns and philosophy to report on marine fisheries status and trends. One of the main goals of FIRMS is to serve as the site for the global reporting of stock status and trends. FIRMS will interact with specialized sub-systems under FIGIS umbrella, such as aquaculture, trade and marketing, and research.

A discussion followed focussing on the scope of the information domains relevant to FIRMS, and the intended target audience. Whereas the Resources and Stocks modules are at the core of FIRMS, it was recognized that FIRMS needs to disseminate information in a broader context; possibly including partners specializing in biology and taxonomy, fishing technology or socio-economic aspects relevant to fisheries management. On target audience, it was agreed that the contributions of FIRMS partners would primarily target scientists, experts and

1 Fisheries Global Information System

2 Fishery Resources Monitoring System

the general public. With respect to policy makers, FIRMS will not interfere with the RFBs' advisory and decision-making mechanisms which result in precisely-worded statements. By reflecting status, recommendations and decisions made by decision makers, it will participate in an overall effort to raise the public and policy makers' awareness of fisheries issues and the general ways to address these issues, and to make more transparent the management actions taken.

Mr Grainger then explained the relationships between FIGIS and the proposed International Plan Of Action (IPOA) on Fisheries Status and Trends Reporting. FIGIS should be seen as a facilitating mechanism, a tool in support to the IPOA implementation.

3: The FIGIS project's development progress during the July 2000 – July 2001 period.

On the FIRMS partnership front, six regional fishery body partners (SPC, ICCAT, ICES, IOTC, GFCM) and Vietnam have established Memoranda Of Understanding (MOU) with FAO for a testing phase. NAFO also agreed to participate in this development stage. Without making any commitment at this stage, Eurostat and IATTC expressed an interest in participating in FIRMS. It was noted that the presence at the meeting of the future CCSBT data manager could facilitate the initiation of an MOU with CCSBT.

On the FIGIS technical front, the internet version of the FIGIS Dissemination system permits users to query and report on five FAO global statistical time series (production, aquaculture, capture, fleet and commodities), the FAO species identification sheets (including information on 300 species), the fishing technology sheets (including information on 70 gear types, 50 vessel types and 20 fishing techniques). As a separate entity to which there is restricted access, the High Seas Vessels Authorisation Record holds information on 1 242 vessels with data from 4 countries (Canada, Japan, Norway, USA). An early prototype of the Resources and Stocks module is also available, with restricted access, and includes an inventory of about 1500 stocks, the case studies supplied by partners, and the global Tuna Atlas statistical time series prepared in collaboration between IATTC, ICCAT, IOTC, SPC and FAO. Also under restricted access is the prototype of the reference table management system aiming at disseminating fisheries standard terms and classifications in support of data exchange. A FIGIS XML[3] data format exchange proposal is at an advanced stage of development and a CD-ROM tutorial in support of its use was made available to the meeting. Most of the GIS layers necessary for global mapping of marine fisheries in FIGIS have been developed, at various scales, including bathymetry, coastline, regional fishery bodies' convention areas, maritime political boundaries (EEZs), statistical water areas, landing places, country borders, sub-national administrative boundaries and a set of about 300 species distribution area maps.

Concerning progress of the Project and plans to promote standard information structure, participants expressed concerns on both the additional workload (mainly on statistical data) and on the interest in harmonising presentations (mainly on non-statistical information). The meeting noted the FIRMS project proposals that had yet to obtain funding. On statistics, it was recognized that harmonizing content (e.g. referring integrated data sets) involves a great deal of effort. It was explained that the FIGIS standardization is mainly downstream of the content handling, with XML metadata[4] terms facilitating data exchange across networks between systems, and that the tool developed would make transparent this process with

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[3] Extensible Markup Language

[4] Metadata terms: descriptors of information content

virtually no additional workload, provided relationships between international and local classifications are clearly established. On non-statistical data, no proper metadata standard is known to exist, even if more or less standard templates are used by organisations The RFBs stated that they generally have standard layout templates, and they would look very favourably at proposals for adopting standards. It was noted that metadata standards were compatible with standardized templates.

4: Presentation of the FIGIS system

FIGIS handles four main types of information:

- statistical time series;
- traditional data bases such as the Glossary, or the Vessel registry;
- knowledge bases allowing the combination of text, images, maps, and graphs presented as fact sheets which editors customize to their requirements; and
- geographical information system allowing outputs in maps products.

The presentation stressed the implications of the "FIGIS standards". These include a common understanding of:

- FIGIS concepts (such as a fishing technique or a stock) and acceptance of the associated data integrity rules,;
- metadata terms to be used as topic descriptors and their position in topic hierarchies; and
- standard vocabulary and classifications.

Information in FIGIS/FIRMS is organized according to the multiple views one can have of the fisheries system. Each view corresponds to one disciplinary (specialized) approach of the system, hence it represents the different roles and reporting responsibilities biologists, technologists, environmentalists or managers may have. The view may be of simple concepts, like aquatic species, gear types, or vessel types, or complex concepts built from relationships established between simple ones, and examples of these would include stocks, fishing techniques, fisheries or fishery management systems.

The FIGIS 3-tier software architecture, based on platform independence and the XML format to convey data between systems, was also described to show how it can technically support distributed management. A live Internet demonstration was made of the modules so far developed, including a very early prototype of the stocks module which included information prepared by RFBs.

In the course of the presentation a number of explanations were made concerning data management and ownership:

- compulsory rules apply to any piece of information contributed by any partner, that serve the purpose of attributing ownership credit, timeliness status and publication schedule, bibliographic sources, versioning and validation status;
- in the routine phase, management of information within FIGIS is under full control and implementation of the owner. This includes the decision on the languages in which to publish. However technical assistance may have to be provided by FAO to resolve any problems;
- the design also allows the owner to control the level of linkages afforded from the contributed material, e.g. exact links to other objects, or searches of proxi-objects;

- with respect to concerns expressed on the possibility of there being contradictory statements attached to different levels of aggregation, the FIGIS system will allow links to be drawn between different aggregation levels (from each piece of aggregated statement to the object(s) giving the detailed information) and so substantially reduce the risk of such contradictory statements; and
- in order to make the correct use of the proposed metadata terms to tag information, accurate and agreed definitions will be needed. As an example, should ICES recommendations evolving from stock assessment be tagged under "Management/advice", which may imply that ICES has a management function? In other words, should the Management tag usage be restricted to information domains relevant to agencies having a management decision and implementation role, or in a broader sense to all roles relevant to management, including the advisory and monitoring role an organisation such as ICES may have.

5: Outlines of the FIGIS-FIRMS partnership.

There are three stages in the development of a partner agreement:

- development of FIRMS as a co-operation between FAO and the RFBs;
- evaluation of FIRMS by the RFB in respect to their particular needs; and
- implementation of FIRMS/FIGIS for dissemination of stock based information.

The development phase as agreed between several RFBs and FAO is ongoing. This phase is due to end in 2-3 years from now. This phase is well-structured and subject to the agreements made between the RFBs and FAO. During this phase the RFBs will interact with FAO on this development. FAO plans to institutionalize the FIGIS project during 2002 to ensure its sustainability within the FAO regular programme budget. The evaluation phase will run partly in parallel with the development phase but there will be a distinct phase after system completion. Implementation depends on a positive evaluation by the RFBs of FIRMS as developed. In order to allow the RFBs to evaluate the implications for their work it will be useful to start to investigate what a possible multilateral partnership agreement between FAO and RFBs will include. A preliminary draft of the partnership arrangement was presented to the participants for discussion.

6: Discussions aimed at developing a realistic work plan during forthcoming year.

Three questions guided partners statements, which have been compiled in Annex 3, and for which a synthesis is given below:

a) <u>How will the system's content be further developed?</u> The agencies expressed their willingness to start contributing information to FIGIS, the scope of information involved concerning primarily stock assessment, resources status and management advice, and possibly management systems information. Training in FIGIS XML and availability of human resources were the two conditions considered for effective contribution. On the availability of human resources, ICES, SPC, IATTC, IOTC and Eurostat stated that they should have no problem, whereas NAFO, ICCAT and CCSBT would be short of resources. On the training aspects, the FIGIS project has prepared a first version of the FIGIS XML tutorial CD-ROM and distributed it to all interested agencies during the meeting. It is proposed to establish an online discussion forum to assist trainees and discuss the design over the internet. Additionally, for those agencies ready to start contributing, that is, having human resources available, the project proposed an immediate on-site training session.

b) How do we work out further the system's requirements? A few essential high level requirements were made clear through the discussions:

- full control by the agencies on the contributions, content and web publication schedule; a well defined border line between what is shared in the co-operative programme and what is of direct and private relevance to the agency;
- a presentation policy should be adopted for dissemination so that credit to the contributing agency, ownership and bibliography, is made obvious, both on web pages and downloadable printouts;
- with respect to content presentation formats, to consider the globalisation of presentation among partners against a common agreed structure, and concern about ensuring compatibility with the topic templates used internally; and
- statistics and information have to be disseminated under clearly labelled and documented programmes headers.

FIGIS proposed to organize a technical workshop to discuss in details the requirements (in great part enshrined in the FIGIS XML design) early in 2002, after agencies have had time to provide feedback on the Stocks and Resources web application, on the data formats required to feed the system, and possibly on effective experience to contribute.

c) How do we progressively set up the FIRMS formal partnership? Those agencies which already established MOUs or pre-arrangements referred to it stating they are willing to follow up with developing further the necessary activities, and being in agreement with the two years preparatory period before a more formal partnership be signed. IATTC and Eurostat are willing to consider coming into the system in the short term. Interactions with CCSBT will also be initiated on the subject of the partnership. Agencies generally insist that firm bilateral agreements, clearly specifying the scope of the data exchange and the roles on both sides be established. During this two years period, opportunity will be made of the various meetings that partners are likely to attend to include an agenda item on the FIGIS partnership to elaborate further the partnership agreement in a step-wise process.

7: Agenda for future development steps.

A timetable skeleton identifying the main activities foreseen related to the establishment of new MOUs, training, refinement of system requirements, and supply of information was presented so as to allow the partners to indicate their intentions. The participants were requested to complete the timetable at the earliest opportunity. This will permit the FIGIS project to develop the work-plan.

ANNEX 1 OF APPENDIX 7: Agenda of the Meeting of Agencies Participating in FIGIS/FIRMs, Nouméa, 9 July 2001

What	who	when
1. Background information on FIGIS/FIRMS: • Purpose and objective – Relationships between FIGIS and FIRMS • Relationships with International initiatives on promoting Status and trends reporting in Fisheries, and CWP work	M. Taconet R. Grainger	10.00 10.30
2. Progress: activities carried out during the period July 2000 - July 2001 • Partnership front (FIRMS) • Technical front (FIGIS)	M. Taconet	11.00
3. Presentation of the FIGIS system • FIGIS internet application • Overview of FIGIS design patterns ... ... including discussions on how partners initial requirements have been implemented	M. Taconet - O.Roux All	11.20
Lunch break		12.30
4. Outlines of the FIGIS partnership • A compilation of ideas proposed ... ... for discussion	M. Taconet All	14.00
5. Discussion aiming at deciding which will be the next steps required to further develop the FIRMS system and partnership • RFBs needs and priorities • Needs as perceived by system developers from case studies ✓ Refining system requirements with partners ✓ Setting up data standards ➢ terms – classifications (environment, methods, ...) ➢ glossaries ➢ coding systems (stocks, fisheries, ... ✓ Training partners in technical aspects ✓ preparing formal partnership for FIRMS ✓ institutionalising FIRMS • Discussion on ways to address these needs, that could be organized according to the following generic items:	round table RFBs representatives M. Taconet All	15.00 16.00 16.30
6. Agenda for future development steps • Elaboration of a tentative work plan	All	17.00

ANNEX 2 OF APPENDIX 7: List of Participants

Participants in the Meeting of Agencies Participating in FIGIS/FIRMs		
Name	Organization	Function
Amaratung, Tissa	NAFO	Assistant Executive Secretary
Bryclow, Keith	SPC	Fisheries Scientist
Crispoldi, Adele	FAO – FIDI	Senior Fishery Statistician
Cross, David	Eurostat	Principal Administrator
Etaix-Bonnin, Regis	Fisheries Department NC	Fisheries Statistician
Garibaldi, Luca	FAO – FIDI	Fishery Statistician
Grainger, Richard	FAO – FIDI	Chief
Hinton, Michael G.	IATTC	Senior Scientist
Kebe, Papa	ICCAT	System Analyst
Kennedy, Bob	CCSBT	Database Manager
Lassen, Hans	ICES	Fisheries Adviser
Lawson, Tim	SPC	Fisheries Statistician
Lingbawan, Domingo B.	BAS - DA – PHL	Assist. Director DA AGTL Statistics
Mayo, Ralph K.	NAFO	Chair, STACREC
Richards, Andrew	FFA	Manager Monitoring, Control Surveillance
Roux, Olivier	FAO – FIDI	FIGIS Team
Schneiter, Emmanuel	SPC	Research Officer/Analyst
Taconet, Marc	FAO – FIDI	FIGIS – Officer
Williams, Peter	SPC	Fisheries Database Supervisor

ANNEX 3 OF APPENDIX 7: Agency statements, needs, wishes, priorities and capacities with respect to the FIGIS-FIRMS implementation
(Note: Items a – d refer to questions in section 6 of Appendix 7)

ICES

a) and b) ICES has already expressed its willingness to provide information for FIRMS/FIGIS based on assessment reports and ICES will contribute to the further development of FIRMS. ICES is also willing to consider the structure of its reports with a view to globalize the presentation of IPOA issues. The ICES Secretariat will maintain responsibility over that part of the system. Other ICES data types are available, but would not at that stage be considered as part of FIRMS.

c) On the partnership arrangement, ICES would expect a firm commitment on both sides to a "bilateral" document that specifies both side roles, and is willing to take an active role in identifying the main partnership management issues.

IATTC:

a) IATTC would look forward interactive programming (sharing software libraries), and has the capacity to start contributions in the short term.

b) IATTC would look at system requirements referring the above stated views, and to its own presentation formats.

c) IATTC will consider participation, provided it has full control on its contributions, and that a co-operative data exchange agreement is reached, particularly addressing the publication layout issue (both in web and printout form). IATTC would favour for FIRMS a scope broader than the strict Stocks assessment and status domain, for the reason that the next question usually raised is what management action has been taken. However, IATTC would look towards setting a minimum level of detail as to the information that would be shared in FIGIS, their concern being to provide from their information systems direct and detailed information on items under their control.

SPC

a) referred to the MOU signed in August 2000 stating that they are satisfied in the ways activities are developing, and that they are willing to follow-up to reach a level where they can effectively contribute.

b) the recent training activity for their staff will allow them to feedback on system requirements.

c) SPC acknowledges that at some stage, the agreement will be with the future WCPO tuna commission

FFA

a) Described its specific role to provide advice to its member countries on the management of Tuna resources in their respective EEZs. Its possible contribution is likely to relate to the Fishery management system's domain of information, but no clear intention to join the partnership was made.

NAFO

a) NAFO expressed interest in the single entry point to provide stock assessment and fisheries information to FIGIS/FIRMS, and to cooperate and interact with FAO particularly to avoid errors in duplications of NAFO statements which will appear on many sites of its own.
b) NAFO referred to the pre-agreement over the first two year period needed to design and evaluate a possible partnership agreement that would be compatible with NAFO's internal procedures.
c) NAFO expressed interest in fitting their data (stock assessments and management information) into the proposed standard with full control of its contributions. As stated in the pre-agreement to actively cooperate, NAFO would have difficulty in achieving it considering the resources needed to handle the workload. In a partnership agreement, resources would have to be found for training and additional man power.

CCSBT

a) Expressed personal interest in going through the information structure standard proposal and understanding more the FIGIS system design.
b) and c) Although not being in a position to talk at this stage on behalf of his commission, the CCSBT representative positioned CCSBT's possible contribution on scientific advice for management of Southern Bluefin tuna fisheries, but that in terms of priorities, CCSBT has first to set up its own database.

Eurostat

a) and b) the contribution would notably address the socio-economic field, and Eurostat probably has resources to effectively contribute, provided training is supplied.
c) Eurostat representative also expressed his willingness to be part of the partnership, and to start discussions on the content of a MOU, which signature would need to undergo a formal process. He believed that Eurostat should be considered a regional partner.

ICCAT

a) ICCAT would supply public domain data on stock assessments and management information. However, ICCAT is short of resources, and additional ones would be needed to allow ICCAT to contribute to the system. In the short term, ICCAT is willing to send its information to FAO in word files for FAO to convert it in XML.
b) Insisted that both web-based application and downloadable versions systematically show-up ownership and bibliography
c) ICCAT representative also referred to the ongoing MOU to state that participating in a formal partnership would not represent any problem

Two country representatives present were also invited to give their views:

New Caledonia representative said that when supplying data to the Regional level, accuracy and confidentiality are two main aspects taken care of.

Philippines representative declared that his country has obligations to supply data for the regional level, (SEAFDEC and SPC), but also to FAO

APPENDIX 8

SUMMARY TABLES ON STATISTICAL PROGRAMMES OF CWP AGENCIES

	EUROSTAT	CCAMLR	IOTC
Main purpose and usage of statistics	The data are required for the management of the EU's Common Fisheries Policy and to assist the EU administration in representations, contacts and negotiations with third countries (bilaterally and through international agencies).	- fishery assessment and management - ecosystem monitoring and management	Data are used for stock assessment, management (including monitoring of management decisions) and investment planning.
Catch and effort data structure, geographical and temporal resolution and length of time series	Catch statistics are stocked at the level of the FISHSTAT NS and STATLANT A questionnaire level. EU Member States are required to submit some STATLANT B data (catch and effort). These are not stocked but are used to meet the EU's obligations to other international agencies	- detailed effort data including date, position, depth, time fishing, time searching, gear characteristics - catch by species, including by-catch and incidental captures - resolution ranges from fine-scale rectangles (approx 30 x 30 nmiles) and 10-day periods, to haul-by-haul - from 1970 to present, some longer/older time series	Mainly data from logbook enumeration by flag, species and gear aggregated to one degree monthly and five degree monthly for surface and longline fisheries respectively. In all cases, data go back to the beginning of the fishery of the Party concerned, e.g., 1952 for the Japanese longline fishery, 1981 for French purse seine, etc.
Are catch data available by EEZ?	No	- data are required to be reported by statistical area although some data may be available for the EEZs of some sub-Antarctic Islands within the Convention Area	No. Reporting of EEZ (or alternatively high seas) catches is not required at this time and not all Indian Ocean coastal countries have clearly delimited EEZs.
Data source (e.g. official report, scientists' estimates, agency observer programme, agency port sampling programme)	Basically, national statistical institutes or fishery ministries. Official data	- Contracting Parties - Member Countries - Scientific Observers - CCAMLR Ecosystem Monitoring Program (CEMP) - Public Domain	Mandatory reporting required of Contracting and Collaborating Parties. Catch data are verified and if necessary corrected or disaggregated to the required gear and species level using alternative data sources. Contracting and collaborating parties are required to report information vessel characteristics and landings or transhipments for all foreign fishing vessels using their ports, as well as vessel characteristics for domestic fleets of over 24m LOA (mandatory – facultative for smaller vessels). The agency will operate port sampling schemes and has access to some nationally operated observer programme data.

	EUROSTAT	CCAMLR	IOTC
Availability of retained fish by-catch (non-target) species data	Normally available (data from STATLANT A questionnaires).	- recorded in fishery catch data and scientific observer data	The Commission has given the Secretariat a mandate to collect such data, but the amount available to date is limited.
Availability of discard data (including birds and mammals)	Normally not available	- recorded in fishery catch data and scientific observer data	The Commission has given the Secretariat a mandate to collect such data, but the amount available to date is limited.
Availability of biological data (including size)	Not available.	- recorded in fishery catch data and/or scientific observer data	Size data are available at the same resolution as catch-and-effort data. Some data sets are raised from inadequate sample sizes. Reporting of sample size is now mandatory for raised data. Other biological data are available in reports and scientific papers, but generally, with the exception of some sex-frequency data and tagging data indicating growth, are not integrated into the database.
Availability of economic data	Some data are available and this is a priority area for further development.	- limited data reported at this stage - some data available from Member Countries	The Data and Statistics Working Group has recommended against collecting economic data on a routine basis as these data are either available in the public domain, or are not collected by the national statistics agencies. The preferred approach is to collect required data as and when needed as a separate activity.
Availability of environmental data	Generally, no data available.	- extent of sea-ice - sea surface temperature - limited data on weather at CEMP sites	Public domain environmental data sets are available and are supplied on request. A programme is being organised to collect and analyse data from >1,000 FAD-associated buoys fitted with satellite transponders.
Catch data verification methods (e.g. trade data)	Various sources are used. Standard procedure for the detection of discrepancies between data for Eurostat and other CWP agencies. Other sources (both official and non-official) are used though in a less systematic manner.	- trade data from Member Countries - new catch documentation scheme for toothfish	Catches are verified by correlation of nominal catch, catch-and-effort and size-frequency data sets and against published scientific papers and national reports. Trade data are not routinely used as most of the species covered have widespread domestic and export destinations.

	EUROSTAT	CCAMLR	IOTC
Usage of fishery-independent data	Fishery independent data are used in the quality control process. Use various case by case, no systematic procedures are used.	- fishery assessment and management (recruitment, abundance, biological parameters) - ecosystem monitoring and management	A wide-scale tagging programme is being planned for tropical tunas and more localised programmes have been conducted in the past. Some localised aerial surveys have been conducted, but not on a sufficient scale to permit stock abundance.
Reporting policy in relation to nationality of catch	CWP principle is used (as for reporting on STATLANT questionnaires)	- In general, CCAMLR Flag States will have assigned to them for the purpose of Article XIX.3 of the Convention, catches taken by their vessels on the high seas in the Convention Area. In cases of vessel charter between Members of the Commission, the Flag State and the State whose nationals control the vessel's operations may agree otherwise in respect of the responsibility for catch reporting and the attribution of the catch for the purpose of Article XIX.3 of the Convention. Members are requested to provide information on such agreements to the Secretariat as soon as they are concluded.	Flag state reporting is the norm but catch from foreign flag vessels can be reported by a Party if these vessels are operated under a joint venture or charter arrangement, provided the flag of the vessels concerned is clearly identified. In certain cases, these catches can be considered to have the nationality of the reporting country, despite capture by foreign flag vessels.
Are countries obliged to report data?	Yes, catch statistics are covered by EU legislation.	- Contracting Parties, yes	Yes – the Commission has mandatory reporting requirements for Contracting and Collaborating Parties.
Do all member countries report data?	Yes. Norway and Iceland (as EEA countries) have a legal obligation to report. EU Candidate Countries (15) are generally reporting on a voluntary basis.	- Contracting Parties, yes - Members deploying scientific observers, yes - Members conducting research (including CEMP), yes - parties to the catch documentation scheme, yes	Some members with minor fisheries for tuna and tuna-like species have failed to report data in the past. Efforts are being made to obtain the missing information.
What is included in catch statistics? (e.g. discards, recreational, fish on-grown in pens, experimental fishing)	Coverage is as reported on STATLANT questionnaires. Discards: not reported. Recreational: requested but reports very incomplete Fish grown on in pens: should be reported as aquaculture Experimental fishing: requested but variable response.	- discards - experimental fishing	All catch should be reported. Where discarding rates are known for species falling within the mandate of the Commission, attempts are made to adjust nominal catch data to account for them. Only one country is involved in on-growing fish at present, for a single species. Both catch and on-grown weights are recorded to permit assessment of removals and of total production.

	EUROSTAT	CCAMLR	IOTC
Observer programmes	None for statistical data collection, but observers are used by national and EU administration in the associated monitoring of catch quota systems. Member States are required to submit methodological reports on their statistical data collection systems which are subject to scrutiny within Working Group "Fishery Statistics".	- A Scheme of International Scientific Observation was adopted in 1992 under Article XXIV of the CCAMLR Convention. This Scheme is designed to gather and validate scientific information essential for assessing the status of populations of Antarctic marine living resources, and the impact of fishing on populations of harvested, related and dependent species. The Scheme is applied equally to harvesting and research vessels. Conservation Measures in Force require that at least one international scientific observer appointed under CCAMLR's Scheme should be aboard each fishing vessel operating in new or exploratory fisheries; fisheries for toothfish (Dissostichus spp); fisheries for crabs (mostly Paralomis spp); fisheries for mackerel icefish (Champsocephalus gunnari). The placement of scientific observers in other fisheries is recommended.	The Commission does not operate any observer programmes at present but some data are available from nationally operated programmes.
Vessel monitoring systems	None for purely statistical data collection but increasing use of vessel monitoring systems, both at national and EU level, for the control of fishing activities.	- requirement under Conservation Measures in force - Contracting Parties monitor their flagged ships - down-times reported to the Secretariat	The Commission does not operate any VMS at present but several nationally operated programmes are in operation or are planned to become operational shortly. No data from these systems have been supplied to the Commission, but these data may be used in the future to obtain data on fishing grounds where logbook reports are not available or of doubtful quality.

	EUROSTAT	CCAMLR	IOTC
Restrictions on access to data	None, other than on the rare occasion on the grounds of statistical confidentiality	- All data submitted to CCAMLR are available for the work of the Commission, Scientific Committee and its Working Groups subject to strict rules of access and use - STATLANT data are published in the CCAMLR Statistical Bulletin - The originators/owners of data retain control over any use of their unpublished data outside of CCAMLR	Data supplied at the mandatory reporting standards are considered public domain provided no single vessel or fleet can be identified from them – in that case, data are aggregated into a “nei” category. Data at finer resolution are considered confidential and access to them is subject to a number of prerequisites, including specific authorisation on their use from the data owner(s).

	SPC	IATTC	ICCAT
Main purpose and usage of statistics	(1) Monitoring of catch, effort and catch rates and (2) stock assessment.	Documentation of catch, stock assessment, management, conservation of marine mammals, bycatch reduction	Scientific statistics are used for stock management. (Assessments as well as monitoring the exploitation level, stock size etc.) Other types of statistics are collected for compliance purpose such as minimum size regulations, excess of quota etc. Some statistics are collected to monitor illegal, unregulated and unreported fishing operations.
Catch and effort data structure, geographical and temporal resolution and length of time series .	(1) Catch and effort logbook data are provided by SPC members for domestic fleets and foreign fleets in their EEZs. (2) Catch and effort data grouped by time-area strata (usually 5x5 x month for longline and 1x1 x month for surface gears) are provided by distant-water fishing nations. Gear types covered include longline, pole-and-line, purse-seine and troll. The time series is from 1950 to the present for annual catch estimates and 1962 to the present for catch and effort data grouped by time-area strata.	Logbook data to set position (~1950 for PS, ~1931 for BB, various for longline logbooks - depends on flag), summary data for distant water fishing nations (Japan, Korea, Taiwan) depends on source. Geographical resolution generally east of 150W longitude, though data for other areas held and used in ad hoc research/management programs (e.g. research on marlins and bigeye tuna).	Annual and hypothetical stock units as basic total catches 1 x 1 degrees latitude longitude grids for surface and by month 5 x 5 and month or quarter for longline. Basic data for 1950 to current. Others mostly from late 1960's
Are catch data available by EEZ?	No	Yes	No.
Data source (e.g. official report, scientists' estimates, agency observer programme, agency port sampling programme)	Scientists' estimates; SPC estimates based on logbook and port sampling data; industry estimates.	Logbooks from vessel operators/skippers, landings from processors, transshipment agencies, national agencies (e.g. U.S. Customs), national research programs (e.g. NRIFSF Japan).	Various. Scientific data are, in principle, national report but necessarily official reporting but scientists' estimates. Supplemental statistics are collected through agency port sampling program and/or direct contact with industry for landing data.
Availability of retained fish by-catch (non-target) species data	Annual catches of major non-target species have been estimated for individual fleets from observer data.	Available from observer program on larger purse seine vessels.	Most of the tuna fisheries, particularly longliners, retain much of the non-target species, as far as they have commercial value. (Bluefin vs. yellowfin tunas). Those are all recorded. However, many non-target species which has very little value, except only a portion (e.g. shark fin), the data have been poor (only total weight but no species breakdown). In recent years, effort has been made to report these by-catches, regardless the value.

	SPC	IATTC	ICCAT
Availability of discard data (including birds and mammals)	Discards of target species by individual fleets have been estimated from observer data.	Available from observer program on larger purse seine vessels.	Some countries report discarded catches, particularly when the discards are made due to the regulatory measures (under-size, over quota). Data on discards of non-commercial value by-catches are difficult to obtain, although national offices have been instructed to include these catches in the report.
Availability of biological data (including size)	Length composition, tagging data, morphometrics, genetic data, stomach contents, sex, gonad stage.	Available from port sampling program and from at-sea measurements and estimates by observers.	For most major species, size data are available. Besides, many other biological data have been collected (e.g. sex, fecundity, morphometrics etc.)
Availability of economic data	See FFA.	None, except compilations from other sources.	No economic data have been collected.
Availability of environmental data	Access to various public domain databases.	Yes - obtained from logbooks and observer records.	Much environmental data have been collected but no centralized data base (at the Secretariat) has been established.

	SPC	IATTC	ICCAT
Catch data verification methods (e.g. trade data)	Landings data. Observer data.	Yes, we use trade data. As well, data are checked for internal consistency using limits for values and by cross-referencing among variable values to flag combinations that are likely to indicate errors in keying. For example, positions may be checked against coastlines and against positions on sequential days, which yields distances traveled which are checked against distances estimated using data on vessel speed. There are many hundreds of possible errors checked by the error checking programs. When errors are flagged, data records are examined to identify and correct the source of the errors. The logbook data have also been checked by reprocessing a random selection of logbooks and comparing results to the data in the system. Error rates on reprocessing were less than one percent. Independent checks for data validity are more difficult to accomplish. Catches recorded in logbook records are compared to unloading weights, and the logbooks are rejected for use if the difference between the total recorded weights differs by more than 25% of the unloading weight. This check may also be applied to catches reported by observers. Independent checks of positions and activity of vessels reported in logbook and observer records may be conducted using information on other vessels sighted and their operations at the time of sighting.	Many methods are used. Trade data are the important source for verification. Also landing data from industry are sometimes useful. In some specific cases, canned product, etc. are used for verification.
Usage of fishery-independent data	Nil.	Trade statistics and reports used to cross validate reported catches in logbooks and unloadings.	Only at the experimental bases. Abundance of juveniles, eggs etc. were used to index recruitment. Aerial survey data have been used for abundance index.
Reporting policy in relation to nationality of catch	Catch data are maintained both by flag of registration (i.e. including "flags of convenience") and by "flag of controlling ownership" (i.e. excluding "flags of convenience"). Catch data for certain chartered vessels are maintained both by flag of registration and by the coastal state in which the chartered vessels operate.	Catch is reported under nationality of vessel flag.	The same as adopted by CWP.

	SPC	IATTC	ICCAT
Are countries obliged to report data?	All data are provided on a voluntary basis.	Yes, in some instances. Further, national law in the U.S. (I do not know about other member countries' laws) requires industry and government to provide records, but in general this forced approach is not taken. Individual contact with vessels, agents, companies, scientists, etc, and confidentiality provisions of the treaty and rules of procedure have provided excellent cooperation and voluntary compliance with data provision.	Member countries are obliged to report data according to the criteria set up by the Commission. Also those non-contracting parties which catch the species under the Commission's mandate have been requested to report their data.
Do all member countries report data?	Almost all SPC members and all non-member distant-water fishing nations report data.	No. The United States NMFS has recently failed to provide data when requested, despite national laws requiring data provision and cooperation.	No. Major fishing countries report data but there are some countries which have IUU vessels, and hence do not report the catches of their flag vessels. Even those countries report, very often data are not adequate (particularly biological data).
What is included in catch statistics? (e.g. discards, recreational, fish on-grown in pens, experimental fishing)	Catch statistics represent live weight. Discards, recreational catches, and subsistence catches are ignored.	Landed catch when known, regardless of source (e.g. commercial, experimental, recreational, artisanal)	It has been requested that all the catches to be reported (but separately), i.e. discards, recreational catches, cultured fish, experimental fishing.
Observer programmes	Observer programmes are operated by SPC, FFA and several SPC/FFA-member governments, although coverage of most fleets is low.	Yes. In place on purse seine vessels of greater than 363 mt fish carrying capacity.	Only national level.
Vessel monitoring systems	See FFA.	Required by some flagging nations (e.g. Panama), but requirement for use and data reporting using VMS systems by all participants in the fisheries of the EPO is under active consideration.	For large vessels, pilot program is going on, i.e. members are requested to start VMS and report the results.

	SPC	IATTC	ICCAT
Restrictions on access to data	Annual catch estimates, and catch and effort data grouped by time-area for all flags combined, are in the public domain. Non-public domain catch and effort data, for individual fleets grouped by time-area, are available at the discetion of SPC, except for fleets of Japan and New Zealand, and the Korean purse-seine fleet, for which authorisation from the sources of the data must be obtained. Logbook data are only available with authorisation from the sources of the data. Data are provided for long-term usage with authorisation from the sources of the data; otherwise data are available only for a specific research project.	Confidentiality is provided by laws against search and seizure of IATTC records. Detailed data (e.g. logbook or company records) are only released with written permission of the individuals providing the data to the IATTC. Access is provided to summary data, which does reveal the identify of operations of individual companies or vessels. Catch & effort data summaries on 5x5-quarter resolution are available on request. Coastal state agencies may be provided 1x1-month catch & effort summaries for their EEZs on request. Other formats may be provided on an ad hoc basis by request to and approval of the Director of Investigations: requests for scientific purposes and research collaboration are seldom disapproved. Release of selected data from the observer program is provided for by signature agreement of vessel skippers and owners. This data is available to flagging nations, and to the International Review Panel (IRP) without vessel identification, for purposes of investigating compliance with marine mammal protection.	Most of the data are on public domain. However, the request for data have to be made by certain qualified persons of each country. Some data are on inter-net website.

	ICES	NAFO	FAO
Main purpose and usage of statistics	The data are required for general documentation of the fisheries and for the assessment of fish stocks	Stock assessment, scientific advice and resource management.	For describing the contribution of fisheries and aquaculture to food supply and to national economies, and to describe the status and trends of world fisheries.
Catch and effort data structure, geographical and temporal resolution and length of time series .	Only Catch statistics broken down by country, year and ICES divisions are requested and stored. The ICES fisheries catch statistics programme only covers FAO Area 27 and therefore not all ICES member countries, e.g. Canada and USA reports to NAFO for their catches in the Northwest Atlantic.	Catch statistics reported as STATLANT A and B data since 1960 according to NAFO statistical areas. Additionally, hail data, observer and logbook data and scientific studies in stock definition resolution.	No
Are catch data available by EEZ?	No	Yes, and by NAFO statistical sub-division.	No
Data source (e.g. official report, scientists' estimates, agency observer programme, agency port sampling programme)	National statistical institutes or fishery ministries. Official data	• Official national reports • Scientific estimates • Observer reports • Hail reports	Official national reports through FISHSTAT, STATLANT reports, publications, data from regional fishery bodies and data from projects and surveys.
Availability of retained fish by-catch (non-target) species data	Normally available (data from STATLANT A questionnaires).	STATLANT reports and observer data	Should be included in FISHSTAT and STATLANT reports.
Availability of discard data (including birds and mammals)	Normally not available	STATLANT reports and observer data	No.
Availability of biological data (including size)	Not available as part of the fisheries statistics programme. Information are found in the Assessment database available on the ICES web page	National scientific studies and observer data	No

	ICES	NAFO	FAO
Availability of economic data	Not available	Not available	Values of landings requested but not yet published on a national basis. Value of trade in fishery commodities published annually.
Availability of environmental data	Not available as part of the fisheries statistics programme. Information are found in the Environment and oceanographic databases available on the ICES web page	• International Marine Environmental Data System (MEDS) • Sea and air temperature, ice on standard hydrographic sections • Research vessels and ships of convenience	No
Catch data verification methods (e.g. trade data)	As for Eurostat. ICES is part of this process	• Direct contact with the reporting agency • Standard inter-agency discrepancy check procedures	Trade data and food balance sheets. Standard inter-agency discrepancy check procedures
Usage of fishery-independent data	As for Eurostat. ICES is part of this process.	Stock assessments and management	Trade data and information on state of resources.
Reporting policy in relation to nationality of catch	CWP principle is used (as for reporting on STATLANT questionnaires)	CWP principles (STATLANT data)	CWP principle applied
Are countries obliged to report data?	No	Yes. Catch statistics are required under the NAFO Convention	Yes for member countries, according to the FAO Constitution
Do all member countries report data?	All member countries that fish in FAO Area 27 report their catches to ICES	Yes	No

	ICES	NAFO	FAO
What is included in catch statistics? (e.g. discards, recreational, fish on-grown in pens, experimental fishing)	Coverage is as reported on STATLANT questionnaires. Discards: not reported. Recreational: requested but reports very incomplete Fish grown on in pens: should be reported as aquaculture Experimental fishing: requested but variable response.	Coverage as reported by STATLANT	Nominal catches i.e. live-weight equivalent of landed component of catch for commercial, subsistence and recreational fisheries on wild stocks are requested. However, data for recreational fisheries and some subsistence fisheries are often unavailable. Experimental fishing is generally not included. Fish on-grown in pens generally reported under aquaculture.
Observer programmes	None for the ICES Fisheries Statistics programme. Observer data are available and use as part of the ICES fish stock assessment programme	An international observer programme with 100% coverage	No
Vessel monitoring systems	Not available	Required by NAFO conservation and enforcement measures	No
Restrictions on access to data	None	None on STATLANT data	None

APPENDIX 9

SUMMARY TABLES ON STATISTICAL AND DATA PROGRAMMES OF CWP TUNA AGENCIES

Presented to the Expert Consultation on Implications of the Precautionary Approach for Tuna Biological and Technological Research (Phuket, Thailand, 7-15 March 2000)

CCSBT: Southern bluefin (*Thunnus maccoyii*)					
Note: Currently CCSBT does not maintain an independent data set. Data are held by member countries and exchanged on an ad hoc basis as required to undertake stock assessments					
Data	**Source**	**Period/Coverage**	**General Reliability**	**Current Use**	**Priority/Other**
Catch and Effort:	• Logbook data, radio reports, in 5 by 5 squares. Australia, Japan, New Zealand • Observer programs	• Logbook: 1952 - present • Observer: various periods from mid-1980s	• Verified by each flag country including observer reports, landings and import/export statistics. • Log book data is good, but there is a need to take into account targeting and discard practices and use of aerial spotting	• Stock assessment	• High
Landing data, Indonesia	• Direct sampling of landings	• Early 1990s	• Supervised technicians	• Stock assessment	• High, need to extend coverage to improve reliability
Summary landing and effort data, Korea	• Korean Government	• Aggregated 1971 to present	• Korean verification systems unknown	• Stock assessment	• High, need to establish systems for obtaining more detailed data
Summary landing and effort, Taiwan	• Taiwanese Government • Total catch from import statistics of Japan	• 1971 to present	• Verification of catch and effort by Taiwan. Small sample checks of transshipments.	• Stock assessment	• High, need to obtain detailed information from Taiwan
Landings	• Custom house records, country reports to the Commission, processor records	• 1952 - present for Australia, Japan and New Zealand	• Undertaken by flag states. Generally good reliability	• To verify data from other sources.	• Medium
Size composition	• Sample monitoring program, observer reports, vessel reports	• 1951 from Australia. • Japanese data from 1952 • Indonesia since mid 1990s • NZ since 1970s	• Primarily from longliners; fish measured by fishermen, taken in commercial catches resulting in uncertainty about whether this is a good sample of the whole stock and accuracy of measure. Australian and Indonesian based on port sampling	• Stock assessment	• High
Recruitment and migratory patterns	• Aerial surveys, tagging and size sampling, acoustic surveys	• Tagging from 1960s, aerial survey from 1990; archival tags from mid 1990s	• Provides estimate of recruitment into Australian coastal waters	• Stock assessment	• High, viewed as an important indicator of recruitment into the fishery
Biological	• Ad hoc, including otolith sampling	• Various, includes growth reproduction, genetics, aging, natural mortality.	• For otolith sampling, large samples from Australia and Japan; smaller number from New Zealand	• Stock assessment	• High
Tagging	• Mainly by Australia and Japan	• Undertaken in 1960s, 1980s and 1990s	• Tagging of (mainly) juvenile fish. A wider coverage has been proposed	• Stock assessment	• Considering expansion of program.

IATTC: Yellowfin (*Thunnus albacares*)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Vessel logbooks • National agencies • Observer programs	• Purse seine logbook: ~1955 - present • Baitboat logbook: ~1931 - present • Longline logbook: selected flags ~1980 - present • Gillnet logbook: selected flags ~1986 - present • Purse seine observers: ~1985 - present	• Generally of good to excellent quality with average coverage levels of about 93 percent of landed catch. Some reporting of mixed species catches (purse seine and baitboat) • Catches are not consistently reported in both numbers and weights (longline) • Inability to access all vessels participating to obtain logbooks (U.S. longline and gillnet) • Observer programs restricted to certain vessels and fisheries • Lack of access to national statistics in timely and/or detailed manner (longline data of U.S., Taiwan, Korea)	• Stock status • EEZ catches • Management recommendations and regulations • Ecological analyses • Fisheries oceanography	• High, required for stock assessments, management
Landings	• Processors and shippers	• Cannery receipts and auction slips: ~1950 – present • Various: Pre-1950 • Transshipment records • Custom-house records	• Lack of contact with certain processing facilities/areas for members and potential members of IATTC (e.g. Japan, Taiwan, EU) • Bigeye and yellowfin sometimes not identified by skippers and/or processors	• Validation of catch and effort data • Stock status • Determination of member nation contributions to IATTC budget	• High, required for stock assessments, management, and budget allocation
Length frequency	• Sampling program	• ~1951 - present (shore based)	• Excellent • Experimental design does not provide information basis to answer some questions (e.g. size of fish caught by flag) • Program not designed to estimate species composition in general	• Stock status: mortality, cohort analysis • Ecological analysis • Fisheries oceanography	• High, required for stock assessment, management • Experimental design under revision
Biological	• Ad hoc	• Various, includes studies on reproductive biology, aging, growth, morphology, genetics	• Excellent	• Stock structure • Growth	• High
Tagging	• Ad hoc	• Various	• Excellent • Frequently missing data on length at recapture • Date and location of recapture frequently not known except to within a few days and general area	• Stock structure • Movement • Mortality • Growth • Schooling behavior	• High, except for schooling behavior

IATTC: Skipjack (*Katsuwonus pelamis*)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Vessel logbooks • National agencies • Observer programs	• Purse seine logbook: ~1955 – present • Baitboat logbook: ~1931 – present • Longline logbook: selected flags ~1980 – present • Gillnet logbook: selected flags ~1986 – present • Purse seine observers: ~1985 - present	• Generally of good to excellent quality with average coverage levels of about 92 percent of landed catch. Some reporting of mixed species catches (purse seine and baitboat) • Catches are not consistently reported in both numbers and weights (longline) • Inability to access all vessels participating to obtain logbooks • Observer programs restricted to certain vessels and fisheries • Lack of access to national statistics in timely and/or detailed manner	• Stock status • EEZ catches • Management recommendations and regulations • Ecological analyses • Fisheries oceanography	• High, required for stock assessments, management
Landings	• Processors and shippers	• Cannery receipts and auction slips: ~1950 – present • Various: pre-1950 • Transshipment records • Custom-house records	• Lack of contact with certain processing facilities/areas for members and potential members of IATTC • Bigeye and yellowfin sometimes not identified by skippers and/or processors	• Validation of catch and effort data • Stock status • Determination of member nation contributions to IATTC budget	• High, required for stock assessments, management, and budget allocation
Length frequency	• Sampling program	• ~1951 - present (shore based)	• Excellent • Experimental design does not provide information basis to answer some questions (e.g. size of fish caught by flag) • Program not designed to estimate species composition in general	• Stock status: mortality, cohort analysis • Ecological analysis • Fisheries oceanography	• High, required for stock assessments, management • Experimental design under revision
Biological	• Ad hoc	• Various, includes studies on reproductive biology, aging, growth, morphology, genetics	• Excellent	• Stock structure • Growth	• High
Tagging	• Ad hoc	• Various	• Excellent • Frequently missing data on length at recapture • Date and location of recapture frequently not known except to within a few days and general area	• Stock structure • Movement • Mortality • Growth • Schooling behavior	• High, except for schooling behavior

IATTC: Bigeye (*Thunnus obesus*)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Vessel logbooks • National agencies • Observer programs	• Purse seine logbook: ~1955 - present • Baitboat logbook: ~1931 - present • Longline logbook: selected flags ~1980 - present • Gillnet logbook: selected flags ~1986 - present • Purse seine observers: ~1985 - present	• Generally of good quality with average coverage levels of about 92 percent of landed catch. • Determining if effort is directed at bigeye is problematic, which may present problems in standardization • Reporting of mixed species catches (purse seine and baitboat) • Catches are not consistently reported in both numbers and weights (longline) • Inability to access all vessels participating to obtain logbooks • Observer programs restricted to certain vessels and fisheries • Lack of access to national statistics in timely and/or detailed manner	• Stock status • EEZ catches • Management recommendations and regulations • Ecological analyses • Fisheries oceanography	• High, required for stock assessments, management
Landings	• Processors and shippers	• Cannery receipts and auction slips: ~1950 – present • Various: pre-1950 • Transshipment records • Custom-house records	• Lack of contact with certain processing facilities/areas for members and potential members of IATTC • Bigeye and yellowfin sometimes not identified by skippers and/or processors	• Validation of catch and effort data • Stock status • Determination of member nation contributions to IATTC budget	• High, required for stock assessments, management, and budget allocation
Length frequency	• Sampling program	• ~1951 - present (shore based)	• Excellent • Experimental design does not provide information basis to answer some questions (e.g. size of fish caught by flag) • Program not designed to estimate species composition of catches in general	• Stock status: mortality, cohort analysis • Ecological analysis • Fisheries oceanography	• High, required for stock assessments, management • Experimental design under revision
Biological	• Ad hoc	• Various, includes studies on reproductive biology, aging, growth, morphology, genetics	• Excellent	• Stock structure • Growth	• High
Tagging	• Ad hoc	• Various	• Excellent • Frequently missing data on length at recapture • Date and location of recapture frequently not known except to within a few days and general area	• Stock structure • Movement • Mortality • Growth • Schooling behavior	• High, except for schooling behavior

IATTC: Bluefin (*Thunnus thynnus*)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Vessel logbooks • National agencies • Observer programs	• Purse seine logbook: ~1955 - present • Baitboat logbook: ~1931 - present • Longline logbook: selected flags ~1980 - present • Gillnet logbook: selected flags ~1986 - present • Purse seine observers: ~1985 - present	• Generally excellent with coverage estimated at about 50 to 60 percent of catch • Determining if effort is directed at bluefin is problematic, which presents problems in standardization • Catches not consistently reported in both numbers and weights (longline) • Inability to access all vessels participating to obtain logbooks • Observer programs restricted to certain vessels and fisheries • Lack of access to national statistics in timely and/or detailed manner	• Stock status • EEZ catches • Management recommendations and regulations • Ecological analyses • Fisheries oceanography	• High, required for stock assessments, management
Landings	• Processors and shippers	• Cannery receipts and auction slips: ~1950 – present • Various: pre-1950 • Transshipment records • Custom-house records	• Lack of contact with certain processing facilities/areas for members and potential members of IATTC	• Validation of catch and effort data • Stock status	• High, required for stock assessments, management
Length frequency	• Sampling program	• ~1951 - present (shore based)	• Excellent • Sampling program not designed to estimate species composition of catches in general • Experimental design developed for YFT and SKJ	• Stock status: mortality, cohort analysis • Ecological analysis • Fisheries oceanography	• High, required for stock assessments, management • Experimental design under revision
Biological	• Ad hoc	• Various, includes studies on aging, growth	• Excellent	• Stock assessment • Growth	• High
Tagging	• Ad hoc	• Various	• Excellent • Frequently missing data on length at recapture • Date and location of recapture frequently not known except to within a few days and general area	• Stock structure • Movement • Mortality • Growth	• High

IATTC: Albacore (*Thunnus alalunga*)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Vessel logbooks • National agencies • Observer programs	• Purse seine logbook: ~1955 - present • Baitboat logbook: ~1931 - present • Longline logbook: selected flags ~1980 - present • Gillnet logbook: selected flags ~1986 - present • Purse seine observers: ~1985 - present	• Generally of excellent quality, but data from vessels capturing albacore and not YFT/SKJ/BET are not included in data summaries. • Determining if effort is directed at albacore is problematic, which may present problems in standardization • Catches are not consistently reported in both numbers and weights (longline) • Inability to access all vessels participating to obtain logbooks • Observer programs restricted to certain vessels and fisheries • Lack of access to national statistics in timely and/or detailed manner	• EEZ and total catches for fleet targeting other tunas	• High, required for stock assessment, management
Landings	• Processors and shippers	• Cannery receipts and auction slips: ~1950 – present • Transshipment records • Custom-house records	• Lack of contact with certain processing facilities/areas for members and potential members of IATTC	• Validation of catch and effort data	• High

IATTC: Bonitos, bullets, mackerels, other tunas, sharks, miscellaneous fishes					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Vessel logbooks • National agencies • Observer programs	• Purse seine logbook: ~1955 - present • Baitboat logbook: ~1931 - present • Purse seine observers: ~1985 - present	• Logbook based data generally of poor quality with unknown coverage levels of landed catch. • Catches are not consistently reported • Observer programs restricted to certain vessels and fisheries • Low emphasis on collection of data	• Ecological analyses • Fisheries Oceanography • Reduction of bycatch	• High
Landings	• Processors	• Cannery receipts and auction slips: ~1950 – present • Pre-1950: \	• No emphasis on collection from locations/processors not also handling landings of more valuable tunas/billfish	• Documentation of catch	• High
Length frequency	• Sampling program	• ~1985 - present (shore based)	• Since 1985 black skipjack have been sampled when encountered, others are not sampled • Observers record sizes in general categories, e.g. small, medium, large, relative to each species or species group	• Ecological analyses • Fisheries Oceanography	• Low

IATTC: Black marlin (*Makaira indica*), blue marlin (*M. nigricans*), striped marlin (*Tetrapturus audax*), sailfish (*T. platypterus*), swordfish (*Xiphias gladius*)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Vessel logbooks • National agencies • Observer programs	• Purse seine logbook: ~1955 - present • Longline logbook: selected flags ~1980 - present • Gillnet logbook: selected flags ~1986 - present • Purse seine observers: ~1985 – present	• Generally not reported in logbooks • Catches not consistently reported in both numbers and weights (longline) • Inability to access all vessels participating to obtain logbooks • Observer programs restricted to certain vessels and fisheries • Lack of access to national statistics in timely and/or detailed manner	• Stock status • EEZ catches • Management recommendations and regulations • Ecological analyses • Fisheries oceanography	• High, required for stock assessments, management
Landings	• Processors and shippers • National agencies	• Receipts and auction slips: ~1985 to present • Transshipment records • Custom-house records • Various other	• Lack of contact with certain processing facilities/areas for members and potential members of IATTC • Bigeye and yellowfin sometimes not identified by skippers and/or processors	• Stock status	• High, required for stock assessments, management
Length frequency	• Sampling program	• ~1988 – present (onboard measurement by observers)	• Excellent	• Stock status: mortality • Ecological analysis • Fisheries oceanography	• High, required for stock assessments, management
Biological	• Ad hoc	• Various, includes studies on reproductive biology, aging, growth, genetics	• Excellent	• Stock structure • Growth	• High

IATTC: Data compilation, error checking and data verification procedures		
Data type	**Source**	
Catch and effort	• Vessel logbooks and observer records	• Data are obtained directly from vessel operators and owners, or recorded by observers onboard vessels. Confidentiality of individual records is maintained, and in the case of logbook records it is known that some operators keep two sets, one of which is for provision to government officials. Data are checked for internal consistency using limits for values and by cross-referencing among variable values to flag combinations that are likely to indicate errors in keying. For example, positions may be checked against coastlines and against positions on sequential days, which yields distances traveled which are checked against distances estimated using data on vessel speed. There are many hundreds of possible errors checked by the error checking programs. When errors are flagged, data records are examined to identify and correct the source of the errors. The logbook data have also been checked by reprocessing a random selection of logbooks and comparing results to the data in the system. Error rates on reprocessing were less than one percent. Independent checks for data validity are more difficult to accomplish. Catches recorded in logbook records are compared to unloading weights, and the logbooks are rejected for use if the difference between the total recorded weights differs by more than 25% of the unloading weight. This check may also be applied to catches reported by observers. Independent checks of positions and activity of vessels reported in logbook and observer records may be conducted using information on other vessels sighted and their operations at the time of sighting. • Problems associated with collection of these data include the inability to access all vessels participating in the fishery to obtain logbooks, particularly U.S.-flag longline and gillnet vessels (for which coverage levels are low), and joint-venture longline vessels operating off Ecuador and Peru (for which no logbook data are obtained), and for some trips of vessels operating out of ports visited infrequently by IATTC staff. In the case of observer programs, only certain vessels and fisheries participate in the programs. As well, some smaller vessels making short trips do not keep logbooks and only oral records are available on the day of arrival, which precludes high coverage rates for these trips.
Catch and effort	• National agencies	• Data received from scientists and national fisheries management agencies are generally presumed correct, though they are checked for internal consistency, such as single occurrences of non-duplicated key fields. Questions arising during the use of these data are referred to the provider. • Problems associated with compilation of these data are principally related to the past failure to provide these data in a timely manner (longline data of Chile, Japan, Korea, Spain, Taiwan and the United States) and/or a detailed format (longline data of Korea, Spain, Taiwan, and the United States). It is not clear what action will correct these problems, because for example, the United States laws provide for provision of the data but the national agency has failed to comply with requests for the data.
Landings	• National agencies	• Data received from scientists and national fisheries management agencies are generally presumed correct, though they are checked for internal consistency, such as single occurrences of non-duplicated key fields. Questions arising during the use of these data are referred to the provider. • Problems associated with compilation of these data include the fact that it is known that in some cases official statistics under-report landings from the eastern Pacific Ocean. A problem may become evident in the case of the E.U. in that individual companies may be prohibited by the E.U. government from providing statistics on individual landings so as to not create discrepancies between IATTC and E.U. official statistics in published documents.
Landings	• Processors and shippers	• Unloading receipts indicating total weight of fish unloaded are generally presumed correct, as are records of transshipment companies that indicate total weight of fish transshipped. Species composition data shown in processing and transshipment records are considered correct unless other information sources, such as sampling, indicate that there is error in the identification of species. It is known that in some instances, bigeye and yellowfin are not identified correctly by skippers and/or processors. • Problems with these data include the lack of contact with certain processing facilities and areas for members and potential members of the IATTC, particularly in Europe, Japan, Korea, and Taiwan. Even when facilities are known, obtaining information may be difficult or impossible, and lacking national regulations requiring provision of data, it may be that little can be done to rectify this situation.
Length frequency	• Sampling program	• These data are generally presumed correct. Following extensive training of individuals (including several months of monitored sampling on a daily basis), sample collection activities are monitored about twice each year by supervisory staff from La Jolla. Additionally, data are occasionally checked for consistency across samplers using statistical techniques, and when indicated additional investigation of data collection practices and data veracity are conducted.

ICCAT: Commercial species of tropical tunas (YFT, SKJ, BET)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Fishing logbooks provided by country • Logbook summary provided by country • Port sampling (interviews) by national offices and/or the ICCAT Secretariat	• Longline: 1957 - present • Purse seine: 1968 – present • Other surface: 1968 – present • The noted time periods show the longest series for any of the species: they differ significantly across species, countries and fisheries.	• Good quality for longline and large tropical purse seine vessels for which data are reported IUU fleet increasing. • For earlier years, the quality varies among countries and fisheries. • Data for baitboats are less reliable in general	• Stock assessments • Management in general terms – not on a by-country basis	• Very high, with finer resolution data desired
Landings	• Country reports (not official data but scientists' best estimates are required) • Cross checking with trade data • Estimates of IUU catches principally through trade data and statistical documents	• 1950 – present • Surface catches may have errors in species breakdown until 1979	• National data from scientists are generally much more reliable than official/national statistics. • Data from the Secretariat are minimal estimated catches and are not reliable for estimating total landings.	• Stock assessment • For raising catch and effort, size data • Management in general terms – not on a by-country basis • Identification of IUU activities	• Highest
Length frequency	• Report from national sources (port sampling, on-board sampling, observers, commercial classifications) • ICCAT Secretariat port sampling	• Purse seine: 1966 - present • Longline: 1958 - present • Baitboat: 1965 - present • The noted time periods show the longest series for any of the species: they differ significantly across species, countries and fisheries.	• Large scale purse seine data is reliable, but only raised data are available at the Commission level • Longline data for one country is reliable, but recently sample coverage has been decreasing. Other longline data are less reliable	• Stock assessments • For estimating catch-at-size • For management using minimum size restrictions: not on a by country basis	• High
Biological	• Ad hoc from ICCAT's specially coordinated biological program (e.g. hard parts) • Other: national programs	• Various	• Various. Generally within the range of the program, they are reliable	• Estimating biological parameters for assessments	• Various
Tagging	• International cooperative effort (funded by national programs) • Ad hoc ICCAT-funded programs, e.g. on-going BET/YFT	• Various	• Release and recovery data are reliable	• Stock structure • Growth • Fishing mortality • Migration • Behavior	• High

ICCAT: Commercial species of temperate tunas and tuna like fish (BFT, ALB, SWO)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Logbook summary provided by country • Port sampling (interviews) by national offices and/or the ICCAT Secretariat	• Longline: 1957 - present • Purse seine: 1980 – present except Mediterranean PS & Other surface: 1950 – present • The noted time periods show the longest series for any of the species: they differ significantly across species, countries and fisheries.	• For recent years, good quality for longline • For earlier years, the quality varies among countries and fisheries. • Data for surface gears are much less reliable in general or absent.	• Stock assessments • Management	• Very high, with finer resolution data desired
Landings	• Country reports (scientists' best estimates) • Cross checking with trade data • Estimates of IUU catches principally through trade data and bluefin statistical documents	• 1950 - present	• National data from scientists are generally much more reliable than official/national statistics. • Data from the Secretariat are minimal estimated catches and are not reliable for estimating total landings. • Uncertainties increased with introductions of various regulations	• Stock assessment • For raising catch and effort, size data • Management • ID of IUU activities	• Highest
Length frequency	• Report from national sources (port sampling, on-board sampling, observers, commercial classifications) • ICCAT Secretariat port sampling	• Longline: 1958 - present • Baitboat: 1968 – present • The noted time periods show the longest series for any of the species: they differ significantly across species, countries and fisheries.	• Longline data for most of the fisheries are reliable but recently sample coverage has been decreasing for some of the fisheries. • Data from surface fisheries for bluefin and swordfish in the east Atlantic and the Mediterranean are very unreliable and coverage rates are very low. • For many major fisheries in the Mediterranean, including purse seine, data are not available. • Uncertainties increased with introductions of various regulations	• Stock assessments • For estimating catch-at-size • For management using minimum size restrictions	• High
Biological	• Sex information required for swordfish and reported with length frequency data • Ad hoc from ICCAT's coordinated biological program (e.g. hard parts) • Other: national programs	• Various	• Various. Generally within the range of the program, they are reliable	• Sex data for estimating catch at size by sex for swordfish. • Estimating parameters for assessments	• Various
Tagging	• International cooperative effort (funded by national programs)	• Various and the level of release varies between species.	• Release and recovery data are reliable	• Stock structure • Growth • Fishing mortality • Migration • Behavior	• High

ICCAT: Other billfishes (BUM, WHM, SAI. SPF)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Fishing logbooks provided by country • Logbook summary provided by country • Observer program • Port sampling (interviews) by national office and/or the Secretariat	• 1959 – present • The noted time period shows the longest series for any of the species: they differ significantly across species, countries and fisheries.	• For recent years, good quality for longline. However, they are by-catches and hence effort data do not representative. • Recreational fisheries data are less reliable or non-existence.	• Stock assessment • Management in general terms – not on a by-country basis	• Very high.
Landings	• Country reports (not official data but scientists' best estimates are required) • Estimates by extrapolation	• 1950 – present	• In general, reliability is much less compared with other commercial tuna species..	• Stock assessment • Management in general terms – not on a by-country basis	• Highest
Length frequency	• Report from national sources (port sampling, on-board sampling, observers, commercial classifications) • Commission's port sampling	• Various	• Recent data for some fisheries are reliable. However, in general terms, not quite adequate or reliable.	• Stock assessments • For management	• High
Biological	• Some according to the Commission's specially coordinated biological program (e.g. hard parts, etc.) • Others from national sources	• Various	• Various. Generally within the range of the program, they are reliable	• Estimating biological parameters for assessments	• Various
Tagging	• International cooperative effort (funded in part by national programs and by the Commission).	• Various	• Release and recovery data are reliable	• Stock structure • Growth • Fishing mortality • Migration • Behavior	• High

ICCAT: Other small tunas					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Logbook summary provided by country	• Variable	• Variable	• Stock assessment	• .
Landings	• Country reports (not official data but scientists' best estimates are required)	• 1950 – present	• Less reliable and coverage than other commercially important tunas.	• Stock assessment • Management	• Highest
Length frequency	• Report from national sources (port sampling, on-board sampling, observers, commercial classifications)	• Various	• What is available are good to excellent, but coverage is very low		• High
Biological	• Various national sources	• Various	• Various. Generally within the range of the program, they are reliable	• Estimating biological parameters (e.g. growth)	• Various
Tagging	• Ad Hoc	• Various	• Release and recovery data are reliable	• Stock structure • Migration • Behavior	• High

ICCAT: By catches (particularly sharks)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Logbook summary provided by country	• Variable	• Variable	• Stock assessment	• .
Landings	• Country reports (not official data but scientists' best estimates are required)	• 1995 – present • Some effort is made to report retrospectively	• Less reliable and coverage than other commercially important tunas.	• Stock assessment • Management	• Highest
Length frequency	• Report from national sources	• Various	• What is available are good, but coverage is very low		• High
Biological	• Various national sources	• Various		• Estimating biological parameters (e.g. growth)	• Various
Tagging	• Ad Hoc	• Various	• Release and recovery data are reliable	• Stock structure • Migration • Behavior	• High

IOTC: Commercial species of tropical tunas (YFT, SKJ, BET) and temperate tunas (SBF, ALB)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority**
Nominal Catch	• Data reported by species and IOTC statistical area by reporting countries. Logbook data for PS and LL fisheries, sample or market survey for small-scale fisheries. • Estimates of IUU catches principally through sampling programmes and statistical documents • If necessary, data are estimated from FAO databases or national statistical bulletins	• 1950 – present • Data prior to late 1980's might represent underestimates for non-industrial fisheries.	• In general, reported catches (about 80% of the total catch of YFT and BET) are reliable. • For non-reported catches, IOTC estimates are more or less reliable depending on the source (sampling programs, scientific reports, etc.). • Catches from small LL fleets (primarily YFT and BET) are poorly known • Catches of ALB from Taiwanese fleet have not been reported in recent years	• Stock assessment • For raising catch and effort, size data • Management • Quantification of IUU activities	• Highest
Catch and effort	• Data grouped by time-area (1x1 & month for surface, and 5x5 & month for longline) submitted by reporting nations (PS, LL, BB, GILL, HAND)[1] • Fishing logbooks provided or summarized by country (some LL, some PS) • National observer program. • IOTC (IPTP) port sampling	• Longline: 1952 - present • Purse seine: 1981 – present • Baitboat: 1976 – 1993 • Uneven coverage for artisanal fisheries (GILL, HAND, TROL). • Time period for DWFN represents the whole history of the industrial fisheries in the IO.	• Almost complete coverage for large tropical PS vessels. Quality is assumed to be good. • Coverage is uneven for LL fisheries. Quality is assumed to be good. • Uneven quality for artisanal fisheries	• Stock assessment • Management	• Very high
Length frequency	• Data grouped by time-area (1x1 & month for surface, and 5x5 & month for longline) submitted by reporting nations (PS, LL, BB, GILL, HAND) • Other national sources (on-board sampling, processing plants, scientific publications) • IOTC (IPTP) port sampling	• Purse seine: 1982 - present • Longline: 1952 - present • Baitboat: 1983 - 1993 • The noted time periods show the longest series for any of the species: they differ significantly across species, countries and fisheries.	• Large scale purse seine data is reliable. • Longline data for some countries is reliable, but sample sizes have been low. • Baitboat data set is reliable for only one country.	• Stock assessment	• High
Biological	• From national and IOTC (IPTP) sampling programmes. • National observer program • Scientific reports	• Various	• Various. Generally within the range of the program, they are reliable	• Stock assessment	• Various
Tagging	• International cooperative effort (funded by national programs) • IPTP	• Various	• Excellent	• Stock structure • Growth • Fishing mortality • Migration	• High

[1] PS: Purse seine; LL: Longline; BB: Baitboat; TROL: Trolling; GILL: Gillnet: HAND: Handline

IOTC: Billfish (SWO, SFA, BLM, BLZ. MLS)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Nominal Catch	• Data reported by species and IOTC statistical area by reporting countries. Logbook data for PS and LL fisheries, sample or market survey for small-scale fisheries. • Estimates of IUU catches principally through sampling programmes and statistical documents • If necessary, data are estimated from FAO data or national statistical bulletins	• 1950 – present • The noted time period represents the longest series for any of the fisheries. However, coverage differs significantly across species, countries and fisheries.	• In general, reliability is much less compared with the commercial tuna species as discards of these species are not reported • SWO data are more reliable than other billfish data.	• Stock assessment • Management	• Highest
Catch and effort	• Data grouped by time-area (5x5 & month for longline) submitted by reporting nations (LL, GILL) • Fishing logbooks provided or summarized by country (some LL) • National observer program. • IOTC (IPTP) port sampling	• 1952 – present • The noted time period represents the longest series for any of the fisheries. However, coverage differs significantly across species, countries and fisheries.	• Only swordfish are target species, hence effort data is not representative. • Recreational fisheries data are not complete.	• Stock assessment	• Very high.
Length frequency	• Data grouped by time-area (1x1 & month for surface, and 5x5 & month for longline) submitted by reporting nations (PS, LL, BB, GILL, HAND) • Other national sources (on-board sampling, processing plants, scientific publications) • IOTC (IPTP) port sampling	• 1985 – present • The noted time period represents the longest series for any of the fisheries. However, coverage differs significantly across species, countries and fisheries.	• In general terms, sampling coverage not adequate.	• Stock assessment	• High
Biological	• From national and IOTC (IPTP) sampling programmes. • National observer program. • Scientific reports	• Various	• Various. Generally within the range of the program, they are reliable	• Stock assessment	• Various

IOTC: Neritic tunas (LOT, FRI, BLT, BIP, KAW, COM, GUT, STS, WAH)					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Nominal Catch	• Data reported by species and IOTC statistical area by reporting countries. Mostly sample or market survey from small-scale fisheries. • Estimates of IUU catches principally through sampling programmes and statistical documents • If necessary, data are estimated from FAO databases or national statistical bulletins	• 1950 – present. • The noted time period represents the longest series for any of the fisheries. However, coverage differs significantly across species, countries and fisheries.	• Less reliable and coverage than other commercially important tunas. • For non-target species, reporting of catches might be incomplete. Discards are not reported. • Species composition is inaccurate for fisheries in which catch statistics are aggregated by commercial categories.	• Stock assessment • Management	• Highest
Catch and effort	• Data grouped by time-area (1x1 & month for surface, and 5x5 & month for longline) submitted by reporting nations (PS, LL, BB, GILL, TROL, HAND) • Fishing logbooks provided or summarized by country (some LL, some PS) • National observer program. • IOTC (IPTP) port sampling	• 1970 – present • The noted time period represents the longest series for any of the fisheries. However, coverage differs significantly across species, countries and fisheries.	• Variable, depending on the gear, country and species. In general, information is poor.	• Stock assessment	• High
Length frequency	• Data grouped by time-area (1x1 & month for surface, and 5x5 & month for longline) submitted by reporting nations (PS, LL, GILL, TROL, HAND) • Other national sources (on-board sampling, processing plants, scientific publications) • IOTC (IPTP) port sampling	• 1983 – present • The noted time period represents the longest series for any of the fisheries. However, coverage differs significantly across species, countries and fisheries.	• Information available at IOTC is incomplete, often with no specific time-area information. Few countries have reported size-frequency information for these species.	• Stock assessment	• High
Biological	• From national and IOTC (IPTP) sampling programmes. • National observer program • Scientific reports	• Various	• Information is scarce. When available, data are considered reliable	• Stock assessment	• High

IOTC: Discards					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Nominal Catch	• National observer program	• In area under control of British Indian Ocean Territory authorities. • Data from earlier observer programmes in western IO PS fishery not available to IOTC.	• Very incomplete reporting. Only data from British Indian Ocean Territory observer program has been submitted to IOTC		• Low
Catch and effort	• National observer program	• *Idem*	• Coverage very low		• Low
Length frequency	• National observer program	• *Idem*	• Coverage is very low.		• Low

IOTC: Data compilation, error checking and data verification procedures		
Data type	**Source**	
All types of data	• National Agencies	• The statistical design and procedures applied by the national agencies in obtaining the data is being documented to the extent possible. Where reported data have been raised from sampling data (e.g. size-frequency or catch-and-effort data), the procedures applied are also documented. In such cases, it is mandatory for member countries to provide the original sample sizes to allow estimation of variability. • A dedicated working group carries out periodic reviews of the data situation and recommends courses of action to improve quality. • When necessary, IOTC provides technical assistance with data collection and verification procedures to reporting countries.
	• Sampling program	• Sampling programmes are being implemented in major landing ports of the Indian Ocean to improve the quality of the information available for non-reporting fleets. These programmes, with the participation of national scientists, are under supervision from the Secretariat staff. Sampling procedures are monitored through periodic visits to sampling ports.
	• Processing plants	• Several facilities processing the catch of small longliners in the eastern Indian Ocean, for which the information is scarce, collect valuable information such as weights of all individual fish in the catch for each unloading. These data have been maintained in the company records and steps have been taken to recover and computerized such records.
Catch and effort	• National Agencies	• Data received from scientists and national fisheries management agencies are subjected to routines to verify internal consistency (e.g., fishing positions should be at sea, total catch for a year should exceed reported nominal catch, etc.). Records that appear anomalous in relation to historical patterns are also flagged as suspect. Once the verification procedures are complete, the data sources are contacted to clarify any pending issues. • Whenever the spatial coverage of the catch-and-effort data is known, these data are used to verify the nominal catch data reported by statistical areas.
Nominal Catches	• National agencies • Sampling program	• Data received from scientists and national fisheries management agencies are checked for internal consistency and in relation with recent trends. Anomalous data are flagged for later verification. • Three staff members reviewed independently every revision of new data received from reporting countries before the data is incorporated into the database. These data revisions are individually documented and a database of such revisions is maintained to improve data quality assessment. Whenever possible, information is also crosschecked with published sources such as national statistical bulletins, scientific papers or FAO databases. • If necessary, questions originated from the data revisions are referred to the data provider. In these cases, records are deemed preliminary until a reply is obtained.
Length frequency	• National agencies • Sampling program • National observer program	• These data are generally presumed correct. Data submitted are verified through visualization routines and other basic analyses to identify unusual patterns. If necessary, clarifications are requested from the data provider. • Mandatory minimum standards require that the original sample sizes be reported for data that national agencies provide already raised to total catch. • Port sampling or national observer programmes also cover some fleets reporting size-frequency data. In these cases, comparisons are carried out between the independent sources of data to verify consistency.

SPC: Albacore, Bigeye, Skipjack and Yellowfin					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• Data grouped by time-area (1x1 & month for pole-and-line and purse seine, and 5x5 & month for longline) provided by distant-water fishing nations	• Longline: 1962 – present • Pole-and-Line: 1972 – present • Purse seine: 1967 – present • Troll: 1986 – present • Coverage by logbook data vary by fleet and year;, all data are raised to represent total catch and effort, except Japanese pole-and-line and Korean longline data. • Korean purse-seine data cover only days on which a set was made • No data for Taiwan purse seiners.	• Generally considered to be good quality, although the extent to which catch data have been verified with landings is unknown. • The extent of illegal and unreported catches is unknown. • Data provided by Japan for longline are in numbers of fish only and for purse-seine are not stratified by set type. • Bigeye misidentified as yellowfin in Korean purse-seine data.	• Monitoring of catch, effort and CPUE • MULTIFAN stock assessments (growth, mortality, recruitment, movement) • National fishery assessments	• High
Catch and effort	• Logbook data provided by SPC member governments	• 1970 to the present • Data cover domestic fleets of SPC members and foreign fleets operating under access agreements • Coverage in the SPC area is about 90% for purse seine and 50 % for longline • Coverage is low for some domestic fleets • Logbook data for Japanese fleets do not cover the high seas	• Generally considered to be good quality, although most catch data have not been verified with landings due to poor coverage of landings data. • The extent of illegal and unreported catches is unknown. • Bigeye are usually misidentified as yellowfin in surface fisheries.	• Monitoring of catch, effort and CPUE • MULTIFAN stock assessments (growth, mortality, recruitment, movement) • National fishery assessments	• High
Landings	• Vessel agents, via SPC member governments	• Most data cover 1990 – present • Coverage is low or unknown for most fleets	• Generally good quality	• Estimation of annual catches by fleet • Verification of logbook data	• High
Length frequency	• SPC observer program and port sampling and observer programmes of SPC member governments	• Most data cover 1990 – present • Coverage is low or unknown for several fleets	• Generally good quality	• MULTIFAN stock assessments	• High
Biological	• SPC observer program	• Various, includes studies on growth, morphology, genetics	• Excellent	• Growth • Stock structure	• High
Tagging	• SPC tagging programmes	• 1977-1980 and 1989-1992 • Data cover primarily skipjack and yellowfin, with some data for albacore and bigeye	• Excellent	• MULTIFAN stock assessments • Stock structure	• High

SPC: Bycatch, including billfishes, bonitos, bullets, mackerels, other tunas, sharks, miscellaneous fishes					
Data type	**Source**	**Time period/Coverage**	**General Reliability**	**Current uses**	**Priority/Other**
Catch and effort	• SPC observer program and port sampling and observer programmes of SPC member governments	• ~1992 – present, coverage is low	• Generally good quality	• Estimation of annual catches by fleet	• High
Landings	• Negligible	•	•	•	•
Length frequency	• SPC observer program and observer programmes of SPC member governments	• ~1990 – present, coverage is low	• Generally good quality	• Coverage is too low for most uses	• Low, but expected to increase

APPENDIX 10

ITEMS REQUIRING ACTION IN CWP-19 REPORT

Para. 8. Despite trends in the opposite direction, CWP recommended that efforts should be pursued with classification maintenance agencies to make trade classifications for fishery commodities more detailed, especially for species of little volume of trade, but for which there are conservation concerns.

Para. 9. Although some of the possible reasons for discrepancies among fishery trade data of CWP agencies were identified, CWP recommended that Eurostat, FAO and OECD should investigate the causes of discrepancies in published data and should attempt to eliminate these discrepancies or, where the differences were due to the use of differing concepts in the compilation of the data, provide adequate documentation in the publications explaining the concepts used.

Para. 18. According to the Compliance Agreement, data diffusion would be restricted to Governments of Parties to the Agreements and Regional Fishery Bodies. FAO would, however, be interested in receiving listings of vessels from regional fishery bodies which could be included in a parallel database (accessible to whoever the data providers decide), both to verify the Record data, and to attempt to estimate global fishing capacity. CWP recommended that Vessel Name, National registration number, Flag, Fishing gear, Size, including LOA and capacity of hold, Party providing authorization to fish and Provider organization, where available, be exchanged among tuna agencies and programs.

Para. 20. CWP reviewed the Report of the Meeting of Agencies Participating in FIGIS/FIRMS which was held on 9 July 2001 in Nouméa (Appendix 7) and agreed that FIGIS/FIRMS offers a good opportunity to facilitate improved reporting on fishery status and trends through cooperation amongst CWP agencies. It was agreed that progress on the development of FIGIS/FIRMS should be reviewed at CWP-20.

Para. 108. CWP agreed that the agenda for the next CWP should include an item on agency data collection standards, with STATLANT as one sub-item.

Para. 109. CWP agreed that the CWP Newsletter (formerly the STATLANT Newsletter) should be continued and gratefully accepted Eurostat's offer to continue the editing of the Newsletter. It was further agreed that:

- the Newsletter should be placed on the CWP website;
- the Newsletter should have links to the agency websites in order to reduce the risk of inclusion of outdated information;
- a list of meetings relevant to fishery statisticians should be maintained in the Newsletter on the website;
- the CWP member agencies are encouraged to submit contributions to the Newsletter editor.

Para. 120. CWP recommended that the efforts made by regional fishery bodies and FAO and FAO to improve elasmobranch reporting and statistics should be intensified.

Para. 121. CWP agreed that collection of species-specific statistics should be included in the agenda of future meetings, taking in broader aspects including species of special interest such as aquatic reptiles, marine mammals and seabirds as well as observer programmes and methods for estimating catches of non-target species.

Para. 139. The problem of inconsistent usage of terms of catch, discards, landings and bycatch among different bodies was noted and CWP agreed that this problem should be on the agenda for discussion at its next session.

Para. 142. CWP congratulated Eurostat for the work in compiling the file, recognizing that, while the principles were clear, the integration of the data from the various sources was not straightforward. CWP agreed that the file should be up-dated, though ICCAT pointed out that, while it would collaborate to the limit of its resources, the essential restructuring of its data-base was the secretariat's first priority. It was agreed that, while the maximum of data from ICCAT would be included in the up-dated file, where these were not available tuna data from the regional agencies or FAO would be used, with the mention of the appropriate source.

Para. 150. CWP considered the addition of further fields in the HSVAR database could be useful. CWP agreed that for the purpose of inter-agency exchanges of vessel records, a unique vessel identifier should be assigned to each vessel, since current vessel identifiers (such as vessel name, flag state and registration number in the flag state, radio call sign, etc.) are unstable. CWP also agreed that a field indicating whether the vessel is actively fishing should be added, where possible, recognizing that it may be difficult for national governments to provide this information. It was recognized that because the purpose of HSVAR is to identify vessels, only those fields which can be used for that purpose should be included and that the inclusion of other fields might overly burden the providers of the data.

Para. 152. CWP recommended that FAO draft a list of essential and desirable vessel identifiers for vessel registries (keeping them to a minimum) for the consideration of CWP agencies and that FAO consult with them regarding the use of unique vessel identifiers in HSVAR and CWP agency vessel registries.

Para. 156. Since the current cycle of changes to ISIC (and to the Central Product Classification) will be completed by 2007, there may still be time for further agency proposals to flow to the Technical Sub-group reviewing the proposals for changes to ISIC Rev. 3. CWP recommended that relevant agencies keep track of these developments and see to it that any sub-classes for fishing and fish farming agreed upon at regional level are in harmony with ISIC Rev. 3.

Para. 159. Eurostat reported that its fleet statistics are derived from European Commission's administrative file of fishing vessels. EU member countries' contributions to this file were submitted using national classifications of vessel type. At the EU level, these were processed into a simplified classification of three items. Thus Eurostat would be unable to supply statistics using the proposed ISSCFV classification and it is unlikely that the European Commission would have the resources to reprocess the data. Eurostat would initiate a discussion of the proposed classification at the next meeting of its Working Group "Fishery Statistics" in February 2002 and FAO would be invited to present the proposal to the national representatives.

Para. 162. CWP recommended that the proposal for revision be accepted as a revision to ISSCFV. Discussions are still required on certain details of the proposal, particularly on the Longliner breakdown. Both Eurostat and IOTC proposed promoting the freezer and wetfish longliner classification above that of midwater and bottom longliners. FAO will follow up on

this aspect by sending fact sheets to the CWP participants of the proposed categories to trigger further discussion.

Para. 165. Two possible options were presented to CWP to redistribute these newly classified species items into ISSCAAP groups. CWP expressed its preference for the following option and recommended that FAO should follow it for the revision of the ISSCAAP groups.

Code	Present ISSCAAP group	Proposed revision	Demersal /Pelagic	Species items to be added	Species items to be removed
31	Flounders, halibuts, soles	Flounders, halibuts, soles	D		
32	Cods, hakes, haddocks	Cods, hakes, haddocks	D		
33	Redfishes, basses, congers	**Miscellaneous demersal fishes**	D	Lanternfishes	Coastal species from group 33
34	Jacks, mullets, sauries	**Miscellaneous coastal fishes**	D	Coastal species from group 33	All species from group 34 except mullets & threadfins
35	Herrings, sardines, anchovies	Herrings, sardines, anchovies	P		
36	Tunas, bonitos, billfishes	Tunas, bonitos, billfishes	P		
37	Mackerels, snoeks, cutlassfishes	**Miscellaneous pelagic fishes**	P	All species from group 34 except mullets & threadfins	
38	Sharks, rays, chimaeras	Sharks, rays, chimaeras			
39	Miscellaneous marine fishes	**Marine fishes not identified**			

Para. 172. It was noted that in certain instances, particularly for highly migratory species, it is desirable to look at specific criteria (e.g. aggregation of species) for issuing code groupings. CWP recommended that FAO look into such possibilities as new codes are being issued.

Para. 173. For the year 2002, a printed version of the ASFIS list of species has been planned in collaboration with ASFA. This printed version, at request of CWP, will also contain explanations on the methodologies adopted and on criteria followed in the compilation and continuous updating of the list, and on the treatment of particular cases.

Para. 187. CWP agreed that details concerning statistical methodologies used in the provision of information by countries are very useful and recommended that regional agencies should distribute this information amongst CWP agencies and make this information available to FIGIS.

Para. 190. As a basis for possible future advocacy by CWP for improving the quality of fishery statistics, CWP recommended that the following areas should be investigated by the Secretariat during the intersessional period and presented to CWP-20 as a proposal:

- collate, summarize and prioritize reports from recent technical and management meetings where specific statistical data needs were identified and calls made in support of data collection activities;
- identify examples and reasons for success of successful projects and programmes where an improvement in the quality of statistical data has led to improved science and better fishery management. Demonstrate the cost effectiveness of collecting higher quality data. Identify examples of unsuccessful projects and programmes and the reasons for failure and demonstrate the cost of not collecting data; and
- identify specific problems which require immediate attention and action needed to improve these situations.