
**INTERNATIONAL COMMISSION
for the
CONSERVATION of ATLANTIC TUNAS**

**R E P O R T
for biennial period, 1980-81
PART II (1981)
English version**

MADRID, SPAIN

1982

INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

Member Countries (as of April 1, 1982)

Angola, Benin, Brazil, Canada, Cape Verde, Cuba, France, Gabon, Ghana, Ivory Coast, Japan, Korea, Morocco, Portugal, Senegal, South Africa, Spain, U.S.A., U.S.S.R.

Chairman of Commission

Dr. L. KOFFI, Ivory Coast.
(from November 20, 1979)

First Vice-Chairman of Commission

Mr. T. ISOGAI, Japan
(from November 17, 1981)

Second Vice-Chairman of Commission

Mr. R. GARCÉS-VELAZCO, Cuba
(from November 17, 1981)

Panel Membership (as of April 1, 1982)

Panel	Contracting Parties	Chairman
1	Angola, Brazil, Cape Verde, Cuba, France, Gabon, Ghana, Ivory Coast, Japan, Korea, Morocco, Portugal, Senegal, Spain, U.S.A., U.S.S.R.	Ghana
2	Canada, France, Japan, Korea, Morocco, Portugal, Spain, U.S.A.	Morocco
3	Brazil, Japan, South Africa, U.S.A.	Japan
4	Angola, Canada, Cuba, Japan, Korea, Portugal, Spain, U.S.A., U.S.S.R.	Spain

Council

No election was conducted for the 1982-83 biennial period.

Standing Committees

Committees:

Committee on Finance and Administration (STACFAD)

Committee on Research and Statistics (SCRS)

Chairman

Mr. C. J. BLONDIN, U.S.A.
(from November 22, 1977)

Mr. J. S. BECKETT, Canada
(from November 17, 1981)

Secretariat

Príncipe de Vergara, 17, 28001 Madrid (Spain)
Executive Secretary: O. RODRÍGUEZ-MARTÍN
Assistant Executive Secretary: P. M. MIYAKE

LETTER OF TRANSMITTAL

The Chairman of the International Commission for the Conservation of Atlantic Tunas presents his compliments to the Member Governments to the Convention for the Conservation of Atlantic Tunas (signed in Rio de Janeiro, May 14, 1966), and to the Delegates and Observers representing said Governments, and has the honor to transmit the "**Report for the Biennial Period, 1980-81, Part II (1981)**", describing the activities of the Commission during the second half of said biennial period.

The volume contains reports of the Seventh Regular Meeting of the Commission, held in November, 1981, and of all the associated meetings of the Standing Committees and Sub-Committees. In addition, it contains a summary of the activities of the Secretariat, and the National Reports on scientific activities related to tuna fisheries as carried out by the various countries.

This Report has been drafted, circulated and approved in compliance with Article III, paragraph 9, and Article IV, paragraph 2-d, of the Convention, and Rule 15 of the Commission's Rules of Procedure. The Report is available in the three official languages of the Commission: English, French and Spanish.

L. Koffi
Commission Chairman

TABLE OF CONTENTS

CHAPTER I — Secretariat Reports

Administrative Report 1981	5
Financial Report 1981	12
Secretariat Report on Statistics and Coordination of Research	30

CHAPTER II — Records of Meetings

Proceedings of the Seventh Regular Meeting of the Commission	40
List of Participants	51
Opening Address of Spanish Under-Secretary of Fisheries	61
Opening Address of Commission Chairman	65
Reports of the Meetings of Panels 1 - 4	69
Statement by U.S. Concerning Bluefin Tuna	84
Statements by Japan Concerning Bluefin Tuna	84
Recommendations on Bluefin Tuna Management Measures	86
Summary Table of Regulatory Measures	89
Report of the Standing Committee on Finance and Administration (STACFAD)	90
— Regular Commission Budget (1982-1983)	102
— Member Country Contributions — Regular Commission Budget (1982-1983)	103
— Special Skipjack Budget (1982-1983)	105
— Member Country Contributions — Special Skipjack Budget (1982-1983)	106
Report of the Standing Committee on Research and Statistics (SCRS)	108
AYF - Yellowfin	117
ABE - Bigeye	120
ASJ - Skipjack	122
B - Albacore	124
C - Bluefin	127
DBL - Billfish	132
DSW - Swordfish	136
DSB - Southern Bluefin Tuna	138
E - Small Tunas	138
F - Multi-Species	140
SCRS — Tables	150
SCRS — Figures	175

List of Documents	188
Report of the Sub-Committee on Skipjack	192
Report of the Sub-Committee on Statistics	199
Table of SCRS Assignments	213
Recommendations for the Working Group on Juvenile Bluefin Tuna	217

CHAPTER III -- National Reports

Brazil	218
Canada	221
Cape Verde	224
France	228
Ghana	231
Ivory Coast	234
Japan	236
Korea	243
Senegal	247
South Africa	251
Spain	252
United States	256

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CHAPTER I

Secretariat Reports

ADMINISTRATIVE REPORT 1981

COM/81/9 (Amended)*

1. Member countries of the Commission

There are some governments which are seriously considering the incorporation of their countries to the Commission. However, since the time of the last meeting (November, 1980) there have been no new members of the Commission. Consequently, ICCAT is currently comprised of nineteen (19) member countries.

2. ICCAT meetings

2.1 *Second Special Meeting of the Commission*

In accordance with a decision made by the Commission in 1979, the Second Special Meeting of the Commission was held in Madrid, November 12-18, 1980. The Proceedings of that meeting and the Report of the SCRS meeting, which was held the week prior to the Commission meeting, are included in the "Report for the Biennial Period, 1980-81 (Part I, 1980)".

2.2 *Inter-sessional meetings*

Between June 8 and June 19, 1981, three inter-sessional meetings (Billfish Workshop, Sub-Committee on Skipjack and SCRS Officers Meeting) were held in Miami, Florida, U.S.A., at the invitation of the NMFS-Southeast Fisheries Center.

a) Billfish Workshop

The scientists concerned with billfish met to discuss the data base problem. Many inadequacies in billfish statistics were recognized and estimates presented by the Secre-

*The Administrative Report presented at the Commission meeting was revised.

tariat concerning the missing billfish information were studied. A common data base was established, but there are still a few pending problems. Details can be found in Collective Volume XVI.

b) Meeting of the Sub-Committee on Skipjack

Progress made during the first half of the International Skipjack Year (1981) was reviewed and last minute adjustments were made both to the Program as currently executed and to the Program for the latter half of 1981. The data processing problem was also discussed. Details are presented in SCRS/81/25.

c) SCRS Officers Meeting

The SCRS Officers reviewed the progress made by the scientists and considered the procedures to be followed at the 1981 SCRS Meeting. Details can be found in SCRS/81/7.

d) Meeting of the Panel of Experts on Salaries and Benefits

In accordance with that agreed at the Second Special Meeting of the Commission (Madrid, November 1980), a meeting of the "Panel of Experts" was held in Madrid at the ICCAT Headquarters, June 2-5, 1981. The purpose of the meeting was to study ICCAT Secretariat staff salaries, the possible re-classification of some staff members and the revision and updating of the ICCAT "Staff Rules".

The above-mentioned subjects were studied in detail and it was recommended that the Secretariat compile additional information through contact with FAO, other international organizations with headquarters in Madrid and with multi-national companies.

A small "Working Group of Experts on Administrative Subjects and Salaries" was set up and met in Madrid, September 28-October 2, 1981, to prepare a report for presentation to the Standing Committee on Finance and Administrative (STACFAD). The Group's report was presented as document COM/81/16.

3. Meetings at which ICCAT was represented

3.1 *FAO Committee on Fisheries (COFI)*

The Executive Secretary represented ICCAT at the FAO Committee on Fisheries meeting, held in Rome in May, 1981.

At that time the Executive Secretary held meetings with high officials of FAO, through which he was able to ascertain the designation of a FAO expert on salaries and benefits to attend, in an advisory capacity, the Panel of Experts meeting. Our initial request for a FAO advisor to attend the meeting had been rejected.

3.2 International Commission for the Southeast Atlantic Fisheries (ICSEAF)

ICCAT was represented at the Special Meeting of the International Commission for the Southeast Atlantic Fisheries by the Executive Secretary. That meeting was held in Madrid in June, 1981.

3.3 Intergovernmental Oceanographic Commission (IOC)

The Executive Secretary attended the regular meeting of the IOC, held in Tenerife, Canary Islands, in June, 1981. Although the ICCAT has maintained close working relations with IOC in the past, this was the first time that ICCAT had received an official invitation from this organization. Both our organizations intend to collaborate mutually through an interchange of documentation and scientific data, especially as it affects the ICCAT Skipjack Program.

The Executive Secretary took advantage of this trip to Tenerife to contact personally the local and provincial authorities, as well as the directors, etc. of the Hotel Semiramis concerning the organization of the Seventh Regular Meeting of the Commission.

3.4 Inter-Agency CWP and ICES Meeting

The Assistant Executive Secretary attended the Inter-Agency Meeting of the Coordinating Working Party on Atlantic Fishery Statistics (CWP). The meeting was held in conjunction with the 69th Statutory Meeting of the International Council for the Exploration of the Sea (ICES) in Woods Hole, Massachusetts, U.S.A., in early October, 1981. The reporting of statistics in a similar format among regional agencies for the entire Atlantic was discussed.

4. Collaboration with other organizations

4.1 FAO

As in the past, close working cooperation has been maintained with the FAO Fisheries Department. Mutual assistance in collecting statistics and other information continued as in other years.

Close working relationships were also maintained with other organizations of the FAO Fisheries Department, such as the FAO Fishery Committee for the Eastern Central Atlantic (CECAF), the Western Central Atlantic Fishery Commission (WECAFC), the General Fisheries Council for the Mediterranean (GFCM), and of course, the FAO Committee on Fisheries (COFI).

4.2 Other organizations

-- International Commission for the Southeast Atlantic Fisheries (ICSEAF)

- Inter-American Tropical Tuna Commission (IATTC)
- Northwest Atlantic Fisheries Organization (NAFO)
- Indo-Pacific Fisheries Commission (IPFC)
- Indian Ocean Fisheries Commission (IOFC)
- International Council for the Exploration of the Sea (ICES)
- Intergovernmental Oceanographic Commission (IOC)

5. Coordination of Research

The coordination of research carried out by the Secretariat during 1981 is summarized in the "Secretariat Report on Research and Statistics" (included in Chapter I of this Biennial Report), with further details reported in other SCRS documents.

5.1 Statistics and sampling

Improvements made in statistics include the following:

a) Billfish catch statistics - With the assistance of Mr. Z. Suzuki and Mr. J. C. Rey, who each spent about two weeks at the Secretariat at the invitation of ICCAT, we critically reviewed all the billfish statistics and estimates were made for missing information (SCRS/81/16).

b) Small tunas statistics - The catch data base of small tunas, which had not been given too much attention in the past, was critically reviewed and considerable changes were proposed to improve the base (SCRS/81/28).

c) Portuguese statistics - As the Azores and Madeira statistics became available, the Portuguese catch statistics were significantly revised (SCRS/81/27).

d) Historical statistics (pre-1970) - Since major corrections were proposed and some of these were received late or not yet received at the time of writing, issue of the Historical Series of the Statistical Bulletin was postponed until 1982.

The ICCAT port sampling scheme continued in 1981 and expanded in relation to the Skipjack Year Program. New areas now covered include the surface fishery from Cumaná (Venezuela) and the artisanal fishery off Mohammedia, Casablanca, Safi and Essaouira (Morocco).

While port sampling for the longline fleet was successfully extended to Cumaná, Venezuela, such was not the case for Montevideo, Uruguay, due to administrative problems. Sampling at Cape Town, South Africa, was interrupted until a replacement was found for the former sampler at that port who resigned.

As the multi-national tuna fleets develop, protection of privacy has become more complex. Obtaining and reporting the statistics from such multi-national fleets present very delicate and difficult problems for the Commission.

5.2 Data processing

The INFONET system was contracted again in 1981 for ICCAT data management. The unit cost, in terms of U.S. dollars, remained approximately the same as in 1980. The volume of work increased again in 1981.

5.3 Biostatistical work

The vacancy for the position of ICCAT biostatistician was announced in early 1981 and over 60 applications were received. After conducting interviews with the pre-selected candidates, Mr. J. P. Wise (U.S. citizen) was selected and contracted for a one-year period, which can be extended for another year. Mr. Wise joined the Secretariat staff in early October.

Due to the delay in recruiting the biostatistician, the Secretariat contacted a few qualified scientists to pursue the possibility of a short-term contract to carry out biostatistical work along the west African coast. Unfortunately, none of the scientists contacted was able to assume this responsibility. As a result, the project was postponed until December, 1981, when Mr. Wise carried out this mission.

Despite the absence of a biostatistician during most of 1981, various biostatistical assignments given to the Secretariat were executed by its regular staff. These include the review of the data bases (as reported in Section 5.1), reporting sources of data in the Statistical Bulletin (SCRS/81/29), and generating a final catch and effort file for Taiwanese longliners based on two sets of files from different sources (ICCAT and Taiwan University) (SCRS/81/11). All the statistics reported by the national offices have been evaluated as received and any discrepancies found and improvements to be made have been advised.

5.4 Skipjack Year Program coordination

Three manuals for the International Skipjack Year Program (Port Sampler's, Shipboard Sampler's and Laboratory) have been developed in the three official languages of the Commission and distributed widely among the scientists and technicians in the field. The Manuals contain detailed instructions and forms (SCRS/81/8, 9 and 10).

Under the overall coordination of the ICCAT Secretariat, the following activities were carried out as reported by the end of September, 1981:

- a) Intensive sampling by five countries in the Annobon area during the summer of 1981 (SCRS/81/26)
- b) Various tagging cruises were carried out by nine countries in both the east and west Atlantic.
- c) Sonic tagging cruises were carried out by France and Ivory Coast with the cooperation of Canadian scientists in the Annobon area.
- d) Port sampling - various countries are engaged in this activity. The Secretariat also provided financial assistance for sampling in Morocco and Venezuela (see Section 5.1).

- e) Fishery Oceanography - Various countries are engaged in this activity.

The Secretariat has been coordinating these activities while actually providing materials for tagging, etc. and accounting for all tag recoveries (SCRS/81/26).

Coordination of the management of data resulting from the International Skipjack Year Program was discussed in detail at the meeting of the Sub-Committee on Skipjack held in Miami in June (SCRS/81/25).

6. Publications

The preparation of the following publications has been charged to this chapter:

- a) Biennial Report, 1980-81, Part I (English, French and Spanish)
- b) Statistical Bulletin, Vol. 10 (1979) (Final Edition)
- c) Statistical Bulletin, Vol. 11 (1980) (Preliminary Edition)
- d) Collective Volume, Vol. XIV (SCRS Report "A")
- e) Collective Volume, Vol. XV (1) and (2) (1980 SCRS Documents)
- f) Collective Volume, Vol. XVI (Report of the Billfish Workshop)
- g) Data Record, Vol. 17 (Data received from November 1980 to February 1981)
- h) Data Record, Vol. 18 (Data received from March to September, 1981)
- i) Statistical Series, No. 10 (1980 ICCAT port sampling)
- j) Proceedings of the Seventh Regular Meeting of the Commission (Provisional)
- k) Newsletter (3 issues)

7. Secretariat

7.1 Staff

Except for the addition of the new biostatistician (see Section 5.3), there have been no changes in the Secretariat staff.

The Executive Secretary would like to inform the Commission, with pleasure, of the excellent collaboration he had from the entire Secretariat staff throughout the year. Due to this collaboration, we were able to complete, on time, all the assignments given to the Secretariat. I would especially like to point out the extra effort put forth by the staff during the extended absence of the Assistant Executive Secretary. During that time, the staff not only successfully carried out its routine work, but voluntarily assumed additional responsibilities, some of which were superior to their administrative categories and did so without receiving or even asking for any financial compensation.

7.2 Trips

Besides the trips made by the Secretariat staff to attend meetings, as mentioned in Sections 2 and 3 of this Report, the Skipjack Coordinator made two trips during 1981, as follows:

- a) La Jolla, California, U.S.A., in January for approximately two weeks in order to draft the skipjack manuals.
- b) Senegal, Ivory Coast and Ghana in April-May to review the progress of and make final adjustments to the International Skipjack Year Program.

Also, the biostatistician visited Ivory Coast and Ghana in December, 1981, in order to study various sampling schemes adopted in these countries.

O. Rodríguez-Martin
Executive Secretary

FINANCIAL REPORT 1981

COM/81/10 (Amended)*

I. REGULAR COMMISSION BUDGET

1. Auditor's Report for Fiscal Year 1980

The Auditor has examined the accounts and balance sheet of the Commission up to December 31, 1980. In accordance with Regulations 9-3 and 12-7 of the Financial Regulations, and in compliance with the recommendation of the Council at its Second Regular Meeting, the Secretariat sent a copy of the Auditor's Report to all member country governments in June, 1981. An abstract is included as Statement 9 of the Biennial Report, 1980-81, Part I.

2. 1981 Regular Budget

The Regular Commission Budget (*Statement 1*), approved by the Commission at its Sixth Regular Meeting (Madrid, November, 1979), amounted to US\$ 750,000 (see Appendix 3 to Annex 6 of the STACFAD Report contained in the Biennial Report 1978-79 (Part II)). In 1981, there were certain circumstances which affected the budget, as follows:

- a) The U.S. dollar experienced a substantial revaluation, with respect to the peseta.
- b) As a result of the above, the classification of Spain with respect to the post adjustment, calculated periodically by the United Nations, showed a decrease, in dollars, which consequently resulted in a decrease in the ICCAT staff members' salaries.
- c) The salary for a biostatistician had been foreseen in calculating the 1981 Budget. However, this position was not filled until October 1, 1981.
- d) The Assistant Executive Secretary was absent from the Secretariat for several months, during which time he did not receive salary.
- e) Effective use of the IBM MC Composer to prepare publications for offset printing has reduced considerably the publication costs.
- f) The high professional and efficiency level of the Secretariat staff made it possible to carry out effectively all the Secretariat's work, without having to contract additional part-time staff.

* Updated to the end of Fiscal Year 1981. Modifications approved by the Commission have been introduced.

As a result of these circumstances, the Fiscal Year ended with a positive balance.

However, we regret to have to refer once again to the delays in payment of the member country contributions. Consequently, we could have the case where our accounting records show a positive balance of \$100,000 or more at the end of a fiscal year and yet not have sufficient funds available to meet Commission expenses.

3. Review of Commission accounts

Statement 2 shows the balance sheet for the Regular and Special Skipjack Budgets for Fiscal Year 1980. There was a balance of \$147,921.01 in Cash and Bank, broken down as follows: \$118,927.88 corresponding to the Regular Commission Budget and \$28,993.13 corresponding to the Special Skipjack Budget.

Pending member country contributions totaled \$117,651.62. Of that amount, \$72,964.93 corresponded to the 1980 Regular Commission Budget and \$44,686.69 to the Special Skipjack Budget.

Statement 3 shows the status of the member country contributions to the 1981 Budget. A total of \$168,054.53 is pending from Benin, Gabon, Ghana, Senegal and Spain and corresponds to both the 1981 Regular Budget and amounts pending from other years.

Statement 4 shows the Budget, Expenditures and Balance of the Regular Commission Budget to the end of Fiscal Year 1981, with a positive balance of \$209,469.32. Included in these expenditures is the cost of a second IBM MC Composer (\$13,791.73), whose purchase was authorized by the Commission at its Seventh Regular Meeting (Tenerife, November 1981). The Commission decided that the positive balance mentioned above should be deposited to the Working Capital Fund. Past experience has proven the usefulness of this Fund, since it has permitted us to carry out Commission activities, in spite of the constant delays in payment of member country contributions.

4. General Comments on Regular Commission Budget

Chapter 1 - SALARIES

As a result of the circumstances pointed out in Section I.2 of this Report, there is a substantial positive balance for Fiscal Year 1981.

Chapter 2 - TRAVEL

The trips made by members of the Secretariat staff are described in the Administrative Report (contained in this "Biennial Report"). This chapter also includes the expenses incurred by the Executive Secretary and the Assistant Executive Secretary in attending the consulting meeting in Miami on limiting the catch of bluefin tuna (February 1982).

Chapter 3 - MEETINGS

The actual expenses pertaining to this Chapter were slightly lower than the amount budgeted:

ICCAT REPORT 1980-81 (II)

i) Simultaneous interpreters (travel, salary, per diem, etc.)	\$ 17,426.43
ii) Extra staff (a multi-lingual translator, head receptionist, copy machine operator, assistant copy machine operator)	7,860.98
iii) ICCAT Secretariat staff members (travel, per diem, overtime, transport of equipment and materials)	32,729.48
iv) Hotel conference rooms, Secretariat working rooms, coffee break and miscellaneous	4,246.41
v) Cymen Company (electronic equipment)	9,978.12
vi) 3 Rank Xerox copy machines	6,745.39
vii) Office materials	<u>2,697.21</u>
TOTAL EXPENSES	\$ 81,684.02

Chapter 4 - PUBLICATIONS

The following publications have been charged to this chapter:

<i>Title</i>	<i>Volume</i>	<i>Date published</i>	<i>Contents</i>
Biennial Report, Part I	1980-81	July 1981	
Statistical Bulletin	10 (1979) (Final)	Feb. 1981	
Statistical Bulletin	11 (1980) (Prov.)	Sept. 1981	
Collective Volume	XIV	Mar. 1981	Report "A" of 1980 SCRS.
Collective Volume	XV	Mar. 1981	1980 SCRS documents.
Collective Volume	XVI	Sept. 1981	Report of the Billfish Workshop (Miami, 1981).
Data Record	17	Mar. 1981	Data received from Nov. 1980 to Feb. 1981.
Data Record	18	Oct. 1981	Data received from March to Sept., 1981.
Statistical Series	10	Aug. 1981	ICCAT port sampling, 1980.
Provisional Proceedings of the 7th Regular Meeting (1981)		Dec. 1981	
Newsletter	3 issues		

Chapter 5 - OFFICE EQUIPMENT

The total paid for office furniture purchased in 1981 was approximately the same as the amount budgeted. The purchase of a second IBM MC Composer was also included in this chapter, as mentioned in the explanation of Statement 4.

Chapter 6 - OPERATING EXPENSES

Details of the expenses corresponding to this budget chapter are as follows:

Office supplies	\$ 7,375.82
Photocopier (Rank Xerox)	9,992.84
Mailing expenses	14,348.81
Telephone	5,060.63
Telegram service	1,577.42
Telex service	2,577.92
Maintenance	5,404.52
Auditor's fees	1,250.00
Security bond	1,382.08
Electricity	1,775.24
Office cleaning service	1,983.41
Miscellaneous	<u>244.26</u>
TOTAL OPERATING EXPENSES	\$ 52,972.95

Chapter 7 - MISCELLANEOUS

This chapter includes such minor expenses as repairs (plumbing, furniture repairs, etc.), local transportation for office business and general expenses which are not applicable to other budget chapters.

Chapter 8 - COORDINATION OF RESEARCH

a) Staff

This sub-chapter includes J. P. Wise (Biostatistician, since October 1, 1981), V. Nordström (Systems Analyst), D. Da Rodda and O. Rodríguez Muñoz (Statistical assistants). It also includes the expenses of the ICCAT port samplers in Tenerife, Las Palmas, St. Maarten, Cape Town and Cumaná.

b) Travel

Credited to this sub-chapter are the travel expenses for J. P. Wise and his family to join the Secretariat, the trips of V. Nordström to Miami and of J. P. Wise to Abidjan (Ivory Coast) and Tema (Ghana).

c) Office equipment

These expenses correspond to office material for the statistical department.

d) Data processing

Data processing expenses remained within the amount budgeted, in spite of the considerable increase in processing work.

e) Inter-sessional meetings

The expenses of the following inter-sessional meetings were included in this sub-chapter:

- i) SCRS Officers Meeting (Miami)
- ii) Billfish Workshop (Miami)
- iii) Sub-Committee on Skipjack (Miami)

We would like to point out that the facilities and other services offered by the Southeast Fisheries Center, Miami, helped to reduce considerably the expenses for the meetings held there.

f) Miscellaneous

The cash prizes for the tag recovery lottery were charged to this sub-chapter, as well as other tag rewards.

II. SPECIAL SKIPJACK BUDGET

1. 1979-82 Special Skipjack Budget (Statement 5)

The Special Skipjack Budget for 1979-82 was approved by the Commission at its 1978 meeting (included in the Biennial Report, 1978-79, Part I, Appendix 5 to Annex 5). The 1981 Special Skipjack Budget amounted to \$177,500.

2. Member country contributions to the Special Skipjack Budget

Statement 6 shows the status of the member country contributions to the Special Skipjack Budget. There are still contributions pending from various countries which total \$91,225.82, i.e., 51 percent of the 1981 Skipjack Budget is still pending payment.

3. Budget, Expenditures and Balance of the Skipjack Budget, 1981

Statement 7 shows the Budget, Expenditures and Balance of the Special Skipjack Budget for Fiscal Year 1981. There is a positive balance of \$78,322.03; and in accordance

with the Commission's decision, this amount is to be applied to the Skipjack Working Capital Fund. We would like to point out that all the financial necessities, as proposed by the Skipjack Program Coordinator, were duly met.

ACTIVITIES

a) Tagging

This sub-chapter includes such expenses as monetary tag recovery rewards, the purchase of 1,000 T-shirts for the Skipjack Program, and financial assistance for experts on tagging cruises in Africa and Brazil.

b) Statistics

The purchase of sampling equipment, calipers and ichthyometers, etc., is charged to this sub-chapter.

ICCAT COORDINATION SERVICES

a) Salaries

Included here are the salaries of P. E. K. Symons (Program Coordinator), D. Magermans (full-time skipjack secretary) and B. F. de Bobadilla (part-time skipjack secretary).

b) Office equipment and materials

The purchase of an IBM typewriter was charged to this sub-chapter.

c) Trip expenses

Trips to Africa and Miami (U.S.A.) and "home leave" expenses for the Skipjack Coordinator were charged to this sub-chapter.

d) Operational expenses and contracts

Included in this sub-chapter are expenses such as skipjack tagging lottery awards, publication and mailing of skipjack manuals and telephone.

III. OTHER BUDGET STATEMENTS

1. Statement of Income and Disbursements for both budgets

Statement 8 shows the total Income and Disbursements, corresponding to Fiscal Year 1981, for both Commission budgets.

2. Breakdown of the Working Capital Funds (Statement 9)

a) Regular Commission Budget

At the end of Fiscal Year 1980, the Working Capital Fund showed a balance of \$180,054.62. During 1981, a substantial amount of Interest Income (\$41,706.50) was deposited to this Fund. The positive balance for Fiscal Year 1981 (\$209,469.32) has also been deposited to this Fund. Two amounts, \$200 from the sale of ICCAT publications and \$253.98 from the difference in currency exchange, were deposited to the Working Capital Fund. Consequently, at the end of Fiscal Year 1981, the Working Capital Fund of the Regular Commission Budget shows a balance of \$431,683.42.

b) Special Skipjack Budget

There was a balance of \$66,472.92 in the Skipjack Working Capital Fund at the end of Fiscal Year 1980. The positive balance for Fiscal Year 1981 (\$78,322.03) was deposited to the Fund. Therefore, at the end of Fiscal Year 1981, the Skipjack Working Capital Fund shows a balance of \$144,794.95.

3. Balance Sheet for the Regular and Special Skipjack Budgets

Statement 10 shows the assets and liabilities corresponding to both Commission Budgets.

4. Auditor's Report for Fiscal Year 1981

The Balance Sheet at the end of Fiscal Year 1981 has been extracted from the Auditor's Report and is included as *Statement 11*.

STATEMENT 1

Regular Budget, 1980-1981* (US\$)

CHAPTER	1980 BUDGET	1981 BUDGET
1. Salaries	260,000	312,000
2. Travel	16,000	19,200
3. Meetings	58,000	70,000
4. Publications	30,000	36,600
5. Office Equipment	4,000	4,800
6. Operating Expenses	48,000	57,600
7. Miscellaneous	5,000	5,000
<i>Sub-total</i>	421,000	505,200
8. Coordination of Research		
a) Staff	130,000	156,000
b) Travel	14,000	16,800
c) Office Equipment	7,000	8,400
d) Data Processing	28,000	33,600
e) Inter-sessional Meetings (Sub-Committees, Working Groups, etc.)	20,000	24,000
f) Miscellaneous	5,000	6,000
<i>Sub-total</i>	204,000	244,800
9. Contingencies	0	0
TOTAL	625,000	750,000

*Approved by the Commission in 1979.

STATEMENT 2

Balance Sheet for the Regular and Skipjack Budgets for Fiscal Year 1980 (US\$)

<i>ASSETS</i>		<i>LIABILITIES</i>	
Cash and Bank:		Working Capital Funds:	
a) Regular Budget	118,927.88	a) Regular Budget	180,054.62
b) Special Skipjack Budget	<u>28,993.13</u>	b) Special Skipjack Budget	66,472.92
	147,921.01		
Pending Contributions:		Bluefin Tagging Fund	
a) Regular Budget	72,964.93		1,998.46
b) Special Skipjack Budget	<u>44,686.69</u>		
	117,651.62		
Rounding off		In favor of:	
	1.00	Brazil:	
		a) Regular Budget	813.00
		b) Special Skipjack Budget	3,629.00
		Cuba:	
		a) Regular Budget	669.59
		b) Special Skipjack Budget	194.41
		Ivory Coast:	
		a) Regular Budget	10,220.14
		b) Special Skipjack Budget	<u>1,521.49</u>
TOTAL	<u>265,573.63</u>	TOTAL	265,573.63

STATEMENT 3

Status of Member Country Contributions in 1981 - Regular Commission Budget (US\$)

<i>Country</i>	<i>1980 Balance</i>	<i>Contributions for for the 1981 Budget</i>	<i>Contributions paid for the 1981 Budget</i>	<i>Other Con- tributions</i>	<i>Balance</i>
Angola	--	24,847.00	24,847.00 (20/IV/81)	--	--
Benin	- 4,387.00	5,131.00	--	--	- 9,518.00
Brazil	+ 813.00	18,082.00	18,082.00 (30/XII/81)	--	+ 813.00
Canada	--	16,607.00	16,607.00 (20/II/81)	--	--
Cape Verde	--	11,390.00	11,390.00 (27/XI/81)	--	--
Cuba	+ 669.59	25,195.00	24,525.41 (23/III/81)	--	--
France	--	119,133.00	119,133.00 (31/VIII/81)	--	--
Gabon	--	5,131.00	--	--	- 5,131.00
Ghana	-15,184.57	28,737.00	--	--	- 43,921.57
Ivory Coast	+10,220.14	38,279.00	28,058.86 (31/VIII/81)	--	--
Japan	--	62,779.00	62,779.00 (25/III/81)	--	--
Korea	--	64,774.00	64,774.00 (30/XII/81)	--	--
Morocco	--	22,852.00	22,852.00 (20/VI/81)	--	--
Portugal	--	35,963.00	35,963.00 (1/IV/81)	--	--
Senegal	-24,440.00	15,726.00	15,726.00 (9/XII/81)	478.40	- 23,961.60
South Africa	--	10,609.00	10,609.00 (31/III/81)	--	--
Spain	-28,953.36	141,872.00	85,303.00 (28/V/81)	--	- 85,522.36
United States	--	70,239.00	70,239.00 (6/II/81)	--	--
U.S.S.R.	--	32,654.00	32,654.00 (17/III/81)	--	--
TOTAL	-72,964.93 +11,702.73	750,000.00	643,542.27	478.40	- 168,054.53 + 813.00

Budget, Expenditures and Balance of the Regular Commission Budget for Fiscal Year 1981 (US\$)

<i>Chapter</i>	<i>I</i> <i>Amount Budgeted</i>	<i>II</i> <i>Actual Expense</i>	<i>III</i> <i>Difference</i>
1. Salaries	312,000.00	231,577.39	+ 80,422.61
2. Travel	19,200.00	11,544.97	+ 7,655.03
3. Meetings	70,000.00	81,684.02	- 11,684.02
4. Publications	36,600.00	21,565.29	+ 15,034.71
5. Office Equipment	4,800.00	18,125.43*	- 13,325.43
6. Operating Expenses	57,600.00	52,972.95	+ 4,627.05
7. Miscellaneous	5,000.00	5,324.16	- 324.16
			+107,739.40
			- 25,333.61
<i>Sub-total</i>	505,200.00	422,794.21	+ 82,405.79
8. Coordination of Research			
a) Staff	156,000.00	79,249.55	+ 76,750.45
b) Travel	16,800.00	7,432.10	+ 9,367.90
c) Office Equipment	8,400.00	1,173.97	+ 7,226.03
d) Data Processing	33,600.00	19,690.38	+ 13,909.62
e) Inter-sessional Meetings (Sub-Committees, Working Groups, etc.)	24,000.00	8,599.11	+ 15,400.89
f) Miscellaneous	6,000.00	1,591.36	+ 4,408.64
9. Contingencies	0.00	0.00	+ 0.00
<i>Sub-total</i>	244,800.00	117,736.47	+127,063.53
TOTAL	750,000.00	540,530.68	+209,469.32

* This amount includes \$13,791.73, the cost of a second IBM MC Composer, whose purchase was authorized by the Commission at its Seventh Regular Meeting (Tenerife, November 1981).

STATEMENT 5

Revised Budget for the International Skipjack Year Program, 1979-1982 (US\$)

	1979	1980	1981	1982	Total
A) ACTIVITIES					
Tagging with Dart Tags	0	60,000	15,000	10,000	85,000
Improved Statistics (Port and Intensive Sampling) . . .	0	35,000	45,000	10,000	90,000
Biochemical Stock Identification (Genetics)	0	8,000	2,000	0	10,000
<i>Sub-total</i>	0	103,000	62,000	20,000	185,000
B) ICCAT COORDINATION SERVICES					
Salaries	30,000	58,440	80,500	99,010	267,950
Office Equipment and Materials	0	3,400	5,000	5,000	13,400
Trip Expenses	5,000	8,000	13,000	8,000	34,000
Operational Expenses and Contracts	7,000	13,000	17,000	15,000	52,000
<i>Sub-total</i>	42,000	82,840	115,500	127,010	367,350
TOTAL	42,000	185,840	177,500	147,010	552,350

STATEMENT 6

Statement of Member Country Contributions in 1981 — Special Skipjack Budget (US\$)

<i>Country</i>	<i>1980 Balance</i>	<i>Contributions for 1981 Budget</i>	<i>Contributions paid for the 1981 Budget</i>	<i>Other Con- tributions</i>	<i>Balance</i>
Angola	--	3,594.00	3,594.00 (20/IV/81)	--	--
Benin	- 1,333.00	1,038.00	--	186.30	- 2,184.70
Brazil	+ 3,629.00	3,466.00	--	--	+ 163.00
Canada	--	4,379.00	4,379.00 (20/II/81)	--	--
Cuba	+ 194.41	6,096.00	5,769.99 (21/VI/81)	--	- 131.60
France	--	28,858.00	28,858.00 (12/VIII/81)	--	--
Gabon	--	1,038.00	--	--	- 1,038.00
Ghana	- 2,349.69	5,796.00	--	--	- 8,145.69
Ivory Coast	+ 1,521.49	5,868.00	332.68 (31/VIII/81)	--	- 4,013.83
Japan	--	16,837.00	16,837.00 (4/VI/81)	--	--
Korea	--	18,070.00	18,070.00 (30/XII/81)	--	--
Morocco	--	4,716.00	4,716.00 (12/VIII/81)	--	--
Portugal	--	8,149.00	8,149.00 (1/IV/81)	--	--
Senegal	- 4,666.00	4,457.00	4,457.00 (9/XII/81)	--	- 4,666.00
South Africa	--	2,156.00	2,156.00 (31/III/81)	--	--
Spain	- 36,338.00	34,708.00	--	--	- 71,046.00
United States	--	20,271.00	20,271.00 (6/II/81)	--	--
U.S.S.R.	--	8,003.00	8,003.00 (17/III/81)	--	--
TOTAL	- 44,686.69 + 5,344.90	177,500.00	125,592.67	186.30	- 91,225.82 + 163.00

STATEMENT 7

Budget, Expenditures and Balance of the Special Skipjack Budget for Fiscal Year 1981 (US\$)

	<i>I</i> <i>Amount Budgeted</i>	<i>II</i> <i>Actual Expense</i>	<i>III</i> <i>Difference</i>
A) ACTIVITIES			
Tagging with Dart Tags	15,000.00	18,226.62	- 3,226.62
Improved Statistics (Port and Intensive Sampling)	45,000.00	1,582.89	+ 43,417.11
Biochemical Stock Identification (Genetics)	2,000.00	0.00	+ 2,000.00
			+ 45,417.11
			- 3,226.62
<i>Sub-total</i>	62,000.00	19,809.51	+ 42,190.49
B) ICCAT COORDINATION SERVICES			
Salaries	80,500.00	62,256.75	+ 18,243.25
Office Equipment and Materials	5,000.00	1,032.59	+ 3,967.41
Trip Expenses	13,000.00	8,424.10	+ 4,575.90
Operational Expenses and Contracts	17,000.00	7,655.02	+ 9,344.98
<i>Sub-total</i>	115,500.00	79,368.46	+ 36,131.54
TOTAL	177,500.00	99,177.97	+ 78,322.03

STATEMENT 8

Statement of Income and Disbursements —
Regular Commission Budget and Special Skipjack Budget (US\$)

<i>INCOME</i>			<i>DISBURSEMENTS</i>		
Cash and Bank at end of Fiscal Year 1980:			From 1981 Regular Budget	526,738.95	
a) Regular Budget	118,927.88		Purchase of IBM MC Composer . .	<u>13,791.73</u>	540,530.68
b) Special Skipjack Budget.	<u>28,993.13</u>	147,921.01	From 1981 Special Skipjack Budget		<u>99,177.97</u>
Income for 1981:			Total Disbursements		639,708.65
a) Regular Budget	643,542.27		Balance in Cash and Bank at end of Fiscal Year 1981:		
b) Special Skipjack Budget.	<u>125,592.67</u>	769,134.94	a) Regular Budget	264,578.35	
Other contributions:			b) Special Skipjack Budget. . . .	<u>55,594.13</u>	320,172.48
a) Regular Budget	478.40		Bank Interest for 1981		41,706.50*
b) Special Skipjack Budget.	<u>186.30</u>	664.70	Sale of ICCAT publications		200.00*
Difference in currency exchange.		<u>253.98*</u>	TOTAL		959,881.13
TOTAL		959,881.13	TOTAL		959,881.13

*To the Working Capital Fund of the Regular Budget.

STATEMENT 9

Breakdown of the Working Capital Funds (US\$)

1. REGULAR BUDGET

At the end of Fiscal Year 1980	180,054.62	
Bank Interest for 1981	41,706.50	
Sale of ICCAT publications	200.00	
Difference in currency exchange	253.98	222,215.10
Positive Balance – Fiscal Year 1981		209,469.32
Rounding off (see Statement 2)		<u>- 1.00</u>
TOTAL AT END OF FISCAL YEAR 1981		431,683.42

2. SPECIAL SKIPJACK BUDGET

At the end of Fiscal Year 1980		66,472.92
Positive Balance – Fiscal Year 1981		<u>78,322.03</u>
TOTAL AT END OF FISCAL YEAR 1981		144,794.95

Balance Sheet -- Regular and Special Skipjack Budgets (US\$)

<i>ASSETS</i>		<i>LIABILITIES</i>	
Cash and Bank:		Working Capital Funds:	
a) Regular Budget.	264,578.35	a) Regular Budget.	431,683.42
b) Special Skipjack Budget.	<u>55,594.13</u>	b) Special Skipjack Budget.	144,794.95
	320,172.48		
Pending Contributions:		Bluefin Tagging Fund.	
a) Regular Budget.	168,054.53		1,998.46
b) Special Skipjack Budget.	<u>91,225.82</u>	In favor of Brazil:	
		a) Regular Budget.	813.00
Total pending contributions. . .	<u>259,280.35</u>	b) Special Skipjack Budget.	<u>163.00</u>
TOTAL.	579,452.83	TOTAL.	579,452.83

International Commission for the Conservation of Atlantic Tunas - Balance Sheet at Close of Fiscal Year 1981

<i>ASSETS</i>		<i>LIABILITIES</i>	
<i>Available:</i>		<i>Acquired holdings</i>	
BANCO EXTERIOR DE ESPAÑA			\$116,266.94
Time deposit account	\$298,686.75		
C/A 82-31279Q (US\$)	10,819.49	<i>Working Capital Fund:</i>	
C/A 30-17632A (ptas.)	964,037.03	Regular Budget	\$431,683.42
C/A 30-17329F (convert. ptas.)	3,205.69	Special Skipjack Budget	\$114,794.95
Cash on hand (ptas.)	<u>83,382.62</u>		
(at 98.50 ptas. per \$1)	1,050,625.34	Positive balance - Bluefin Tagging Fund	\$1,998.46
	<u>\$10,666.24</u>		
	\$320,172.48		
<i>Receivables:</i>		<i>Income received in advance:</i>	
From Regular Budget:		BRAZIL	
BENIN	\$9,518.00	Regular Budget	\$813.00
GABON	5,131.00	Special Skipjack Budget	<u>163.00</u>
GHANA	43,921.57		\$976.00
SENEGAL	23,961.60		
SPAIN	<u>85,522.36</u>		
	\$168,054.53		
From Special Skipjack Budget:			
BENIN	\$2,184.70		
CUBA	131.60		
GABON	1,038.00		
GHANA	8,145.69		
IVORY COAST	4,013.83		
SENEGAL	4,666.00		
SPAIN	<u>71,046.00</u>		
	\$91,225.82		
<i>Equipment:</i>			
Acquired before 1981	\$95,665.75		
Acquired during 1981	<u>20,331.99</u>		
	\$115,997.74		
<i>Bonds</i>			
	<u>\$269.20</u>		
TOTAL ASSETS	\$695,719.77	TOTAL LIABILITIES	\$695,719.77
Furniture ceded by Undersecretariat of Merchant Marine of Spain	\$3,365.38	Furniture ceded by Undersecretariat of Merchant Marine of Spain	\$3,365.38

SECRETARIAT REPORT ON STATISTICS AND COORDINATION OF RESEARCH

COM-SCRS/81/24 (Amended)

I. Statistics and sampling

1. Collection of 1980 statistics through the national offices

The same routine procedure was adopted as has been used in previous years. Various requests and reminders were forwarded by letter, telephone, telex and telegram to those countries which failed to provide the Commission with statistics on time. The progress made by the national offices and by the Secretariat is shown in Table 1 to Appendix 4 to Annex 8.

The reporting of Task I nominal annual catch statistics, Task II catch and effort statistics and Task II biological data in 1981 was again considerably behind schedule. Nevertheless, most countries had reported their Task I catches by the time of the compilation of the provisional Statistical Bulletin in early September.

2. Port sampling by the Secretariat - Longline (for surface see Section V)

The Secretariat's efforts to collect logbook records and size frequencies from longliners at Atlantic transshipping ports were continued during 1981. At the ports of Las Palmas, Tenerife, St. Maarten and Cape Town, people were employed by the Secretariat as part-time coordinators.

In addition to these, a professor at the Universidad de Cumaná, Venezuela, who had been contacted in early 1980, cooperated with ICCAT and collected logbook abstracts from longliners unloading at Cumaná. Also a few biological samplings were made from this fleet. On the contrary, the person contracted in Montevideo, Uruguay, in early 1980 indicated that he was encountering some bureaucratic difficulties in sampling, i.e., authorizations by the government and/or ship-handling agent for sampling were not granted. The Secretariat tried to solve these problems by communicating with the Uruguayan government, agents, Taiwanese government, etc. As of the time of writing, the problem has not yet been solved. As a result, sampling at Uruguay is unfortunately not yet in effect. However, the matter is still being pursued. Some of the difficulties are due to the fact that the countries involved are not members of ICCAT.

The sampler hired at Cape Town resigned in early 1981 and the person hired to take his place resigned after one month. Therefore, from June to September, sampling was interrupted. The Sea Fisheries Department of South Africa solved this problem. The basic problem was that the work load does not warrant full-time employment, while the

salary offered, based on the South African Government's part-time employee scheme, was not attractive enough for the job.

As a result, 1981 ICCAT port sampling coverage for the Taiwanese fleet was very poor. The Secretariat again raised the question as to whether or not it is worthwhile continuing the port sampling system in view of the difficulties involved and the rising costs. The matter should be carefully evaluated. If it is decided to continue the program, we recommend that the budget be increased, including an increase in the sampler's salary allocation and funds for periodic visits to these ports by the Secretariat staff to guarantee that adequate data are collected.

3. Major improvements in statistics

The following data bases have been completely revised. Details can be found in Section III, "Biostatistical Work."

- Billfish data base (Task I)
- Portuguese catch statistics (Task I)
- Small tuna and tuna-like catches (Task I)
- Bluefin biological (size) data (Task II)
- Taiwanese catch and effort statistics for 1976-78 (Task II)

4. Remaining problems and pending matters

A. When two sets of data exist, the scientists may have difficulty choosing between them. Following herewith are some examples:

- i) Taiwanese Task II catch and effort data (ICCAT port sampling vs. Taiwan University). For solution, see SCRS/81/11.
- ii) Korean Task II catch and effort data (ICCAT port sampling vs. Korean Government). No solution offered. The discrepancies are not substantial. Using either set of data will make little or no difference in the conclusion.
- iii) Korean size data (ICCAT port sampling vs. Korean sampling). An evaluation of the differences between the two sets of data has not yet been made.
- iv) Ghana-based Japanese fleets (Catch and effort and size data by Ghanaian scientists vs. data of the Japanese Government). Size frequencies have discrepancies between the two sets. The Working Group on Juvenile Tropical Tunas decided to use the Japanese Government catch and effort data and the Ghanaian scientists' sampling results.

B. There are gaps between scientists' estimates and official national statistics. The Sub-Committee on Statistics and the SCRS decided that the scientists' estimates should be used for compilation of the Statistical Bulletin and thereafter for population evaluations. As this criterion is observed, Statistical Bulletin catches are often different from the official catch data which are used for calculation of the ICCAT member country contri-

butions. However, we are increasingly encountering somewhat delicate cases such as different estimates being presented even by the scientists directly involved in ICCAT tuna studies. In such cases, it is very difficult for the Secretariat to judge which are the most adequate estimates.

C. The Secretariat is not being notified of changes in national statistics. In the past, it was recommended that the Secretariat and the scientists be notified of changes in statistics. This has not been practiced. The Secretariat has to go through all the papers submitted to the SCRS, to scan for the data used in their analyses and to check consistency with the ICCAT data base. This task involves a lot of time and effort and yet sometimes discrepancies are overlooked. Even if the discrepancies are found, the author still has to be contacted and asked if such discrepancies are authors' errors or if there are any bases for changes, etc. We recommend very strongly that any revisions made on national statistics (Task I and Task II) be duly reported to the scientists involved and to the Secretariat and that in case the revision is significant, the changes and reasons for them be documented and presented to the SCRS.

D. In the past there have been problems of "unconventional" fleet catches, i.e. catches made by vessels flying flags different from the country which actually owns and operates the vessels. The majority of these fleets fly the flags of Panama, Netherlands Antilles or Venezuela. The catches made by this type of fleet are sometimes reported by the flag country and/or by the country which owns the boats but some are not reported by either the flag country or the owner country. The Secretariat has always been aware of this problem ever since it started activities in 1970 and has tried to cover the unreported catches and to avoid double reporting. Since these fleets used to be limited to the bait-boats from Tema (and recently from Venezuela) and longliners, we have been able to solve the problem somewhat through the port sampling program. Up to 1979, the catches which escaped our survey and double reporting problems were very minor among this type of multinational fleets. Besides, U.S. statistics used to include these multi-national fleets owned by the U.S.

Since 1979, however, the situation has become more complicated as more North American purse seiners have changed their registration to Central and South American countries. Specifically, the U.S. changed its policy and now is reporting only statistics of its own flag vessels.

There also exist the following problems with the North American purse seiners registered with other countries:

i) Privacy of industry

The North American purse seine data are collected mostly by IATTC but both IATTC and ICCAT have an obligation to protect the privacy of industry. Publishing data by flag may violate this privacy. ICCAT, together with IATTC, is now studying a method by which we can make the data available but still protect industries' privacy.

ii) Data are still partial

The IATTC has difficulties in obtaining complete records for Atlantic catches. Besides, the data from catches landed at ports where IATTC has no personnel (e.g. Tema,

Cumaná, etc.) are not included in their system.

iii) Risk of double reporting

The catches reported by Venezuela include some of the catches by foreign flag vessels. The Secretariat finally separated the national catch from the foreign flag catches, up to 1979 (trip by the Assistant Executive Secretary to Venezuela, 1980). We are hoping to adopt a similar procedure for 1980 catches. However, among the national flag catches reported by Venezuela, it is difficult to ascertain what part corresponds to the fleet operated by non-Venezuelan vessels and is included in the so-called "unconventional" fleet catches. In order to avoid double reporting, this point should be clarified.

It seems that the only solution to the problems is to:

- i) Obtain as much information as possible from the port sampling program.
- ii) Expand the port sampling program (presently limited to the longline fleet) to the surface fleet and obtain as much information as possible at various landing ports.
- iii) Discuss the problem with non-member countries involved (e.g. Venezuela, Panama, Netherlands Antilles) and seek a viable solution. Venezuelan statistics in particular should be further reviewed to separate foreign fleet, genuine national fleet and "unconventional" fleet catches.

E. At the 1980 SCRS Meeting, it was agreed that the Historical Series be published this year only after approval of the collaborators who were selected at that time for each species. The Secretariat sent listings of the most up-dated base to the collaborators in March, 1981, requesting their comments, approval or disapproval by August 15. The results as of November, 1981, are as follows:

- Yellowfin — Dr. Sakagawa raised a few questions on the data and his approval for publishing data was not granted.
- Skipjack — Mr. Pianet suggested some revisions.
- Bigeye — Mr. Kume suggested substantial revisions. He also suggested to postpone publication until the Sub-Committee on Statistics could discuss the revisions once again.
- Albacore — Dr. Bard suggested substantial revisions.
- Bluefin — Dr. Farrugio approved. No word was received from Mr. Parrack.
- Billfish — The Workshop proposed major, complete revisions.
- Small tunas — The Secretariat proposed major revisions.

The Secretariat felt that the present situation does not warrant final publication of the Historical Series, particularly due to the fact that major revisions on small tunas, Portuguese statistics, billfish, albacore, etc. are not yet approved by the Sub-Committee on Statistics or the SCRS. After consulting with the Convener of the Sub-Committee, it was decided to wait until the Sub-Committee has had a chance to review all these changes.

II. Data processing (ICCAT data bank)

1. Facilities

The INFONET system was contracted again in 1981 for ICCAT data management. The unit cost in local currency was increased by approximately 15 percent as a result of inflation but due to the recent favorable exchange rate, the cost was about the same in terms of dollars. The work load is constantly increasing but our careful use of the system managed to maintain the overall expenditures for data processing at about the same level. Since two computers are now available at INFONET, the problem of saturation of computer time has been solved.

2. Data processing

- a) Updating all data bases. There was substantially more work involved in updating the Task I data base in 1981, due to the numerous revisions to the historical data, billfish data, small tunas data and Portuguese data.
- b) Data entry and processing of port sampling statistics (Statistical Series-10).
- c) Compilation of Historical Statistical Bulletin and subsequent updating of the historical data base.
- d) Separation of Task I catch data into major areas, using Task II and biological data (including billfish).
- e) Preparation of data files for the meeting of the Billfish Workshop.
- f) Output of the Statistical Bulletin.
- g) Output of data received recently (Data Record, Vols. 17 and 18).
- h) Preparation of species catch tables for the SCRS Meetings and consequently for the SCRS Report (both 1980 and 1981 Reports).
- i) Progress in the compilation of the bluefin biological data base.
- j) Updating tagging file and output of yearly recovery summary.
- k) Creation and distribution of tapes, upon request by the member countries.

3. Dissemination of information and publications

a) *Quick estimates :*

- April, 1981 -- for estimates of all of 1980
- October, 1981 -- for estimates of first half of 1981

b) Statistical Bulletin

Vol. 10, February, 1981 -- final 1979 version - published
 Vol. 11, September, 1981 -- first edition of 1980 - published

c) Data Record

Volume	When published	Data received on:
17	March, 1981	November, 1980 - February, 1981
18	October, 1981	March-September, 1981

d) Collective Volume of Scientific Papers

Volume	When published	Contents
XIV	March, 1981	1980 SCRS Report A
XV (1 & 2)	March, 1981	1980 SCRS Papers
XVI	September 1981	Billfish Workshop Report

e) Statistical Series

Volume 10	August, 1981	Port sampling summary
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Errata prepared for hard copy users as well as data base users were inserted in Volume 10. The Secretariat intends to follow this procedure periodically.

III. Biostatistical work**1. Biostatistician**

The vacancy of the position of biostatistician was announced in early 1981. By March, over 60 applications had been received. After a pre-selection was made, a few candidates were interviewed or contacted. After consulting the SCRS Officers, the Executive Secretary selected Mr. J. P. Wise (U.S.A.) as ICCAT biostatistician. The contract is initially for a one-year period, until the end of 1982, but can be extended for one more year if both parties are agreeable. Mr. Wise joined the Secretariat at the beginning of October.

2. West African biostatistical mission

According to a decision made at the 1980 SCRS Meeting, several people (including Mr. Cadima of Portugal, Mr. Boerma of Holland and Mr. Bard of Ivory Coast) were contacted to inquire about their interest and availability for the mission to west Africa for clarifying biostatistical problems. Unfortunately, it was not possible for any of the aforementioned scientists to accept this task. Since recruitment of the biostatistician was

somewhat delayed, the mission was postponed until December, 1981, when Mr. Wise visited Ivory Coast and Ghana to carry out various assignments given to him by the SCRS. The results of his trip will be reported in detail at the 1982 SCRS Meeting.

3. Revision of TASKI base

a) Billfish statistics

In order to reach an agreement among the scientists on the billfish catch data base to be used for population evaluation, an interim meeting (Billfish Workshop) was held in Miami, at the invitation of the NMFS Southeast Fisheries Center in June, 1981. While preparing the data base for this meeting, the Secretariat contracted Mr. J. C. Rey (Spain) and Mr. Z. Suzuki (Japan) to work at the Secretariat on the subject. Both scientists spent about two weeks at the ICCAT headquarters collaborating with the Secretariat staff. All the data in the base were critically reviewed and estimates were made for insufficient data. All the procedures for the estimates and the new set of data (revised data base) were presented at the Workshop, and served as the basis for discussion at the time of the meeting. This paper (WP-1) is attached as Appendix 9 to the Workshop Report (Collective Volume XVI).

The follow-up regarding the pending problems from the Workshop was carried out and the data base was further revised after agreement by all the Workshop participants was reached.

b) Historical data series

When the collaborators for the Historical Statistical Bulletin reviewed the statistics (pre-1970), they, as well as the Secretariat, found many errors and/or points where improvements can be introduced, not only for pre-1970, but for recent years as well. After exchanges of opinion on these points among pertinent scientists, the data base was revised.

c) Portuguese catch statistics

The details of these statistics are discussed in SCRS/81/27. Major revisions have been proposed mainly based on the new estimates made available by scientists in Madeira and Azores and according to the critical review of all the existing data made by the Secretariat. This study was further followed up by the Portuguese scientists (SCRS/81/44).

d) Small tunas

The small tuna statistics, and to some extent the recent biological research on these species, have been critically reviewed by the Secretariat. Details are reported in SCRS/81/28.

4. Task II Catch and Effort

In addition to the routine updating of Task II catch and effort files, we have solved the problem of two existing data sets for Taiwanese catch and effort statistics for 1976-1978. For details see SCRS/81/11.

5. Bluefin Task II biological data base

According to the agreements reached at the Bluefin Workshop (Santander, 1979), the Secretariat completed catch and catch and effort data base for bluefin while Mr. Parrack (U.S. NMFS) completed the biological data base. Although there were some technical difficulties in transmitting this large data base from the U.S. to ICCAT, it was finally received in early 1981 by the Secretariat. The catalogue of this data base appears in Data Record, Vol. 18.

6. Footnotes on the Statistical Bulletin

At the 1981 Inter-sessional SCRS Officers Meeting, the footnotes of the Statistical Bulletin were a subject of discussion (SCRS/81/7). This matter was studied by the Secretariat and reported in SCRS/81/29.

7. Processing of Skipjack Year Program data

This will make up the major part of our processing work load in 1982. Up to now, only the procedures as to how the data should be handled have been discussed and decided upon at the Sub-Committee on Skipjack Meeting (see SCRS/81/25 and 26). For detailed information see Section V of this Report.

IV. Tagging program

An international Atlantic tuna tagging program has been active this year as 1981 has been designated International Skipjack Year (see Section V). The tagging lottery was held on April 24, 1981, at ICCAT headquarters. A \$500 prize was awarded to each winner in the following categories: east Atlantic skipjack, west Atlantic skipjack, Atlantic tropical tunas (except skipjack) and Atlantic temperate tunas and billfishes.

V. International Skipjack Year Program

1. Improved statistics -- port and intensive sampling

The Secretariat spent considerable effort in the first half of 1981 preparing and translating the three manuals for the Skipjack Program: the Port Sampler's Manual, the

Shipboard Sampler's Manual and the Laboratory Manual. These manuals contain detailed instructions and forms for coordinating the collection of statistics and samples in the field and laboratory.

Attempts to improve the quality of Task II statistics, and in some cases to obtain them for the first time, were made by at least seven countries. These improvements in port sampling are detailed in SCRS/81/25 and 26.

Intensive sampling was carried out by five countries in the Annobon region during the summer of 1981. Data from this activity should aid the interpretation and eventually improve the quality of Task II data from port sampling (see also SCRS/81/25 and 26 for further details).

2. Tagging

Many tagging cruises have been organized for the International Skipjack Year, with seven countries involved. Skipjack tagging cruises are not limited to the tagging of skipjack tuna but other tropical tunas are tagged whenever caught. Therefore, these activities caused the total number of fish released to increase substantially.

A lot of tagging materials and rewards (T-shirts or money) have been provided. Rewards for skipjack tags returned are funded by the Special Skipjack Budget, whereas rewards for other species are funded by the Regular Commission Budget.

The release and recovery data are all entered into a single data base as data are received.

3. Other Program activities affecting the ICCAT

Some information on stage of maturity of sampled skipjack will be contained in port sampling (Task II) data received by the ICCAT. These data will be available through the ICCAT upon request.

The fishery oceanography activity may also place some demands on the ICCAT data center. At the moment, the work envisaged would probably require the ICCAT to obtain selected data tapes from national or international oceanographic organizations, and to provide copies of these upon request to scientists involved in the Skipjack Program. However, there are other possibilities, depending upon the eventual needs of scientists, which have yet to be specified.

4. Data processing (ICCAT data bank)

A special information file on the collection, location and progress in analysis of samples and data collected through all Program activities is being compiled by the Secretariat. This information will be available through newsletters, special circulars and upon individual request.

As a result of the Skipjack Program, the data processing work to be carried out by the Secretariat is expected to increase substantially. The main increases will arise from:

a) the creation of the new bookkeeping information file; b) increased contributions to the Task II data base and the modification of the format; c) increased volume of tag-release and recovery information to be utilized in lotteries; d) the creation of a fishery oceanography file of yet unknown size and complexity; e) increased requests for specific information from each of the above files and data base, the likely extent of which is also unknown at this time. The Special Skipjack Budget contains funds which have been approved for this work to the end of 1982.

CHAPTER II

Records of Meeting

PROCEEDINGS OF THE SEVENTH REGULAR MEETING OF THE COMMISSION

Puerto de la Cruz, Tenerife, Canary Islands, Spain
November 11-17, 1981

Table of Contents

Plenary Sessions of the Commission

Annex 1 – Agenda

Annex 2 – List of Participants

Annex 3 – Opening Address by Spanish Under-Secretary of Fisheries

Annex 4 – Opening Address by the Commission Chairman

Annex 5 – Panel Reports

Annex 6 – Summary Table on the Present Status of the Regulatory Measures

Annex 7 – Report of the Standing Committee on Finance and Administration
(STACFAD)

Annex 8 – Report of the Standing Committee on Research and Statistics (SCRS)

Opening Plenary Session – November 11, 1981

Item 1. OPENING OF THE MEETING

1.1 The Commission held its Seventh Regular Meeting at the Hotel Semiramis, Tenerife, Canary Islands, Spain, under the chairmanship of Dr. L. Koffi (Ivory Coast). The Chairman introduced Mr. M. Aldasoro, the Spanish Under-Secretary of Fisheries.

1.2 Mr. Aldasoro, on behalf of Mr. J. Lamo de Espinosa, Spanish Minister of Agriculture and Fisheries, welcomed all the delegates, scientists and observers attending the meeting to a beautiful island which is important in the Spanish fisheries. He commended the remarkable progress made by the scientists during the preceding week, especially

noting the International Skipjack Year Program, the symposium on environment as well as population evaluations of all tuna studies. He commented that ICCAT is important in two aspects; that is, international joint research and management is possible through this forum, as well as the fact that each member country can take individual actions for its interests. He referred to specific tuna problems relating to the Canary Islands and hoped that the SCRS finds solutions to these problems. He also noted that Spain has a good fishing fleet, high demand for fish with a good market price but a lack of resources. Spain will offer research cooperation, exploitation methods and training of scientists to any country needing them. Mr. Aldasoro's address is attached as Annex 3.

1.3 The Chairman, Dr. Koffi, expressed his appreciation to the Spanish Government and the island authorities for honoring the Commission with their presence at the opening session of the Seventh Regular Meeting of the Commission and expressed his gratitude for the warm welcome extended to ICCAT. The Chairman asked Mr. Aldasoro to convey ICCAT's sincere appreciation to Mr. Lamo de Espinosa, Minister of Agriculture and Fisheries.

1.4 The Chairman formally opened the meeting and welcomed all the delegates and observers to the Commission Meeting. He asked the participants to remember Mr. E. B. Young, former Commission Chairman and Canadian Commissioner, who passed away last August. Dr. Koffi expressed his sympathy to the Canadian delegates and asked them to give ICCAT's condolences to Mr. Young's family.

1.5 In his opening address (Annex 4), Dr. Koffi mentioned the scientific results achieved in various fields. He commented on the progress of various research programs and expressed his concern for the rational management of tuna resources since the regulations adopted by the Commission have only been applied irregularly until now. This situation is caused by the differences between the interests of the countries which are geographically close to the resources and the interests of those located far from the resources. He nevertheless concluded that the political and economic future of ICCAT is not free from potential problems, but that its enthusiasm, the quality and seriousness of its organization and its work, as well as its ability to adapt itself to the developing law of the sea allow us to hope for a very promising future.

1.6 He then referred to various scientific research tasks carried out throughout the year and to the scientific discussions held during the preceding week. He congratulated all the scientists and their Chairman, Mr. A. Fonteneau (France), for their success. He also commended the Executive Secretary and the Secretariat staff for successfully coordinating all the research and for organizing such a smoothly-run meeting.

1.7 The delegations of the member countries were introduced (see Annex 2, List of Participants).

Item 2. ADOPTION OF AGENDA, ARRANGEMENTS FOR THE MEETING AND APPOINTMENT OF SUBSIDIARY BODIES

2.1 The Commission reviewed the Tentative Agenda which was circulated 90 days before the meeting. The Commission adopted the Agenda without changes (attached as Annex 1).

2.2 The observer from the European Economic Community (EEC) referred to Agenda Item 30 and recalled the status of the EEC's request for full participation in ICCAT's work as a Contracting Party. He stressed the importance of the Commission's reviewing the amendments of the Convention proposed by France and making a decision on the matter. The French delegate agreed with the suggestion made by the EEC observer and further suggested that a working group be established to study this problem. The delegations from the U.S.A., Canada, Japan, Spain, Ivory Coast and Portugal supported the proposal to form such a working group and expressed their wish to participate in the group. The Chairman noted that there was a consensus on this proposal and it was agreed that the working group should have open participation.

2.3 The Commission decided that Agenda Items 4-17, 19-23 and 27-33 should be referred to the Standing Committee on Finance and Administration (STACFAD).

Item 3. ADMISSION OF OBSERVERS

3.1 All the observers (countries and various organizations) attending the meeting were welcomed and admitted (see Annex 2, List of Participants).

3.2 The observer from the EEC asked to be seated next to the French delegation, as France is the only EEC member among the ICCAT member countries.

Item 18. REPORT OF THE SECOND SPECIAL MEETING OF THE COMMISSION

18.1 The Executive Secretary presented the Report of the Second Special Meeting of the Commission held in Madrid, November, 1980 (COM/81/20 - Biennial Report, 1980-81, Part I).

18.2 Among various points in the Report, the Executive Secretary referred to the recommendation in Item 15 of the STACFAD Report regarding the location of the 1981 meeting and explained how he chose Tenerife as the place of the 1981 Meeting.

Second Plenary Session — November 12, 1981

Item 20. REPORT OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

20.1 Mr. A. Fonteneau (France), Chairman of the SCRS, presented the Report of the Standing Committee on Research and Statistics and summarized the scientific findings.

20.2 Mr. Fonteneau first explained the models used by the scientists in population analyses. He summarized the results of studies on stock structure, status of stocks, and recommendations for future studies which are reported in the pertinent sections of the SCRS Report. Also the results of SCRS studies of the effects of current regulations, where applicable, as well as any recommendations for new regulations, are found in each

species section. The SCRS Chairman drew the attention of the Commission and Panels to the pertinent sections of the Report.

20.3 He also touched on other points of SCRS business, including the great success of the International Skipjack Year Program, interest of the Committee in biological and ecological aspects of tuna in relation to population analyses, the symposium to be held next year, and inter-sessional meetings. He reported that Mr. J. S. Beckett (Canada) was elected Chairman of the SCRS for the 1982-1983 biennial period.

20.4 The Commission congratulated the SCRS for successfully carrying out scientific studies and for the remarkable progress made in that aspect. The SCRS Chairman was congratulated for his effective leadership during his four-year term and for his impressive, concise explanations given to the Commissioners regarding SCRS findings.

20.5 The Commission reviewed and adopted the SCRS Report (Annex 8).

Third Plenary Session — November 13, 1981

Item 27. INTERNATIONAL SKIPJACK YEAR PROGRAM

27.1 The Convener of the Sub-Committee on Skipjack, Dr. G. Sakagawa (U.S.A.) presented the Report of its meeting in Miami (COM-SCRS/81/25) and of its meeting held during the SCRS the week preceding the Commission Meeting (Appendix 3 to Annex 8). Dr. Sakagawa stated that this, the third year of the four-year Program, is the Skipjack Year. He noted with pleasure that all the activities have been executed properly and successfully. All the items planned for 1981 have been carried out.

27.2 Dr. Sakagawa referred to three manuals, i.e. Port Sampling, Shipboard Sampling, and Laboratory Manuals, each prepared in the three languages of the Commission. A total of 19,000 fish were tagged, two sonic tagging experiments were conducted, and exploratory fishing undertaken off Brazil, Cape Verde, and Cuba. Port sampling, using ICCAT's procedures, was extended to Cape Verde, Cuba, Morocco, Portugal and Venezuela. Several hundred samples of spines, gonads, etc. were collected to study age, growth, maturation, fecundity, and other aspects of skipjack biology. Oceanographic research was conducted from vessels, buoys and satellites as well as through examination of historical data.

27.3 The Sub-Committee recommended, and the SCRS concurred, that a scientific conference on skipjack should be organized in mid-1983 to provide a forum for presentation of papers describing Program results and to allow working groups to integrate these results into documents addressing each of the four questions asked by the Commission. These documents reporting the conclusions of the Program will be presented at the 1983 Commission Meeting, permitting commissioners to review all achievements.

27.4 The Commission reviewed the reports with satisfaction and congratulated the Sub-Committee, the Convener and the Skipjack Coordinator for a job well done. The Commission adopted the reports.

Final Plenary Session – November, 17, 1981

Item 21. REPORT OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION (STACFAD)

21.1 The Chairman of the Standing Committee on Finance and Administration (STACFAD) presented his Committee's Report. The Commission reviewed the Report, with particular attention to the following Agenda Items:

- Item 4. Panel membership*
- Item 5. Administrative Report*
- Item 6. Relations with other organizations*
- Item 7. Commission publications*
- Item 8. Auditor's Report 1980*
- Item 9. Financial status of Regular Budget 1981*
- Item 10. Working Capital Fund – Regular Budget*
- Item 11. Proposal for Commission to provide travel funds for the Chairmen of the Commission, STACFAD and SCRS to attend its meetings*
- Item 12. Regular Budget for Biennial Period 1982-1983*
- Item 13. Member country contributions to the Regular Budget 1982-1983*
- Item 14. Financial status of the Skipjack Program*
- Item 15. Working Capital Fund – Skipjack Budget*
- Item 16. Review of the Skipjack Budget*
- Item 17. Member country contributions to the Special Skipjack Budget*
- Item 19. Report of the Panel of Experts on Salaries and Benefits of the Secretariat Staff*
- Item 28. Training program for developing countries*
- Item 31. Date and place of the next meeting of the Council or Special Meeting of the Commission*
- Item 32. Items to be considered by the Council at its next meeting*
- Item 33. Date and place of the next Regular Meeting of the Commission*

21.2 The Commission adopted the Report of the Committee and concurred with all the recommendations made in the Report concerning these Agenda Items. The Report is attached as Annex 7. The Chairman congratulated the Committee Chairman, Mr. Blondin, and the members for their excellent work.

Item 22. REPORTS OF PANELS 1-4

22.1 The Reports of Panels 1 through 4 were presented by their respective Chair-

men. All the Reports (attached as Annex 5) were carefully reviewed and adopted by the Commission together with all the recommendations. The recommendations concerning the new bluefin regulations proposed by Panel 2 are discussed under Agenda Item 25.

Item 23. REPORTS OF SUBSIDIARY BODIES APPOINTED BY THE COMMISSION FOR THE MEETING

23.1 No other subsidiary bodies were appointed; therefore, no other reports were received.

Item 24. STATUS OF THE REGULATIONS ADOPTED BY THE COMMISSION REGARDING YELLOWFIN, BLUEFIN AND BIGEYE

24.1 The Executive Secretary referred the Commission to document COM/81/14 and presented the updated Summary Table showing the status of the regulatory measures which have been put into effect by each member country. The Commission reviewed the table, which is attached as Annex 6.

Item 25. OTHER POSSIBLE REGULATORY MEASURES TO BE CONSIDERED

25.1 The Commission noted that new regulatory measures on bluefin stocks (*Thunnus thynnus thynnus*) were recommended by Panel 2.

25.2 The delegate from Brazil stated the following, "Brazil does not agree with the recommendation made by Panel 2 concerning measures to protect bluefin because it includes the southwestern Atlantic. In principle, Brazil is in favor of the conservation of tuna resources and could not be otherwise as this is the purpose of the existence of ICCAT. However, the scientific basis applied does not seem satisfactory to us as bluefin tuna are only caught occasionally in the southwestern Atlantic. Since Brazil does not fish for bluefin, it might seem that this decision is not important to us, but we feel that it sets a dangerous precedent because other similar measures could be taken for species that Brazil does catch. We are concerned that the southwestern Atlantic has been included since some tags were collected which indicate migration from the northern to the southern hemisphere. However, the fact was ignored that many tags were recovered indicating migration between the western and eastern Atlantic, which means there is only one bluefin stock in the Atlantic.

The reason for this statement is a result of a special situation in which Brazil finds itself at this time, but we recognize the rights of and have complete respect for the decision made by the countries that are directly involved in the problem."

25.3 Japan objected to the recommendation for the reasons presented at the Panel Meeting (attached as Appendices 3 and 4 to Annex 5).

25.4 The Chairman decided to take a vote on the recommendations for the bluefin regulations. According to Rule 9, paragraph 3, of the Rules of Procedure, a quorum existed as more than two-thirds of the Contracting Parties were present, i.e. 15 countries out of a total of 19 member countries. It was confirmed that the proposal for the

bluefin regulation was made under Article VIII.1.b.ii of the Convention and, therefore, according to Rule 9, paragraph 2, a majority of the member countries of the Commission (or 10 affirmative votes) was needed to pass the recommendation.

25.5 In voting, 11 countries (Canada, Cuba, France, Ghana, Ivory Coast, Morocco, Portugal, Senegal, South Africa, Spain and U.S.A.) voted affirmative; one country (Japan) voted negative; and three countries (Brazil, Cape Verde and Korea) abstained.

25.6 The Commission adopted the recommendation on the bluefin conservation measures which appears as Appendix 5 to Annex 5. The Commission instructed the Secretariat to take the necessary measures to inform the Contracting Parties of the recommendation, according to Article VIII of the Convention.

Item 26. CREATION OF AN INFRACTIONS COMMITTEE

26.1 Referring to COM/81/27, the Executive Secretary explained that this item was included in the Agenda according to the Commission's decision at its 1980 meeting. He also noted that no new countries had ratified the ICCAT Port Inspection Scheme since the last Commission Meeting and, therefore, ratification by two countries is still lacking to implement the Scheme.

26.2 France asked all the delegates of countries which have not yet ratified the Scheme to take the necessary steps to accelerate the ratification of the Port Inspection Scheme.

26.3 Cuba proposed that the Secretariat inform all the Contracting Parties of the present status and to request again their taking prompt action on the matter. The Commission agreed with the Cuban proposal.

26.4 The Commission decided that the discussion of establishing an Infractions Committee is still premature, since the Port Inspection Scheme is not in effect. Therefore, it was decided to include this item again in the 1982 Agenda of the Commission Meeting.

Item 29. OTHER ACTIVITIES IN RESEARCH AND STATISTICS

29.1 The Commission reiterated all the recommendations made in pertinent sections of the SCRS Report (Annex 8) concerning research and statistics.

Item 30. REQUEST FOR ADMISSION TO THE COMMISSION BY THE EUROPEAN ECONOMIC COMMUNITY (EEC)

30.1 The Working Group, which had been established earlier to study the legal aspects of this subject, reported their conclusions: The Working Group held two meetings, the first, Friday, November 13, 1981, addressed in large part the question of the procedure to be followed to enable EEC accession to the ICCAT Convention. Three possibilities were raised: (1) we could adopt the amendment procedure provided under Article XIII of the Convention as has already been proposed by the Government of France through its formal proposal for amendment, (2) we could have recourse to a protocol to the Convention; and (3) a Conference of Plenipotentiaries might be convened to deal with

this issue. The question of whether Contracting Parties agreed "in principle" with the EEC accession was also raised. This latter question was the subject of much of the discussion at the November 17 meeting as well as the question as to the acceptability or non-acceptability of the existing French proposed amendment. There was general agreement, with one notable exception, that in principle the EEC could accede to the Convention. However, there was no consensus on the procedure or on the actual text of an amendment. So as to achieve some progress on these two important issues, the Working Group agreed to propose to this Commission that the ICCAT Secretariat, in consultation with FAO as the depository of our Convention, and subject to the need to satisfy financial and administrative requirements, convene a meeting of legal experts from each Contracting Party to address: (1) the need to correct the linguistic discrepancies in the three-language versions of the Basic Texts of the ICCAT Convention, and (2) the question of the procedure and the text of an amendment facilitating the EEC's accession. Such a meeting should take place as soon as possible and in any event in advance of next year's Special Meeting of the Commission. The legal experts should be empowered *inter alia* to work out a compromise text that could eventually be acceptable to their Governments.

30.2 The Commission accepted the report and concurred with the recommendations.

Item 34. OTHER ITEMS

34.1 No other items were discussed.

Item 35. ELECTION OF THE CHAIRMAN OF THE COMMISSION

35.1 France nominated Dr. L. Koffi (Ivory Coast) for reelection as the Chairman and this proposal was unanimously supported. Dr. Koffi was elected Chairman of the Commission for the 1982-1983 biennial period.

Item 36. ELECTION OF THE VICE-CHAIRMEN OF THE COMMISSION

36.1 The U.S.A. nominated Dr. T. Isogai (Japan) to be the First Vice-Chairman of the Commission and this nomination was unanimously supported. Dr. Isogai was elected for the 1982-1983 biennial period.

36.2 Spain nominated Mr. R. Garcés Velazco (Cuba) to be the Second Vice-Chairman and the nomination was supported unanimously. Mr. Garcés Velazco was elected Second Vice-Chairman for the 1982-1983 biennial period.

Item 37. ELECTION OF COUNCIL MEMBERS

37.1 Since a Special Meeting of the Commission will be held in 1982, the Commission decided that it would not be necessary to elect members of the Council for the next biennial period.

Item 38. ADOPTION OF REPORT

38.1 The Commission adopted the Proceedings of the Opening, Second and Third Plenary Sessions together with all its Annexes and Appendices.

38.2 The Commission decided that the Proceedings of the Final Plenary Session would be approved by mail, as soon as possible after the meeting.

Item 39. ADJOURNMENT

39.1 The Chairman of the Commission thanked the Chairmen of the Panels, the STACFAD Chairman, the SCRS Chairman and the scientists for their excellent collaboration during the meeting. He also expressed his appreciation to the Secretariat and the interpreters for their efficient work during the course of the Meeting.

39.2 The Meeting was adjourned.

AGENDA

Procedure of the meeting

1. Opening of the meeting
2. Adoption of Agenda, arrangements for the meeting and appointment of subsidiary bodies
3. Admission of Observers

Administration

4. Panel membership
5. Administrative Report
6. Relations with other organizations
7. Commission publications

Finance

a) Regular Commission Budget

8. Auditor's Report 1980
9. Financial status of Regular Budget 1981
10. Working Capital Fund – Regular Budget
11. Proposal for Commission to provide travel funds for the Chairmen of the Commission, STACFAD and SCRS to attend its meetings
12. Regular Budget for Biennial Period 1982-1983
13. Member country contributions to the Regular Budget 1982-1983

b) Special Skipjack Budget

14. Financial status of the Skipjack Program
15. Working Capital Fund – Skipjack Budget
16. Review of the Skipjack Budget
17. Member country contributions to the Special Skipjack Budget

Reports to the Commission

18. Report of the Second Special Meeting of the Commission
19. Report of the Panel of Experts on Salaries and Benefits of the Secretariat Staff
20. Report of the Standing Committee on Research and Statistics (SCRS)
21. Report of the Standing Committee on Finance and Administration (STACFAD)
22. Reports of Panels 1-4
23. Reports of subsidiary bodies appointed by the Commission for the meeting

Measures for the conservation of stocks

24. Status of the regulations adopted by the Commission regarding yellowfin, bluefin and bigeye
25. Other possible regulatory measures to be considered
26. Creation of an Infractions Committee

Research

27. International Skipjack Year Program
28. Training program for developing countries
29. Other activities in research and statistics

Other Matters

30. Request for admission to the Commission by the European Economic Community (EEC)
31. Date and place of the next meeting of the Council or Special Meeting of the Commission
32. Items to be considered by the Council at its next meeting
33. Date and place of the next Regular Meeting of the Commission
34. Other items
35. Election of the Chairman of the Commission
36. Election of the Vice-Chairmen of the Commission
37. Election of Council Members
38. Adoption of Report

Adjournment

39. Adjournment

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**OPENING ADDRESS BY MR. M. I. DE ALDASORO,
SPANISH UNDER-SECRETARY OF FISHERIES**

The Minister of Agriculture and Fisheries, Mr. J. Lamo de Espinosa, on behalf of the Spanish Government, would have liked to welcome personally all the participants of the Seventh Regular Meeting of the International Commission for the Conservation of Atlantic Tunas. However, he was unable to be here, precisely because of a matter concerning fisheries. In fact, today the Senate is debating the approval of a Spanish-Moroccan Fishery Protocol, which has already been approved by the House of Deputies, and he must attend the session to defend this Protocol.

For this reason, I was chosen to welcome, in the name of our Government, all the participants who this year have the privilege to meet in Puerto de la Cruz, a marvellous site on a beautiful island which demonstrates two innate characteristics of this Commission: tuna conservation and a willingness to receive new arrivals.

This concern for conservation can be seen from this very hotel: the Orotava Botanical Park where all the native plants are cared for and preserved with careful attention by all the island inhabitants. The many foreign fishing fleets that use our islands as a base for their fishing activities exemplify the Canarian spirit of warm and sincere hospitality.

Both spirits are pillars of this organization: ICCAT's concern for tuna conservation in combination with optimum exploitation, and a desire to receive all the countries in the area which are interested in this fishery are characteristics which are the basis for this organization.

The Canary Islands are not only this, but much more. As regards tuna, our islands are located exactly at the convergence of tuna migratory routes. In Canarian waters there are several tuna species from different habitats. Temperate species, such as albacore, come to these waters as well as species from warm tropical waters such as yellowfin, skipjack and bigeye. We are at the crossroads of the geographical distribution of various species.

But let us now turn to the work at hand. We have met here to write jointly a new chapter in the history of this Commission, which is beginning to be long and interesting. This new chapter should reflect the work already carried out as well as progress made towards a better knowledge of the oceanographic and biological conditions favorable to these species, their migrations and the reasons for them, the abundance and strength of each tuna generation in different areas of the Atlantic. As a result of this improved knowledge, we should proceed in establishing the measures deemed most appropriate to maintain these resources at optimum exploitation.

The vital importance of prior scientific studies is evident. The scientists worked during the preceding week, as in the past, to analyze their studies, compare the results and refine their evaluations of the resources. I have carefully reviewed the Agenda of the

Standing Committee on Research and Statistics, giving special attention to Item 6, "Review of conditions of stocks" for each species. Every year we await the pertinent recommendations that the scientists present to us, the people responsible for fishery management in each of the countries represented here.

I was informed that this year a Symposium was held during the ICCAT meeting. The Symposium was entitled "The Definition of Tuna and Billfish Habitats and Effects of the Environmental Variations on Apparent Abundance and Vulnerability to Fisheries." The subject was very pertinent and I am sure that the discussions were very useful for everyone.

We recall that human effort is of little importance when compared with oceanographic and environmental variations and the inter-relations between the species. Therefore, the multi-species analyses are very important.

Within this context of scientific studies, I would particularly like to mention the importance of the skipjack research program initiated in 1979. This program was planned for four years and now it seems that the scientists plan to extend it for one more year, that is, until 1983. In general terms, I believe it is generally accepted that skipjack are still under-exploited and there still exist important resources of this species that are not exploited. The Skipjack Program has its own special budget, which is probably in fact too small if we look beyond the figures which appear in ICCAT financial reports and, more so, if we consider the costs of each research cruise. These cruises require vessels and technicians on board, and the expenses incurred are borne by the countries carrying out the cruises, among which Spain stands out for its financial efforts in this aspect. This Program should confirm the existence of substantial non-exploited resources of skipjack. Thus, the traditional fleets can continue to exploit the traditional fishing grounds, as well as allowing the incorporation of new fleets of countries that show an interest in these fisheries and which will play an important role in helping to solve man's problem of the scarcity of food.

Without expressing excessive optimism, we feel that in the ten long years the Commission has been in existence, basic knowledge has been provided to the Fishery Administrations. This knowledge has permitted them to put regulations into effect for the protection of tuna resources. In addition, I feel that the Commission has helped to make us responsible to the national administrations by offering improved collaboration in scientific research programs as well as by improving our data collection system and by encouraging completion of these regulations.

In summary, ICCAT is a forum in which:

- a) the scientists from various countries can undertake programs jointly so that those countries that lack financial resources and which would find it very difficult to carry out such programs alone can participate. Otherwise, these would not be within reach of many of the Commission member countries.
- b) the national fishery administrators can carry out rational management of the tuna resources and obtain optimum exploitation without risk of the depletion of these resources.

I have referred to programs, scientific studies, and to the Commission itself. Let us now center our attention on tuna, whose diverse species from the temperate and tropical waters inhabit Canarian waters. Please let me make a few comments on the future of the tuna fisheries in these waters.

I would like to remind you that several years ago sardine catches off the northeast coast of Spain (Galicia) declined considerably to such a point that we began to think that this species, which follows migratory routes according to environmental conditions, had temporarily abandoned that coast. This caused serious problems, with socio-economic repercussions. The scientists were able to prove, however, that the sardine had not abandoned the Spanish coasts. Actually, the thermocline was responsible for the lack of catches; that is, sardines were present but at a depth that the purse seine gear in use could not reach.

Now I wonder, could tuna be present on a permanent basis in the Canary Islands waters but at depths too great for the gears to reach? Could there be tunas that are not part of the commercial stocks? Do these tunas exist, but at distances or depths that the fishermen cannot reach with the equipment currently used? I refer these questions to the Standing Committee on Research and Statistics for their study and, possibly, the answers to these questions. ICCAT will have been of great service to the Canary Islands, which will be returned through the courtesy and friendliness that I'm sure the inhabitants will show you.

To answer these questions, the SCRS may have to carry out extensive research. The Spanish Oceanographic Institute will contribute its efforts, but it would be very useful if ICCAT would collaborate to try and decipher these unknown factors about tuna. Such collaboration would also be beneficial to the other member countries by providing them with additional knowledge on tuna species, which is one of the purposes for which the Commission was created.

Finally, I would like to express my desire that other countries which are not yet members of ICCAT but are here as observers and which are interested in tuna fisheries, become full members. Following this invitation, I would like to comment on what Spain could represent for new members, as it represents for all fishing countries.

Last month the Spanish House of Deputies debated in great detail the subject of fisheries. On that occasion, the Minister, Mr. Lamo de Espinosa, referred to something that is of vital importance to fishing countries and those that have resources off their coasts. Fishing as a social and economic activity comprises a broad cycle that goes from scientific research and surveys, to catches, landings, transport and finally to the sale of the product.

To develop this cycle, at least the following elements are necessary:

1. fishery resources
2. fleet, technology and crews
3. port infrastructure and transport services
4. markets

Spain is a fishing power from the point of view of fleet, technology, crew and catches. Spain has the most open port infrastructure in the world. The number of vessels with foreign flags that use our ports as a vital base for their fishing activities is proof of this. Spain has one of the best consumer markets. In Europe, the average consumption of seafood per capita is 9 kgs, while in Spain, the average is 40 kgs. More importantly, the prices of the fish are higher in our country than in the rest of Europe.

The only thing that Spain lacks is sufficient resources— one of the four basic elements. Spain has, without a doubt, the most difficult factors to improvise, such as the geographic location, the human element, and the market. It is important to emphasize

this fact when in the last few years attention has been centered on extending the Exclusive Economic Zone which, in short, constitutes only one of the four basic elements.

Certainly, in this Commission these ideas stand out. Tuna is not, and cannot be, "corralled" by boundaries in the sea, because of its completely migratory nature.

That is why I wanted to insist on this point, to underline the fact that Spain offers and will continue to offer its infrastructure, participation in the Spanish market, and scientific training to those countries that collaborate with us in the rational exploitation of the resources and in maintaining fishing activity.

With these thoughts, I will end my introductory address. Perhaps it was somewhat long; but that is due to the interest I have in taking advantage of this opportunity to communicate with all of you, the members of the Convention, the observers, and those countries that may someday sit with us in ICCAT.

Thank you very much.

OPENING ADDRESS BY DR. L. KOFFI, COMMISSION CHAIRMAN

Distinguished delegates:

It is with great satisfaction that I encounter such a large number of participants at the Seventh Regular Meeting of our Commission. This is, I am sure, a true testimony of the constant interest that you have for our work.

I would like to reiterate my sincere thanks and welcome all of you to this lovely and charming town, Puerto de la Cruz.

I cannot put off any longer a rather sad duty, which is to ask you to remember Mr. E. B. Young, my predecessor as Chairman of the Commission, who died suddenly last August. We recall his vast scientific knowledge, his great professional experience, and above all, his competence and confidence in carrying out his duties as Chairman. On behalf of all of us, please allow me to convey our sincere condolences to the Canadian delegation. I would also like to ask the Canadian delegation to relay our sympathy to Mr. Young's family.

At a time when our Commission meets for the seventh time in regular session, and marks the third anniversary of the International Skipjack Year Program, I would like, first of all, to assess our activities and comment on the recent developments of the Skipjack Year Program.

Mr. J. Lamo de Espinosa, Spanish Minister of Agriculture and Fisheries, said in his opening address at the Second Special Meeting (Madrid, November 12-18, 1980), and I quote:

"At a time when the majority of the international fishery organizations are facing difficulties, our Commission has a clear view towards the future and this is due to the fact that the ICCAT is concerned with tunas, species which, because they are highly migratory, rely on the assistance of all countries for their rational management and conservation. However, we have to be realists and we must not dwell on the positive aspects of this organization without analyzing some of the difficulties which confront the Commission and for which special attention must be given."

Those words bid me to present some thoughts concerning the matters that constitute the essential concerns of our Commission.

Without going into details that will be covered by succeeding speakers, let us examine, if you will, and assess our Commission's activities.

This non-exhaustive assessment could be broken down into two levels: A) the scientific level, and B) the level of rational management of tuna resources.

A) We have every reason to be satisfied with the results obtained on the scientific level, as they are quite impressive. I would like to point out the most significant ones:

--good logbook coverage for most of the industrial fleets

--very good size sampling in practically all member countries (200,000 tunas were measured in 1980)

- excellent utilization of the ICCAT data base, which is available to all member countries
- considerable progress in research
- use of more efficient models such as fishery simulation models which will allow for future rational management of the fisheries and the conservation of stocks.

The results vary, of course, according to the species:

Yellowfin (*Thunnus albacares*) is probably the best known tuna species in the Atlantic. Following a recommendation made by the SCRS to improve fishery production, a 3.2 kg minimum weight limit for yellowfin was put into effect in 1973.

Bigeye tuna (*Thunnus obesus*) has been studied less, although the biology and dynamics of this species seem particularly complex, since bigeye is partially a tropical species, especially the juveniles, and partially a temperate species. Because of the strong growth potential of bigeye and because juvenile bigeye mix with yellowfin, ICCAT adopted in 1979 a minimum size limit regulation for bigeye identical to that established for yellowfin.

Skipjack (*Katsuwonus pelamis*) is a species that was virtually ignored scientifically until 1976, although the catch potential of this species seemed very interesting. That marked the origin of the International Skipjack Year Program, which developed within the ICCAT framework. Research projects carried out in 1981 by a number of ICCAT member countries are varied and intensive. The program is developing successfully and it is certain that in 1982 and 1983 the scientists will answer the majority of the questions that were asked at the beginning of this Program. ICCAT's role is also important: it is indisputable that this project could never have been set up or carried out without this Commission's help. Moreover, the international collaboration among all the member countries has been exemplary at each stage of the Program.

The temperate species, albacore (*Thunnus alalunga*) and bluefin (*Thunnus thynnus*) are also studied by ICCAT. The status of albacore stocks has been analyzed regularly for the last five years and no serious problems have arisen. Therefore, no regulatory measures have been put into effect for this species.

Bluefin tuna, a species that has been exploited since ancient times, has been given special attention in ICCAT, in spite of the relatively low catches. There are various factors which make this species especially interesting: its frequent trans-oceanic migrations, very long life span (25 years), strong growth potential (giant bluefin tuna weigh more than 500 kg), its long history of exploitation, and above all, an apparently sharp decline in abundance which worries the scientific community. Since 1975, conservation measures have been in effect to protect the stocks: a 6.4 kg size limit and a limit on fishing mortality.

Finally, billfishes, which include sailfish, blue marlin, white marlin and swordfish, have also been studied by ICCAT. Knowledge of these species, however, remains very fragmentary as was confirmed by the Ad Hoc Working Group on Billfishes which met in Miami in June, 1981. The difficulties are due to the uncertainties of stock identification as well as from the poor quality of catch and catch-per-effort statistics.

B) As regards fishery management and conservation of resources, ICCAT has established regulations for yellowfin, bluefin and bigeye. These regulations have been adopted

by the majority of the member countries and incorporated into their national legislation.

A port inspection scheme was adopted by ICCAT and is on the way to being implemented on the international level. The regulations adopted by the member countries within the ICCAT framework are, therefore, varied. However, it must be recognized that the application of these regulations is often poor. For example, the yellowfin regulation has been continuously violated for seven years (certain fleets catch more than 80 percent under-sized yellowfin!), apparently without any apprehensions or penalties!

Likewise, the bluefin regulations are applied only irregularly. In fact, it seems that the regulations adopted within the ICCAT framework have had only a marginal effect in that they limit the increase in catch of small yellowfin, bluefin and bigeye and partially limit the fishing effort on bluefin tuna. While not encouraging, these results are not negative.

There you have our assessment since our last meeting.

Now let us look at the problem areas and those which should be given special attention.

ICCAT has, by its very nature, various weaknesses. First of all, its conception and Basic Texts were developed prior to the new Law of the Sea and the creation of the exclusive economic fishing zones. It is indisputable that the majority of the tuna species are migratory, and during their life time cross many economic zones and live on the high seas. However, these countries which have an important biomass of tunas in "their waters" have acquired, in fact, the right to exploit and conserve those resources. This particular right has not been taken into account by the ICCAT.

With this in mind, you will recall that there are currently 19 member countries in ICCAT: some are developing countries, often with tuna resources along their coasts, while others are industrialized nations which have the machinery for production but often do not have resources near their coasts. This results in a fundamental divergence in the management and resource conservation viewpoints: coastal countries which do not have tuna fleets are interested mainly in maintaining the resource at a high level of abundance, while expecting to develop their fisheries; and the interest of industrialized countries whose coasts are far from the resource lies, in general, in profiting as much as possible from their heavy investments, which could bring about the "accidental" overexploitation of the stocks.

This difference in interests remains latent in ICCAT and risks being accentuated in the future.

In direct relation with these problems, ICCAT's terms of reference are limited, in accordance with the Basic Texts, to the "biological" conservation of resources through maximum sustainable catches. This concept, which presents the advantage of being biologically sound, is now totally insufficient for fisheries management. The "rational" management of the fisheries rests at the present time on a combination of biological objectives (e.g. maintenance of the resource) and socio-economic objectives (volume of catches, profitability, full employment, etc.), either on the short-or medium-term basis. This modern approach, which on the one hand, would probably show the economic differences between the member countries, is statutorily inaccessible to ICCAT.

Moreover, the control of regulations regarding tuna fishing could pose legal problems in implementation and require extremely complex control techniques.

Even though ICCAT's political and economic horizon is not free from potential

problems, its dynamism and the quality and seriousness of its structure and its work forecast a very promising future for ICCAT.

The research structure, which has brought about the development of fishery statistics and research work in the majority of the member countries, is a very positive factor. The necessity for coordination and centralization of statistical and research efforts remains indisputable. The ICCAT Secretariat fulfills its role perfectly at a rather moderate cost if we take into account the work accomplished.

The past and future scientific progress of ICCAT constitutes, in fact, its best foundation; the permanent east-west and north-south dialogue always maintained within this Commission allows us to be confident of ICCAT's adapting to the new conditions of the Law of the Sea and to the rational exploitation of Atlantic tuna resources.

Distinguished delegates:

It pleases me to underline the importance of the tasks that are about to be initiated and which will be centered on the International Skipjack Year Program. Considerable research has been carried out in the overall framework of this Program and I would like to congratulate the countries for their remarkable efforts.

Like last year, I have had the privilege to witness the scientific work in progress, and I can assure you that, in spite of the pleasant surroundings that invite relaxation, the scientists have not spared their efforts or their weekends in order to present to you scientific studies of the highest quality. On behalf of all of you, I extend to them our thanks and warm congratulations. Please allow me to express in particular my esteem and admiration for the Chairman of the Standing Committee on Research and Statistics, Mr. Alain Fonteneau, for his unselfish dedication in carrying out the difficult task as SCRS Chairman, which he accomplished with apparent ease and simplicity that was admirable.

This is also the time to thank once again and to congratulate the Secretariat led by Mr. O. Rodríguez-Martín, which has done an excellent job in coordinating the research programs and which at all times acted with the desired competence and efficiency.

Distinguished delegates:

Our schedule is very full, I know, but I also know that you are all human. You will not resist, therefore, the desire to visit this cordial and charming town of Puerto de la Cruz and its surroundings. I can assure you that the inhabitants of this island will greet you with joy and friendliness because they have made hospitality their religion.

I wish you an agreeable and useful stay on the island of Tenerife, and hope that our work will be crowned with success.

I officially open the Seventh Regular Meeting of the International Commission for the Conservation of Atlantic Tunas.

Dr. L. Koffi
November 11, 1981

REPORTS OF THE MEETINGS OF PANELS 1-4

Report of the Meeting of Panel 1

Puerto de la Cruz, Tenerife, November 1981

1. OPENING

The meeting was called to order by the Chairman, Mr. M. Mensah (Ghana).

2. ADOPTION OF AGENDA

The Tentative Agenda was adopted without changes (Appendix 1). However, the Chairman requested that Item 10, Election of Panel Chairman, be postponed until the adoption of the Report.

3. ELECTION OF RAPPORTEUR

Mr. R. Stone (U.S.A.) was appointed rapporteur.

4. REVIEW OF PANEL MEMBERSHIP

There were no changes in Panel membership; all the panel members were present, except Angola and the U.S.S.R.

5. REVIEW OF REPORT OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

Mr. Mensah asked the SCRS Chairman, Mr. A. Fonteneau, to summarize the Committee's Report on yellowfin and skipjack.

5-a) Yellowfin

The previous peak catch of yellowfin, about 133,000 MT in 1978, should be exceeded by the projected 1981 catch of some 142,000 MT. The major reason for the large increase projected in 1981 is the very large Spanish purse seine catch, over 55,000 MT (compared to 30-40 thousand tons a year in 1976-80). The 1981 FIS projected baitboat

catch is also roughly double when compared to 2,100 MT for 1979-80. All of these increases occurred in the eastern Atlantic. Catches for other components of the fishery apparently did not change much from 1980 levels.

The question of a single stock or two stocks is unresolved, but nearly all the surface fishery data come from the eastern Atlantic. No new analyses of the two-stock hypothesis were presented.

Under a single stock hypothesis, it appears that there has been a general downward trend of CPUE in the eastern Atlantic purse seine fishery during the 1970's. A production model analysis which used updated data gave MSY estimates ranging from 118,000 to 219,000 MT. A more realistic estimate of the upper level of MSY for the current fishery is 155,000 MT, with twice the current fishing effort (for the $m = 0$ model). Considering the high projected catch for 1981 and the estimated fishing effort, the Committee believes that the stock is presently being fished near the upper estimated MSY, and that increased fishing effort with the current fishing pattern would not produce a proportionate increase in yield.

5-b) Skipjack

Skipjack catches approached 111,000 MT in 1980 and are projected to attain an all-time high of about 140,000 MT in 1981. Data from the International Skipjack Year Program are being collected but are not yet analyzed. Therefore, no good index of skipjack abundance is available and no new analysis was presented this year. The potential yield from the stocks is unknown, but available information suggests that the potential is larger than current catch levels.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS

6-a) Yellowfin

Mr. Fonteneau noted that there is a minimum size regulation for yellowfin but it is not being followed. The high number of under-sized fish being landed, discarded and not reported causes a problem in estimating the status of stocks. Mr. Fonteneau requested that the Commission continue the 3.2 kg regulation and take measures to correct the problem of under-sized fish mortality.

The U.S.A. supported Mr. Fonteneau's request and recommended the Commission take appropriate action. The delegate from France fully supported the U.S.A.'s recommendation.

6-b) Skipjack

No specific conservation measures were recommended by the SCRS at this time, but Mr. Fonteneau did request better data on "phantom" or non-member countries' fleets. The Chairman supported this request and asked the Commission to appeal to these fleets to make these data available.

7. RESEARCH NEEDED TO BE CARRIED OUT

7-a) *Yellowfin*

Mr. Fonteneau stated that the Spanish scientists have done excellent work on collecting data and that the needed analyses are underway. He also complimented the Cuban researchers for good statistics on their longline fleet and requested biological samples from this fishery. Continued research is needed on recruitment and growth. Also simulation models are needed to study the impact of non-reporting and potential effect of closed seasons.

The Spanish delegate reported that 1979 and 1980 data are being processed and should be available by the end of the year or early next year.

7-b) *Skipjack*

Mr. Fonteneau reported that the research taking place under the International Skipjack Year study is going well. All the data should be analyzed by 1983 and the results will be presented to the commissioners at their meeting during that year.

8. DATE AND PLACE OF NEXT MEETING

The Panel agreed to hold its next meeting at the same place and at the same time as the next Commission Meeting.

9. OTHER MATTERS

No other matters were discussed.

10. ELECTION OF PANEL CHAIRMAN

Ghana was re-elected unanimously.

11. ADOPTION OF REPORT

The Report was adopted.

12. ADJOURNMENT

The Panel was adjourned.

Report of the Meeting of Panel 2

Puerto de la Cruz, Tenerife, November 1981

1. OPENING

The meeting was opened by the Chairman, Mr. A. Lahlou (Morocco).

2. ADOPTION OF AGENDA

The Tentative Agenda (attached as Appendix 1) was adopted.

3. ELECTION OF RAPPORTEUR

Mr. R. Pianet (France) was appointed rapporteur.

4. REVIEW OF PANEL MEMBERSHIP

There have been no changes in panel membership and all eight members were present.

5. REVIEW OF REPORT OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

5-a) Bluefin

The SCRS Chairman, Mr. A. Fonteneau, first explained the particular problems concerning bluefin tuna population studies in the Atlantic:

He first reiterated the uncertainties concerning stock structure; the Committee believes, however, that present evidence (which is still somewhat weak) is towards the hypothesis of two separate eastern and western stocks with a small and variable interchange.

He then stressed the main scientific problems concerning the species: because of the longevity of the fish and the diversity and large number of the fisheries, only cohort analyses can be used. Although these analyses only show relative abundance levels, they provide significant trends; these trends can be weakened or strengthened by the uncertainties concerning the abundance levels of the younger age-classes.

He then reviewed the most important points of the SCRS Report (Annex 8) as well as the conclusions concerning bluefin tuna stocks in the Atlantic:

In the *eastern Atlantic*, adult abundance decreased by half from 1960 to 1979; however, the stock increased and reached a better level in 1980, due mainly to several years of high recruitment. Exploitation levels of adults remained at the 1974 level but that of juveniles decreased. A significant increase in the exploitation rate would reduce abundance below current levels. The stock, therefore, seems stable at the current exploitation level and current regulations controlling size and fishing mortality seem sufficient.

In the *western Atlantic*, the abundance of juveniles and adults decreased steadily since 1960 and current levels are low. The very abundant 1973 year-class, although greatly reduced by heavy exploitation, makes up about 40 percent of the adult stock, according to current estimates. Juvenile exploitation decreased since 1970 and thereafter remained stable; adult exploitation increased and has remained high since 1977. At the present time, the catches are above the surplus of the production possibilities, and the probability of an abundant year-class entering the fishery remains slight. The western adult stock seems depleted, therefore, to a very low level, and juvenile classes do not appear abundant. Under these circumstances, it is recommended that catches of juveniles as well as adults be reduced to as near zero as feasible.

If we consider that there is a single *Atlantic-wide stock*, the abundance of adult fish as well as juveniles decreased since the 1960's at a rate halfway between that of the eastern and western analyses. Fishing mortality rates of both adults and juveniles increased slightly since 1976, and no abundant cohort is expected to enter the fishery. Research shows that, under current conditions, the adult stock would not be able to withstand a catch over 9,500 MT. Since juvenile year-classes do not seem to be very abundant, it is recommended to reduce the catch from these juveniles to as low a level as possible. Since the implementation of the size regulation, catches of bluefin tuna weighing less than 6.4 kg have considerably decreased as compared with the record level of 1975.

5-b) *Albacore, North*

The traditional separation of Atlantic albacore into north and south stocks (separated at 5°N) is accepted by most experts and was not questioned.

The combined longline-surface catches fluctuated for about 15 years at a level slightly below the estimated MSY (60,000 - 65,000 MT). For the last few years, effort decreased (for longliners as well as for baitboats and trollers).

The adult element of the stock remained constant, while juvenile abundance increased since 1973. The 1980 catches amounted to 37,000 MT with an estimated effort of about half that needed to produce MSY. The North Atlantic albacore, therefore, seems moderately exploited, and the yield-per-recruit is increasing. Under present conditions, an increase in effort should allow a significant increase in catches. However, the apparently low level of the parent stock and the high variability of recruitment make it necessary to closely monitor the stock.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS

6-a) *Bluefin*

The delegate from the United States congratulated the SCRS Chairman for his presentation and his comments which were particularly concise and interesting. He referred to the concern expressed by his country for several years as to the decreasing abundance of bluefin, and stressed the alarming development of the situation described in the

SCRS Report, regardless of the stock structure hypothesis used. He concluded that it is essential to take measures to reduce the catch to the lowest possible level; he therefore proposed to limit the directed fishery catch and the incidental catch of bluefin tuna in the western Atlantic to 565 MT for a period of two years, to take effect at the latest on December 31, 1981, while continuing the current regulations. His declaration is attached as Appendix 2 to this report.

France requested a definition of the geographic limits of the eastern and western areas. These are shown in Addendum 1 to Appendix 5 of this report.

The Japanese delegate also made a statement showing his country's position (Appendix 3 to this report). He reiterated that his country believes in the single Atlantic-wide hypothesis and that the stock must, therefore, be managed as such. He also mentioned the uncertainties of the methods used in calculating the stock abundance, the importance of the Atlantic bluefin fishery to his country, and the voluntary restrictions already adopted by Japan in the Mediterranean and in the western Atlantic. The new measure would cause serious damage to the Japanese tuna fishing industry. He, therefore, requested further study of this subject. In addition, Japan would like to have a sufficient amount of time to review the SCRS Report and therefore would like to withhold its decision in the meantime.

The Canadian delegate noted that the SCRS recommendations may seem surprising, but scientists have felt concern in this respect for a number of years and the Canadian delegation had repeatedly stated its wish to propose more strict conservation measures. Although measures are necessary, it is equally important to be able to continue monitoring the stock abundance. He acknowledged Japan's goodwill in taking measures beyond existing regulations, but he observed that bluefin abundance is still decreasing. He, therefore, in principle supports the U.S.A.'s proposal. However, he requested a more precise definition of the basis for calculating the 565 MT catch level.

The U.S. delegate specified that his country's concern is two-fold: to improve the stock status—and therefore to limit catches as much as possible—and to obtain a minimum of data so as to continue scientific analyses and monitor stock abundance. The 565 MT, to be allocated among countries concerned, should allow these two objectives to be reached and should represent a catch of 100 MT of 1-4 year-old fish (< 130 cm), 100 MT (1,000 fish) of 5-9 year-old fish (131-196 cm) and 365 MT (1,000 fish) of 10 years and older fish (> 197 cm). These figures could, of course, be further discussed by the countries concerned. He added that he had paid attention to Japan's arguments, since everyone knows that this country has always been one of the first to take measures whenever these were shown to be necessary, but that the problem was urgent and could not be left pending any longer.

Korea expressed its view that certain measures are needed. However, from the viewpoint of the rational resource utilization to supply the animal protein to mankind, regulatory measures should be light as far as possible, within the range of maximum sustainable yield of resources based on scientific studies.

In answer to a question raised by France, the delegate from the U.S.A. specified that in fact he was requesting a Commission recommendation although only three countries are interested in this measure. In effect, ICCAT's Basic Texts do not contain any specific provision permitting only the countries participating in the fishery to a signifi-

cant extent to be involved in making decisions concerning conservation measures that affect only those countries.

Following a suggestion made by Canada, the delegates decided to postpone discussion on this subject in order to give all the delegations enough time to study in detail the various proposals.

When the discussions were continued, Canada and the United States presented a joint draft recommendation; Spain also submitted proposals and France made a statement. Most of the delegates reiterated their proposals concerning the adoption of new regulations in the western Atlantic:

France stressed the fact that existing measures should be maintained, and that a transfer of fishing effort from the west to the east should be avoided. This declaration was supported by Canada, Portugal and Morocco.

Upon presenting a draft recommendation, Spain showed that it was clear, without entering into the hypotheses of the existence of one or two stocks and according to the SCRS Report, that bluefin tuna in the western Atlantic were in an alarming situation that required special protection measures. Spain supported the French statement and added that it presented a draft recommendation to bring about a constructive solution at a time of danger for a species and to be consistent with the purpose of belonging to ICCAT which has conservation of tuna species in the Atlantic as its objective. Spain added that not taking positive measures in a case such as this would compromise the effectiveness of the Commission.

Since no satisfactory solution or agreement was reached with the representatives of the other countries concerned, Japan reiterated its reservation concerning the existence of two stocks and the validity of the analyses presented. Moreover, Japan questioned the validity of these proposals: the procedures established under the terms of Rule 8 of the Rules of Procedure stipulate an advance notice of 60 days for any recommendation formulated under the terms of Article VIII of the Convention; however, this was not respected. Under these circumstances, Japan proposed that the decision be postponed until after the meeting of the Working Group on Bluefin, to take place in 1982, and cannot—at this time—accept the proposals presented by the Panel. Japan's statement is attached as Appendix 4.

The U.S.A. clarified the joint Canada/U.S.A. proposal and added that it did not believe that a procedural problem was involved since the recommendation of the Panel would be based on the recommendations of the SCRS.

Spain was willing to support any positive declaration.

A consensus was then reached in favor of a recommendation to be made by the Panel, and it was decided that a Working Group would meet to complete a draft, synthesizing the various proposals.

A joint draft recommendation was then completed and, following some modifications, this draft recommendation was accepted by all the delegations, except Japan. The recommendation is attached as Appendix 5 to Annex 5.

Japan stressed that this recommendation represents a substantial change as compared with previous regulations, and regretted that the Panel didn't spend more time studying the SCRS recommendations. Japan noted in particular that the previous measure concerning the limitation of fishing mortality referred to the whole Atlantic and not the eastern and western Atlantic separately; such a modification—affecting the substance and

not only the form--should therefore have been included in the Tentative Agenda, which was not the case. Under the circumstances, Japan strongly opposed this proposed regulation.

The Panel's draft recommendation was finally accepted by all the member countries except Japan, who particularly opposed points 2, 4, and 5.

This recommendation, approved by the majority of the Panel, is therefore submitted to the Commission for approval.

6-b) Albacore, North

Since the status of this species seems satisfactory, no comments were made by any delegation on the Chairman's presentation.

7. RESEARCH NEEDED TO BE CARRIED OUT

The SCRS Chairman referred the Panel to the recommendations on research which are included in the SCRS Report, for both bluefin and albacore. No comments were made on these recommendations which were then accepted.

8. DATE AND PLACE OF NEXT PANEL MEETING

The Panel agreed to meet at the same time and the same place as the next Commission Meeting.

9. OTHER MATTERS

No other matters were discussed.

10. ELECTION OF PANEL CHAIRMAN

Spain proposed that the present Chairman, Morocco (Mr. A. Lahlou), be reelected. This proposal was supported by France, Canada, Japan, Portugal and the U.S.A.

11. ADOPTION OF REPORT

The report was adopted with slight modifications.

12. ADJOURNMENT

The meeting was adjourned.

Report of the Meeting of Panel 3

Madrid, November 1981

1. OPENING

The meeting was called to order by the Chairman, Mr. T. Isogai (Japan).

2. ADOPTION OF AGENDA

The Tentative Agenda was adopted without change (Appendix 1).

3. ELECTION OF RAPPORTEUR

Mr. D. Crestin (U.S.A.) was designated rapporteur.

4. REVIEW OF PANEL MEMBERSHIP

All the Panel members, except the U.S.S.R., were present. The delegate from Korea indicated the intention of Korea to withdraw from Panel 3 membership. The Panel confirmed that Korea's withdrawal would become effective immediately, according to the Rules of Procedure.

5. REVIEW OF REPORT OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

Mr. A. Fonteneau summarized pertinent conclusions of the SCRS Report for the Panel. There is little scientific activity undertaken by the SCRS with respect to southern bluefin and southern albacore. Scientific documents concerning these species were not presented to the SCRS.

5-a) Southern bluefin

This species represents a unique problem since it is believed to be represented by a single stock that is found in the Atlantic, Pacific and Indian Oceans. The fishery in the Atlantic Ocean is conducted primarily by Japanese longline vessels that exhibit effort shifts between the Atlantic and Indian Oceans. This fishery is being monitored by ICCAT. The SCRS Chairman stressed the need to maintain the harvest of juveniles at a low level.

5-b) Albacore, South

This fishery was developed during the early 1960's. Annual harvest levels are in the order of approximately 20-30,000 MT, which represents the levels near the estimated MSY of 25,000 MT. The fishery is conducted primarily by longline vessels. As a result, large fish primarily are harvested which leads to a high yield-per-recruit. As such, the yield-per-recruit is not subject to improvement.

The SCRS recommends that statistics be collected to reflect the purse seine fishery conducted by South African vessels in an effort to determine their impact on the stock. There is a continuing problem to refine abundance estimates and to test whether the production analysis is correct.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS

6-a) *Southern bluefin*

No comments were made.

6-b) *Albacore, South*

No comments were made.

7. RESEARCH NEEDED TO BE CARRIED OUT

No comments were made. The Panel reiterated the SCRS recommendations concerning research.

8. DATE AND PLACE OF NEXT PANEL MEETING

The Panel agreed to hold its next meeting at the same place and at the same time as the next Commission Meeting.

9. OTHER MATTERS

No other matters were discussed.

10. ELECTION OF PANEL CHAIRMAN

Japan was reelected to the Chairmanship, based upon the recommendation of South Africa and seconded by Portugal, U.S.A., Cuba, Brazil and Spain.

11. ADOPTION OF REPORT

The Report was adopted.

12. ADJOURNMENT

The meeting was adjourned.

Report of the Meeting of Panel 4

Puerto de la Cruz, Tenerife, November 1981

1. OPENING

The meeting of Panel 4 was opened by the Chairman, Mr. R. de Miguel (Spain).

2. ADOPTION OF AGENDA

The Tentative Agenda was adopted without modification (Appendix 1).

3. ELECTION OF RAPPORTEUR

Mr. B. García Moreno (Cuba) was appointed rapporteur.

4. REVIEW OF PANEL MEMBERSHIP

All members were present, except Angola and the U.S.S.R.

5. REVIEW OF REPORT OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

5-a) Bigeye

This species is taken by both longline and surface (purse seine and baitboat) fisheries. The major surface fisheries taking bigeye are the baitboat and purse seine fisheries in the areas off Madeira, Azores, Canary Islands, Dakar and in the Gulf of Guinea.

During the last twenty years, the longline fishery has taken the major part of the bigeye catch. After the total Atlantic bigeye reached a record high of 60,000 MT in 1974, the 1979 catch was 40,000 MT. The preliminary 1980 catch is 56,200 MT, with an increase in fishing effort for the same year.

Specific evidence does not exist to confirm the presence of one or two stocks in the Atlantic.

The production model analysis for the total Atlantic stock suggests a current catch level slightly below the MSY.

In analyzing the hypothesis of the existence of one stock in the north and another in the south, we see that for the north stock the fishery is currently operating at a level higher than that of 1979, but below the MSY.

For the south stock, it is assumed that the exploitation rate is higher than the exploitation rate for the north stock.

Several baitboat fisheries are subject to SCRS study in order to solve the problems existing with these fisheries which catch small bigeye.

Concerning recommendations, reference was made to the necessity to compile biological data from the Portuguese baitboat fleet catches, as well as the quantity of bigeye included in the Spanish tropical tuna catch. The Spanish delegate noted that the

quantity of bigeye involved in the Spanish fisheries is hoped to be known with greater certainty after the research activities corresponding to the International Skipjack Year Program have been carried out. He added that some technical difficulties related to data processing hopefully would be improved very soon. Finally, as another recommendation, reference was made to the necessity of estimating the small bigeye discarded as a consequence of the minimum size regulation in effect for this species.

With respect to management, the current minimum size regulation should be continued, as an increase in the overall yield-per-recruit is expected through the application of this regulation. The results of this regulation cannot yet be evaluated due to the short amount of time that has passed since implementation.

5-b) Billfishes

The Billfish Workshop (Miami, June 1981) substantially contributed to the solution of some of the statistical problems as well as to the knowledge of different biological parameters.

5-c) Blue marlin

No information was available on the stock structure. Two hypotheses are considered: a single stock in the entire Atlantic; and two stocks, one in the north and one in the south.

Since 1960, the blue marlin fisheries have developed substantially, but at present the fishing effort is showing a decreasing trend, especially the Japanese fishing effort.

Due to the decrease in fishing effort, increases in abundance should be expected. The incidental nature of the blue marlin catch in the commercial fisheries was also confirmed.

The SCRS is unsure of the exact status of the blue marlin stock, but with the low CPUE levels of recent years, concern is expressed about any increase in effort on the stocks. The SCRS feels that there should be careful monitoring of these fisheries, and that if further analysis confirms this apparent low level of abundance, consideration be given to methods of reducing fishing mortality on this species.

5-d) White marlin

CPUE and catch from Japanese data have shown continuing downward trends in recent years for the total Atlantic and the north Atlantic.

The Japanese effective fishing effort shows a declining trend, with the 1977-79 levels being considerably below the previous ten-year average.

The SCRS does not have available conclusive information on the status of the white marlin stock, but with the declining trend in catch and low CPUE levels in the last few years, concern is expressed about increased levels of fishing effort on the stock.

As with blue marlin, the fisheries taking white marlin, either directed or undirected, should be closely monitored and if further analysis confirms this low level of abundance, consideration should be given to methods of reducing effort on this species.

5-e) Sailfish

Little is known about sailfish, as the catch statistics for this species are mixed with those of *Tetrapturus pfluegeri* (spearfish), and therefore, it is not possible to evaluate the stocks. Since little is known about this species, the fisheries should be monitored. Estimates of effort data, identification of species and sex, biological analysis and study of mortality indices are recommended to be carried out.

5-f) Swordfish

The total annual catch of swordfish in the Atlantic is 20,000 MT. Around 5,000 MT are caught in the Mediterranean.

The Spanish longline CPUE has shown little variability during the last five years.

Information provided by the Canadian longline fishery (resumed in 1979 after not operating for eight years due to problems related to mercury content levels) indicate only a minor increase in the catch rates as compared to the rate just prior to the closure of this fishery.

As reliable data do not exist, it was not possible to conclude the actual stock condition; however, all the fisheries should be monitored in view of the recent increase in catch. The SCRS recommends improving the catch and effort statistics by 5x5 area and by month, as well as improving the historical effort statistics of the major fisheries, especially Italy, Spain (before 1975) and the U.S.A.

5-g) Small tunas

These species are studied very little; they are often discarded from the fisheries (French and U.S.A. purse seine) and their catches are important in the Mediterranean. The state of the stocks is not certain. There are no quantitative analyses because of the lack of statistics. Statistical and biological studies on this species should be made and tagging activities carried out by Spain and the United States should be continued.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS:

Concerning this item, the delegate from the United States stated the following: "The U.S.A. appreciates the fine work done by the scientists at the Miami Inter-sessional Billfish Workshop. However, we are concerned that the data bases, while improved after this Workshop, are apparently still inadequate. We support the SCRS request that the Commission emphasize to member countries the need for better statistics, such as size frequency data.

I want to reiterate that the U.S., through its Fishery Management Councils, is developing a management plan which includes a 20 percent reduction in catch for blue and white marlin by U.S. fishermen. We also note that CPUE's for blue and white marlin reported in the latest SCRS documents continue to remain low. The Commission should continue to monitor the stock trends carefully and be prepared to implement necessary conservation measures."

7. RESEARCH NEEDED TO BE CARRIED OUT

The detailed research activities that are needed to be carried out appear under each corresponding species section.

8. DATE AND PLACE OF NEXT PANEL MEETING

The Panel agreed to hold its next meeting at the same place and at the same time as the next Commission Meeting.

9. OTHER MATTERS

No other matters were discussed.

10. ELECTION OF PANEL CHAIRMAN

Spain was unanimously reelected chairman of Panel 4.

11. ADOPTION OF REPORT

The report was adopted.

12. ADJOURNMENT

The meeting of Panel 4 was adjourned.

Appendix 1 to Annex 5

Agenda for Panel 1 (Tropical Tunas)
Panel 2 (Temperate Tunas – North)
Panel 3 (Temperate Tunas – South)
Panel 4 (Other Species)

1. Opening
2. Adoption of Agenda
3. Election of rapporteur
4. Review of Panel Membership
5. Review of the Report of the Standing Committee on Research and Statistics (SCRS)
6. Review of possible measures for the conservation of stocks:

Panel 1

- a) Yellowfin
- b) Skipjack

Panel 2

- a) Bluefin
- b) Albacore

Panel 3

- a) Bluefin
- b) Albacore

Panel 4

- a) Bigeye
- b) Atlan. bonito
- c) Billfishes
- d) Other species

7. Research needed to be carried out
8. Date and place of next Panel meeting
9. Other matters
10. Election of Panel Chairman
11. Adoption of Report
12. Adjournment

Appendix 2 to Annex 5

**STATEMENT OF THE U.S. DELEGATION CONCERNING
ATLANTIC BLUEFIN TUNA**
(Attached to Report of Panel 2)

The Report of the SCRS indicated an alarming decline in the abundance of Atlantic bluefin tuna resources.

Regardless of whether we believe the one-stock or two-stock hypothesis, it is apparent that the decline in abundance shows up in the western Atlantic.

If we are to heed the recommendation of the SCRS, it is essential that we reduce the catch of bluefin tuna in the western Atlantic to the lowest level consistent with the need for ongoing scientific monitoring.

The U.S., therefore, proposes that:

The Contracting Parties that are actively fishing for bluefin tuna in the western Atlantic take measures to prohibit the directed fishery catch and the incidental catch that contains significant quantities of bluefin tuna for a period of two years.

However, the Contracting Parties that have been harvesting bluefin tuna in recent years in the western Atlantic may permit fishing activities to provide ongoing scientific monitoring at a level not to exceed 565 MT annually, an amount that will be divided between the Contracting Parties after consultations that should take place as soon as possible, and in any event, not later than December 31, 1981.

The information on catches should be exchanged between those Contracting Parties on a frequent, periodic basis, as well as provided annually to the ICCAT Secretariat.

In addition, we should continue the current recommendations concerning minimum size and limiting fishing mortality to recent levels for the eastern Atlantic bluefin tuna fishery.

Appendix 3 to Annex 5

STATEMENT MADE BY JAPAN CONCERNING BLUEFIN TUNA
(Attached to Report of Panel 2)

Japan has been of the view that the Atlantic bluefin tuna consists of a single stock throughout the area. New information has not been provided this year to prove differently, therefore, we have not changed our position. We, therefore, believe that the decision on management of the bluefin stocks should be made on the basis of a single-stock theory as it has been in the past.

As the SCRS Chairman pointed out, cohort analysis contains limitations with regard to estimating absolute values of the current stock size. While we appreciate the efforts exerted by the Chairman and SCRS scientists in preparing such a voluminous report, consideration should be given particularly to possible error included in the recommended catches.

The Japanese longliners depend heavily on Atlantic bluefin tuna. Japan has been seriously concerned about the conservation of the stocks. As stated last year, in addition to the regulatory measures taken by the Commission, voluntary measures have been enforced by Japan, such as closed season in the Mediterranean Sea and reduction of catch and effort in certain areas of the western Atlantic.

It should be emphasized that in the event such drastic regulatory measures were to be adopted, the Japanese tuna fishing industry would be seriously penalized. In addition, such measures would hamper the catching of other species such as bigeye, albacore, and yellowfin to a great extent. Therefore, new regulatory measures should be adopted only after careful examination of the effect of such measures on the basis of reasonable and convincing scientific evidence. Attention should also be drawn to the fact that a considerable amount of time is necessary for Japan, like other countries, to adapt itself to drastic new regulatory measures such as those just proposed.

In conclusion, Japan would like to have a sufficient amount of time to review the SCRS Report and examine all the factors involved including conservation needs before reaching a conclusion as to what decision should be made on this matter. To this point, Japan is not able to agree to reach a final conclusion at this stage on these proposals.

Appendix 4 to Annex 5

SECOND STATEMENT MADE BY JAPAN CONCERNING BLUEFIN TUNA
(Attached to Report of Panel 2)

Since the United States proposal on the bluefin tuna was submitted, we have endeavored with great effort toward reaching an agreement among the representatives of the three countries concerned (Canada, Japan, U.S.A.). Unfortunately, however, a satisfactory solution for the three countries could not be obtained. And it is under this circumstance that Japan would like to make its position clear once again and submit a counter proposal as follows:

Japan has strong concern about the stock condition of tunas since it depends heavily on tuna resources. Management of bluefin tuna should be based on a single stock unit. Cohort analysis on which the SCRS Report is based contains much doubt in estimating the absolute number of the stock, particularly those in recent years. Some scientists, including Japanese scientists, feel the analysis of the bluefin tuna stocks by this method could be in error on absolute stock size as much as 100 percent, if reasonable parameters (natural mortality rate and fishing mortality rate) are not input in the analysis. Japan, therefore, wishes to have time to re-examine the analysis contained in the SCRS Report in order to confirm whether or not it is acceptable. Without such confirmation, Japan cannot accept the adoption of radical proposals, such as these, that would abruptly cause very serious damage to the Japanese tuna fishery in the Atlantic. Such important proposals should be examined carefully beforehand by the Contracting Parties before they are submitted for recommendations.

Japanese longline vessels determine their fishing plans and prepare for their operations by purchasing specific gears and baits for the planned operation area, along with other supplies usually three to four months before their departure. Most of the vessels are already at sea and are engaging in operations or are about to operate in accordance with their original fishing plan. In the event such drastic measures as proposed were adopted and implemented immediately, most of the vessels would have to change their original fishing plans and many would be forced to suspend or curtail their operations, thus causing great economic damage to the tuna industry. It is also feared that a number of tuna boat owners will face bankruptcy and many crewmen will be unemployed. Therefore, time is needed for industry to adapt, even if Japan verifies that such drastic proposed measures are necessary. It should also be pointed out that such proposed measures would hinder to a great extent the rational and effective utilization of other species, such as bigeye, albacore and yellowfin tunas.

In light of the provisions of Rule 8 of the Rules of Procedure, which require 60 days advance notice with regard to any proposal of recommendation to be made under Article VIII of the Convention, there is doubt about the validity of these proposals in terms of procedure.

In view of the above, Japan strongly proposes that the bluefin tuna problem should be reviewed at a special meeting of the Bluefin Tuna Working Group of the SCRS to be held sometime in mid-February, 1982. This would allow the scientists of interested countries to re-examine the stock condition of bluefin tuna and submit their results to Panel 2. Panel 2 will then meet immediately after the Working Group special meeting to make management recommendations to the Commission that will be acted on by a mail vote. At this stage, Japan is not prepared to accept the proposals presented to this Panel by various countries.

Appendix 5 to Annex 5

**RECOMMENDATIONS BY PANEL 2
ON BLUEFIN MANAGEMENT MEASURES**
(Attached to Report of Panel 2)

PREAMBLE: Considering that the SCRS Report shows a decrease in the abundance of the Atlantic bluefin stock,

Realizing that an alarming decrease is observed in the abundance of this species in the western Atlantic, whether or not the one- or two-stock hypothesis is used,

Bearing in mind the SCRS recommendation on the need to reduce the western Atlantic bluefin catch to the minimum level acceptable to the aims of scientific supervision,

The Commission recommends:

FIRST: That the Contracting Parties take measures to prohibit the capture of bluefin tuna for a period of two years in the western Atlantic Ocean, as defined on the attached map (Addendum 1), except under conditions to be agreed upon by the Contracting Parties whose nationals have been actively fishing for bluefin tuna in the western Atlantic; such conditions to be based on the requirement to index the abundance of the stock.

SECOND: That the Contracting Parties whose nationals have been actively fishing for bluefin tuna in the western Atlantic

a) consult and conclude such consultations prior to February 15, 1982, in order to develop the conditions under which fishing by their nationals will be carried out. Until such conditions are developed, directed and incidental catches shall be limited to an annual level of 800 MT to enable ongoing scientific studies to be continued.

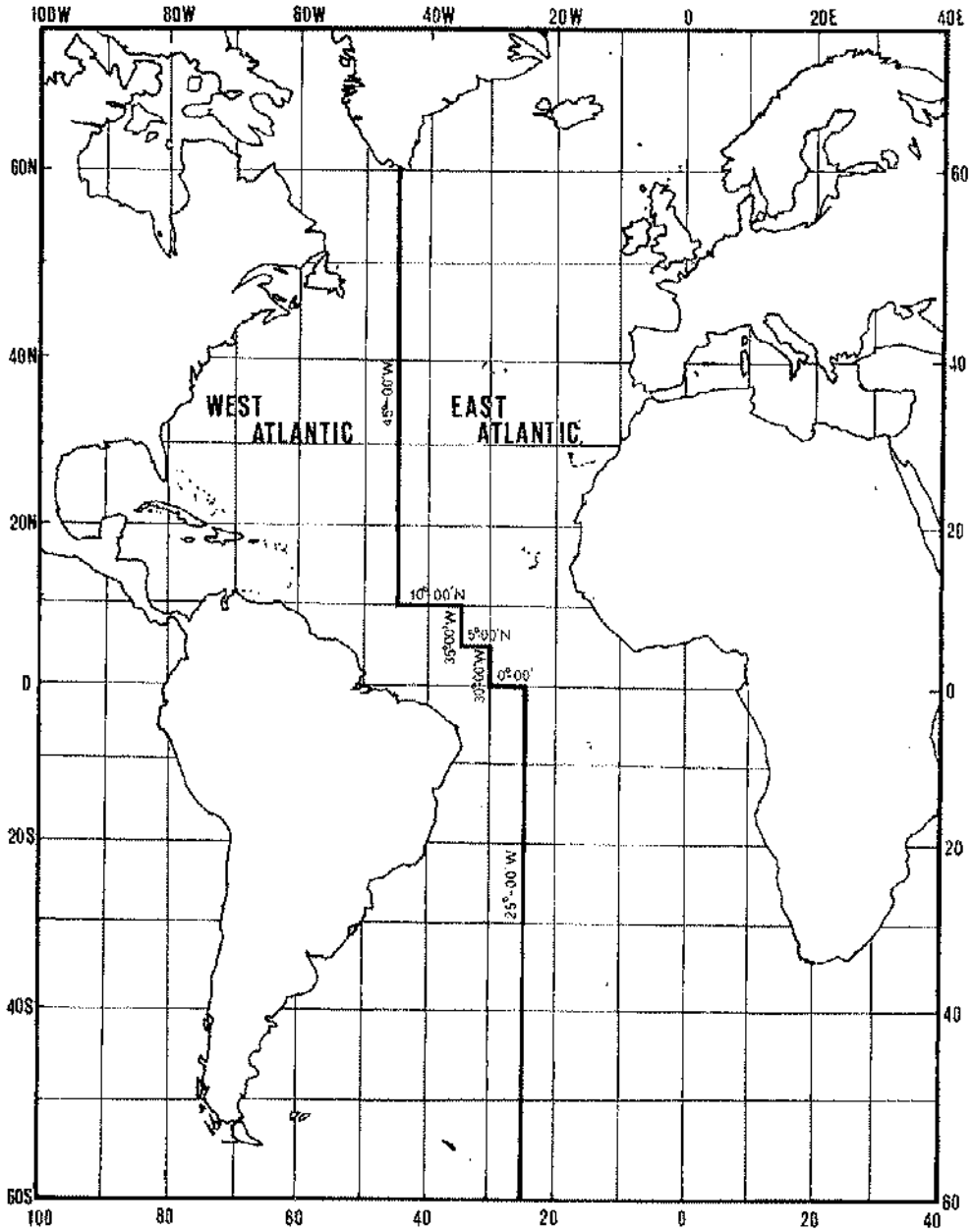
b) exchange information amongst themselves on catches on a frequent basis, and report such information annually to ICCAT.

THIRD: That the annual level of catch be adjusted in the western Atlantic on the basis of the scientific evidence produced by the SCRS, to insure the stabilization or increase of the stock.

FOURTH: That the adoption of the above measures concerning the western Atlantic must not imply any modification in the ICCAT recommendation adopted in 1975 concerning a minimum weight of 6.4 kg adopted for the entire Atlantic and fishing mortality limited to recent levels in the eastern Atlantic; this latter measure being extended until a new decision is made by ICCAT.

FIFTH: That the Contracting Parties take measures to prohibit any transfer of fishing effort from the western Atlantic to the eastern Atlantic in order to thus avoid increasing fishing mortality of bluefin tuna in the eastern Atlantic.

SIXTH: That, with respect to the *FIRST* and *SECOND* recommendations, the Contracting Parties whose nationals have been actively fishing for bluefin tuna in the western Atlantic may agree to implement this recommendation at an earlier date, notwithstanding the provisions of Article VIII, paragraph 2 of the Convention.



Summary Table on the Present Status of the Regulatory Measures taken by each Member Country (Date entered into effect)

	YELLOWFIN	BLUEFIN					BIGEYE
	(3.2 kg)	1st (6.4 kg)	2nd (fishing mortality)				(3.2 kg)
Country	<i>In force July 1, 1973 for an in- definite period</i>	<i>In force Aug. 10, 1975 for an in- definite period</i>	(a) <i>In force Aug. 10, 1975 until Aug. 10, 1976</i>	(b) <i>Extended until Aug. 10, 1978</i>	(c) <i>Extended until Aug. 10, 1980</i>	(d) <i>Extended until Aug. 10, 1982</i>	<i>In force Sept. 7, 1980</i>
Angola	June 17, 1979	-----	-----	No bluefin fishing			-----
Benin	-----	-----	-----	No bluefin fishing			-----
Brazil	Feb. 23, 1973	Aug. 18, 1977	Aug. 10, 1977	Aug. 18, 1977	Mar. 2, 1979	Nov. 17, 1980*	Nov. 17, 1980*
Canada	Sept. 4, 1973	Feb. 17, 1976	Feb. 17, 1976	Feb. 17, 1976	Feb. 15, 1979	Feb. 15, 1979	No fishing
Cape Verde	-----	-----	-----	No bluefin fishing			-----
Cuba	July 1, 1973	-----	-----	No bluefin fishing			Sept. 15, 1981
France	June 29, 1973	Aug. 8, 1975	Dec. 27, 1974	Dec. 27, 1974	Dec. 27, 1974	Dec. 27, 1974	Mar. 3, 1981
Gabon	-----	-----	-----	(no fishing)			Measures being considered
Ghana	June 19, 1976	-----	-----	No bluefin fishing			-----
Ivory Coast	Mar. 2, 1970	-----	-----	No bluefin fishing			Mar. 2, 1970
Japan	June 14, 1973	Apr. 16, 1975	Apr. 16, 1975	Apr. 16, 1975	Apr. 16, 1975	Apr. 16, 1975	Sept. 7, 1980
Korea	Jan. 21, 1973	Dec. 17, 1975	Dec. 17, 1975	Dec. 17, 1975	Oct. 14, 1978	Sept. 15, 1980	Sept. 15, 1980
Morocco (no fishing)	-----	-----	-----	No bluefin fishing			-----
Portugal	Nov. 26, 1973	Nov. 16, 1976	-----	Nov. 16, 1976	**	**	July 17, 1981
Senegal	July 2, 1976	-----	-----	No bluefin fishing			Oct. 22, 1980*
South Africa	May 1973	June 27, 1975	June 27, 1975	Oct. 19, 1976	Feb. 9, 1979	Jan. 11, 1980	Sept. 10, 1980*
Spain	May 29, 1974	Mar. 3, 1975	Feb. 19, 1976	Feb. 19, 1976	Feb. 19, 1976	Jan. 24, 1980	Oct. 26, 1981
U.S.A.	Nov. 5, 1975	Aug. 13, 1975	Aug. 13, 1975	May 18, 1976	June 15, 1979	June 13, 1980	Mar. 30, 1981
U.S.S.R.	Sept. 28, 1978	Sept. 28, 1978	Sept. 28, 1978	Sept. 28, 1978	-----	-----	Nov. 4, 1980

* In the process of taking action.

**Objections reaffirmed on Nov. 16, 1978 and on March 19, 1980.

**REPORT OF THE STANDING COMMITTEE ON
FINANCE AND ADMINISTRATION (STACFAD)**

Puerto de la Cruz, Tenerife, November, 1981

Table of Contents

Main text

Appendix 1 -- Agenda

Appendix 2 -- Panel Membership

Appendix 3 -- Regular Budget 1982-83

Appendix 4 -- Member country contributions to the 1982-83 Regular Budget

Appendix 5 -- Additional budget for Skipjack Program, 1983

Appendix 6 -- Member country contributions to the Special Skipjack Budget, 1982-83

Item 1. OPENING OF THE MEETING

1.1 Mr. C. J. Blondin (U.S.A.), the Chairman of the Committee, opened the session. He noted that a variety of matters have been referred to the Committee.

Item 2. ADOPTION OF AGENDA

2.1 After reviewing the Commission Agenda Items referred to STACFAD, the Tentative Agenda, prepared in advance by the Secretariat, was adopted (Appendix 1).

Item 3. ELECTION OF RAPPORTEUR

3.1 The Secretariat was designated rapporteur.

Item 4. PANEL MEMBERSHIP

4.1 Panel membership, referred to in document COM/81/13, was reviewed.

4.2 The Korean delegate announced his country's withdrawal from Panel 3, while maintaining memberships in Panels 1, 2, and 4. The Committee recognized that according to the Rules of Procedure, withdrawal from Panels can take place during Regular Commission Meetings and noted that consequently, the withdrawal of Korea from Panel 3 will become effective immediately.

4.3 Current Panel membership, after introducing this new change, was confirmed (Appendix 2).

Item 5. ADMINISTRATIVE REPORT

5.1 The Administrative Report (COM/81/9) was presented and fully explained by the Executive Secretary. He outlined all the activities of the Secretariat and the Commission; the ICCAT inter-sessional meetings, meetings at which the Commission was represented, cooperation with other organizations, ICCAT data processing work, ICCAT publications, the progress made in the Skipjack Year Program and the port sampling program. In referring to the Secretariat staff, he introduced Mr. J. P. Wise (U.S.A.), ICCAT's new biostatistician.

5.2 The Administrative Report was reviewed and adopted by the Committee and it was recommended that the Commission approve the Report.

Item 6. RELATIONS WITH OTHER ORGANIZATIONS

6.1 The Committee studied the relationships the Commission maintains with various organizations (COM/81/9) and found them to be satisfactory.

Item 7. COMMISSION PUBLICATIONS

7.1 The Committee studied the sections of the Administrative Report pertaining to Commission publications (COM/81/9) and recommended that the present publication policy be maintained in the future. The Committee noted, in particular, that the number of publications issued by the Secretariat has increased this year due to the increase in work.

Item 8. AUDITOR'S REPORT, 1980

8.1 It was noted that the 1980 Auditor's Report (original in Spanish), with summary translations in English and French, was circulated to the head of each delegation in early 1981. The Report was adopted by the Committee and then recommended to the Commission for adoption.

Item 9. FINANCIAL STATUS OF THE REGULAR COMMISSION BUDGET, 1981

9.1 The Financial Report (COM/81/10) was presented and explained in detail by the Executive Secretary. He pointed out that in 1981, the exchange rate between the U.S. dollar, in which the budget is planned, and the Spanish peseta, in which many of the expenditures are incurred, had shifted in favor of the U.S. dollar. As a result of this and other factors, the financial status of the Commission is good and a positive balance of approximately \$183,960 is forecasted at the end of this fiscal year.

9.2 On the other hand, he called the Committee's attention to the amount of outstanding member country contributions (about \$277,000). Fortunately, no difficulties

were encountered in 1981 because the Working Capital Fund was available and because expenditures for 1981 were considerably less than budgeted.

9.3 Rule 9 of the "Rules of Procedure" was reviewed in terms of voting privileges when the arrears of contributions equal or exceed the amount due for the two preceding years. In responding to a question in this regard, the Executive Secretary explained that one member country does have contributions pending for more than two years and that another country is nearing that limit.

9.4 The Committee recommended that the STACFAD Chairman prepare a letter to be sent to all those member countries which have contributions pending to urge payment and to stress the importance of their fulfilling their financial obligations to the Commission and the difficulties which these delayed payments present in meeting the Commission's financial responsibilities.

9.5 The Executive Secretary proposed that approximately \$13,000 of the positive balance forecasted for Fiscal Year 1981 be used for the purchase of an IBM MC Composer, while the rest of the balance (approximately \$170,000) be moved to the Working Capital Fund. The Committee approved these proposals.

Item 10. WORKING CAPITAL FUND – REGULAR BUDGET

10.1 The Committee reviewed Statement 9 of the Financial Report (COM/81/10) and found it to be satisfactory. The Executive Secretary noted that relatively high interest was earned in 1981 and was deposited in the Fund.

10.2 The Committee recommended that all the unbudgeted income and the unused balance from the 1981 Budget (after purchasing a Composer) go to the Working Capital Fund.

10.3 There were several questions raised as to whether or not the Working Capital Fund could be used to meet Commission expenses which have not previously been budgeted, such as excess meeting expenses, training courses, etc. The Executive Secretary explained that the Working Capital Fund cannot be used to cover the Commission's budget unless the Commission decides to reallocate part of the Working Capital Fund to the budget, thereby increasing the total budget. The purpose of the Working Capital Fund is to keep the Commission operative when the member country contributions are not fully paid. He emphasized that in essence the budget exists, but the actual cash-on-hand is short. He further explained that the present level of the Working Capital Fund is absolutely necessary as so many country contributions are in arrears.

Item 11. PROPOSAL FOR THE COMMISSION TO PROVIDE TRAVEL FUNDS FOR THE CHAIRMEN OF THE COMMISSION, STACFAD AND SCRS TO ATTEND ITS MEETINGS

11.1 At the 1980 Meeting, the Executive Secretary was asked to study the financial implications involved if the Commission decides to pay the travel expenses of the Chairman of the Commission and the Chairmen of the Standing Committees. He was also requested to review the procedures observed by other international organizations in this aspect.

11.2 The Executive Secretary presented the results of his survey in document COM/81/15. The Committee recognized that the financial implications are relatively minor. However, the position taken by all the international organizations (with the exception of NEAFC) is that the member countries to which its Chairmen belong assume all their trip expenses.

11.3 Presently, ICCAT's policy is that, in principle, trip expenses for all participants attending ICCAT meetings should be paid by the respective member nations. In some cases, such as when a scientist who is to attend an unscheduled inter-sessional meeting encounters financial difficulty in obtaining travel clearance from his national sources, but whose presence at the meeting is essential, the Executive Secretary, in consultation with the STACFAD Chairman, is authorized to cover these trip expenses from the Commission budget, providing that such administrative action will not jeopardize other Secretariat activities.

11.4 Recognizing the danger involved in setting a new ICCAT precedent, whereby a "chain reaction" of budgetary requests for ICCAT to assume trip expenses may occur, and recognizing the difficulties in establishing clear-cut criteria for selecting people whose trip is to be paid, the Committee recommended that the Commission maintain its present policy but with some flexibility.

Item 12. REGULAR BUDGET FOR BIENNIAL PERIOD, 1982-1983

12.1 The Regular Budget for the 1982-1983 biennial period was presented by the Executive Secretary (COM/81/11). Detailed explanations were given for each budget chapter.

12.2 The Executive Secretary emphasized the difficulties involved in estimating the budget far in advance of the biennial period, especially because of the constant variations in the currency exchange rate over the short-term. Nevertheless, the present favorable exchange rate (peseta vs. U.S. dollar) will probably make it possible to maintain the 1982 budget at the same level as in 1981 (U.S. \$750,000), and with only a slight increase (due to general inflation) for 1983 (U.S. \$825,000).

12.3 After reviewing carefully the 1982-1983 biennial budget, the Commission approved it and recommended its acceptance to the Commission. The budget is attached as Appendix 3.

Item 13. MEMBER COUNTRY CONTRIBUTIONS TO THE REGULAR BUDGET, 1982-1983

13.1 The Committee agreed to calculate the member country contributions based on the catch and canning figures for 1979, the most recent year for which the most complete data are available. Also, recent changes in Panel membership were taken into consideration.

13.2 The member country contributions for 1982 and 1983, calculated according to the formula specified in Article X of the Convention, are attached as Appendix 4 to this Report.

Item 14. FINANCIAL STATUS OF THE SKIPJACK PROGRAM

14.1 The financial status of the International Skipjack Year Program, which is estimated to the end of 1981, is reported in COM/81/10. It was noted that a positive balance of approximately \$70,000 is forecast. It was suggested that the balance be moved to the Skipjack Working Capital Fund, created by the Commission in 1980, which can be used for the Skipjack Program in the future.

Item 15. WORKING CAPITAL FUND – SKIPJACK BUDGET

15.1 The Committee reviewed Statement 9 of the Financial Report (COM/81/10), which refers to the Special Skipjack Budget Working Capital Fund. The Committee recommended that the positive balance foreseen for the end of 1981 (approximately \$70,000) be deposited to this Skipjack Working Capital Fund.

Item 16. REVIEW OF THE SKIPJACK BUDGET

16.1 The Executive Secretary referred to the International Skipjack Year Program accepted previously for the four-year period, 1979-1982, with the understanding that the yearly budgets would be reviewed and approved on an annual basis. The 1982 budget was reviewed (Appendix 5 to this Report) and its approval was recommended to the Commission.

16.2 The Committee noted that the SCRS proposed that a skipjack scientific conference be held in mid-1983 to compile all the results of the Skipjack Year Program. Therefore, funds are required to cover the costs of the conference and to retain the services of the Program Coordinator for one more year. The Executive Secretary estimated costs at about \$100,000 (COM/81/12). The Committee recommended that the Commission accept this 1983 budget for the Skipjack Year Program, with the understanding that final review and approval is to be made at the 1982 Commission Meeting. The proposed and accepted 1983 budget is attached as Appendix 5 to this report.

Item 17. MEMBER COUNTRY CONTRIBUTIONS TO THE SPECIAL SKIPJACK BUDGET

17.1 The member country contributions to the 1982 Skipjack Year Program, revised in 1979, were reviewed and approved (Appendix 6).

17.2 The country contributions for the 1983 Skipjack Budget were also reviewed (Appendix 6 to this Report). These contributions were calculated based on the most recent panel membership and the 1979 catch and canning figures.

17.3 The Executive Secretary noted that the Committee had established the Skipjack Working Capital Fund in 1980, with the understanding that the Fund could be applied for the expenditures of the Program in the future. Such action is contrary to the general application of the Working Capital Fund. The reason for this action is that the

Skipjack Year Program is a fixed-term Program and the distribution of the budget among years is difficult to assess in advance. Therefore, if there is a positive balance in the Skipjack Working Capital Fund at the termination of the Program, the Commission should decide how that money should be utilized.

17.4 The Committee noted that if any part of the Skipjack Working Capital Fund is left unused at the end of 1982, that positive balance can be reallocated to the new 1983 Skipjack Budget. This will reduce the total cost to be funded by the national contributions. Recognizing this possibility, the Committee accepted the 1983 country contributions proposed at this time (Appendix 6) with the reservation that final review and approval should be made at the 1982 Commission Meeting.

Item 18. TRAINING PROGRAM FOR DEVELOPING COUNTRIES

18.1 The Executive Secretary introduced document COM/81/17 concerning the statistical training program for developing member countries. The Officers who met during the 1981 inter-sessional period evaluated the need for such a training program and decided that on-the-spot training, or perhaps in a neighboring member country, would be more effective than a centralized training course. The SCRS approved this proposal and recommended the Commission to authorize the Secretariat to arrange training programs on a local scale whenever a developing member country requests training at the Commission's expense. This could be achieved by having an ICCAT Secretariat staff member or a neighboring country scientist visit the country which requests the training or by arranging for the scientist/technician to be trained while visiting an appropriate neighboring research center.

18.2 The Committee was informed that funding for such training activities on a limited, local scale is already included in the 1982-1983 estimated budget, since assistance to improve statistics has been one of the major tasks assigned to the Secretariat since the inception of the Commission. The Committee recommended the approval of the SCRS recommendations concerning statistical training programs.

18.3 The delegates from Ghana, Ivory Coast and Cape Verde emphasized the importance of collecting adequate and accurate statistics, which serve as the basis of sound population analyses. Therefore, the training of scientists and technicians is absolutely essential for those countries where fishing is in the developing stages to assure the collection of correct and adequate statistics.

18.4 The delegate of France stated that his country has a scholarship fund to accommodate such training courses, which is available on a bi-lateral basis. The observer from the European Economic Communities commented that the EEC has funds available, through the Lomé Convention, applicable for training people in developing countries in various fields. He volunteered to look into the possibility of making such funds available for ICCAT-organized training.

18.5 The delegate from Cuba proposed that the Secretariat evaluate both the need for holding a training course and the most effective way to carry out the training. At the same time, the Secretariat should contact various international organizations, national

governments and institutes in order to find out and report any funds available, as well as any existing and/or planned courses they may have and look into the possibility of organizing such courses jointly. The Cuban proposal was supported by all the delegates.

Item 19. REPORT OF THE PANEL OF EXPERTS ON SALARIES AND BENEFITS OF THE SECRETARIAT STAFF

19.1 The Chairman of STACFAD introduced the Group's report (COM/81/16) and explained the background of the formation of the Panel of Experts. He noted that the Panel was set up at the 1980 Commission Meeting, on a proposal of Brazil, and that its purpose was to study in detail the salaries and remunerations of the Secretariat staff, which had not been reviewed since the inception of the Commission.

19.2 Mr. Blondin went on to explain that the Panel held two meetings in Madrid, one in June and another in September, 1981. He commended the Group for its competence and extreme dedication to its work, while he emphasized their lack of sufficient time to do all the work that was before them. As a result, he mentioned, the recommendations of the Panel can be considered partial, as there is considerable work to be done in order to complete their study.

19.3 The Panel centered its study on four principal areas:

- a) Staff Rules and Regulations -- (updating)
- b) Taxes -- (clarification of applicability)
- c) Pensions -- (medical insurance, social security)
- d) Salaries and classification of staff positions

19.3.a *Staff Rules and Regulations -- updating*

The Chairman pointed out that the Staff Rules and Regulations had not been revised since their adoption some eleven years ago. The Panel had proposed some revisions for them and recommended in their report that the revised Rules and Regulations be adopted and become effective on January 1, 1982, but that they be considered provisional for one year and confirmed or modified at the 1982 Commission Meeting. It was also recommended that there be provisions for updating these bi-annually, with any changes to be approved through STACFAD. After reviewing the new proposals, the Committee approved the recommendations made by the Panel.

19.3.b *Taxes -- clarification of applicability*

The Panel of Experts noted in their report that the reimbursement of taxes paid (Article 11 of the Rules and Regulations) referred to Spanish taxes. With regards to the payment of taxes by foreign nationals to their own governments, the Panel pointed out that this was a matter for the Secretariat employee and the respective government to negotiate.

19.3.c *Pensions -- medical insurance and social security*

c-1 The Committee also concurred with the recommendations made by the Panel of Experts concerning liability and health insurance plans, which will be obligatory, with minimum coverage payable by the Commission.

c-2 The STACFAD Chairman reiterated the Panel's concern for adequate pension coverage for the Secretariat staff. He mentioned that he had brought with him to the meeting the results of a comparative study of the pension options to be given to the Executive Secretary and his staff for careful review. In his comments on this matter, the Executive Secretary expressed his grave concern about pension benefits for his staff and his desire to resolve this problem as soon as is feasible.

c-3 The STACFAD Chairman confirmed the Panel of Experts' recommendation that a pension plan be selected, by the Secretariat, as soon as possible, hopefully no later than October 1, 1982. He noted that if a plan were not implemented by that date, the Executive Secretary should explain this delay to the STACFAD at its next meeting.

19.3.d *Salaries and reclassification of staff positions*

d-1 There was considerable discussion of this item at the STACFAD Meeting. The delegate of Japan questioned why only two staff positions were assessed by the Panel of Experts and suggested that all positions, based on detailed job descriptions, be reviewed. He also suggested that the Committee distribute copies of the U.N. salary schedule for the Professional Category, for review by the member country delegations and that any budgetary implications, due to the reclassification of any position, be explained to the Committee. The delegate of France confirmed the need to study the problem of reclassification, but expressed his country's grave concern for any budgetary repercussions which this may bring about.

d-2 The STACFAD Chairman pointed out that due to the lack of time, the Panel was unable to complete its study of the staff reclassification problem. He emphasized the very high professional level of the Secretariat staff and noted that this high level must be maintained, even if it means some budgetary repercussions.

d-3 The Committee decided to hold a closed meeting of the heads of the member country delegations on November 16, 1981, to consider the classifications and salaries of personnel employed at the ICCAT Secretariat. After lengthy discussions and the consideration of the Report of the Small Working Group of Experts on Administrative Subjects and Salaries (COM/81/16), the heads of delegations recommended the following:

- FIRST* -- That the Executive Secretary be promoted from P-5 (Step X) to D-1 (Step IV).
- SECOND* -- That the Assistant Executive Secretary be promoted from P-4 (Step XII) to P-5 (Step IV).
- THIRD* -- That the Skipjack Program Coordinator be promoted from P-3 (Step III) to P-4 (Step I).
- FOURTH* -- That the promotions recommended shall take effect at the beginning of the next regular pay period after the conclusion of the Seventh Regular Meeting of the Commission.
- FIFTH* -- That the Executive Secretary shall undertake a review of the positions of all other Professional and General Services category staff person-

nel, to include updating job descriptions, comparing these job descriptions with other similar local international organizations, and to recommend to STACFAD any actions he may wish to take concerning the classification of such personnel. Should the Executive Secretary's recommendations be completed prior to the next meeting of STACFAD he may communicate his recommendations through the mail in order to allow timely approval by STACFAD.

SIXTH -- That promotions authorized will not result in any increase in the overall budget for 1981 and 1982.

d-4 The Committee recommended the adoption of these proposals, and noted that the corresponding post adjustments and family allowances should also be applied.

Item 20. DATE AND PLACE OF THE NEXT MEETING OF THE COUNCIL OR SPECIAL MEETING OF THE COMMISSION

20.1 The Committee recommended that in 1982 the Commission hold its Third Special Meeting, rather than holding a Council Meeting. This will enable the Commission to review various financial and administrative matters, to review all the results of the rapidly progressing scientific studies on stock evaluation and to follow up any management needs.

20.2 The delegate from Ivory Coast stated that when the Convention was drawn up it did not foresee the rapid scientific progress nor the need for quick follow-up action by the Commission to management matters. The Commission has been functioning on a biennial basis, while in reality annual activities are absolutely necessary. To facilitate this situation, the Commission has been holding Regular and Special meetings on an alternate basis, thereby avoiding a Council meeting. The delegate of Ivory Coast felt that this problem could be solved by amending the Convention.

20.3 The Committee reviewed the procedures to amend the Convention (Article XIII of the Convention) and found that there is some discrepancy among the English, French and Spanish versions as to whether or not the Commission can initiate an amendment. Recognizing that all the texts of the Convention are equally correct and formal, Ivory Coast volunteered to initiate the procedure to amend the Convention to the effect that the Commission meetings be held annually, rather than biennially.

20.4 The Committee recommended to the Commission that the Third Special Meeting of the Commission be held during the week starting November 10, 1982. The Committee noted that the 1982 budget includes the meeting cost estimates based on the assumption that the meeting will be held in Madrid. Therefore, if the meeting is to be held outside Madrid, and as a result the cost of the meeting exceeds the estimated amount (\$70,000), then the Commission has to find supplemental financial resources to pay the difference.

20.5 The delegate of Portugal expressed the intention of the Portuguese Government to invite the 1982 Commission meeting to be held in Lisbon, Funchal (Madeira Islands) or Ponta Delgada (Azores Islands), on the condition that the Portuguese Govern-

ment will assume any costs which exceed the 1981 Commission meeting expenses (i.e., \$105,755).

20.6 The Committee noted that the Commission may be faced with the danger of a shortage of as much as \$35,755 under Budget Chapter 3, "Meetings" if we hold the meeting in Portugal, under this condition. The delegate from Senegal stated that if a country invites the Commission to hold its meeting in that country, it must pay the expenses that are in excess of the cost of holding the meeting at the location of the ICCAT headquarters.

20.7 The Committee was pleased with the Portuguese invitation and recommended that the Executive Secretary be authorized to study, together with the Portuguese Government, by January 31, 1982, all the financial aspects of holding the meeting in Portugal. If it is possible to hold the meeting without adverse budgetary implications, the Executive Secretary, in consultation with the STACFAD Chairman, is authorized to make the final decision on the place in Portugal. However, if holding the meeting outside Madrid proves to be unfeasible, the next Commission meeting should be held in Madrid.

Item 21. ITEMS TO BE CONSIDERED BY THE COUNCIL AT ITS NEXT MEETING

21.1 Since the Council will not be meeting in 1982, this Agenda Item was not discussed.

Item 22. DATE AND PLACE OF THE NEXT REGULAR MEETING OF THE COMMISSION

22.1 Since a Special Meeting of the Commission is to be held in 1982, the Committee recommended that this Agenda Item be discussed at the 1982 Commission Meeting.

Item 23. OTHER MATTERS

23.1 No other matters were discussed.

Item 24. ELECTION OF THE CHAIRMAN OF THE STACFAD

24.1 Mr. C. J. Blondin (U.S.A.) was unanimously reelected Chairman of the Committee for the next biennial period.

Item 25. ADOPTION OF REPORT

25.1 The Report was adopted.

Item 26. ADJOURNMENT

26.1 The meeting was adjourned.

Appendix 1 to Annex 7

**Agenda for the Standing Committee on
Finance and Administration (STACFAD)**

1. Opening of the meeting
2. Adoption of Agenda
3. Election of Rapporteur
4. Panel membership
5. Administrative Report
6. Relations with other organizations
7. Commission publications
8. Auditor's Report 1980
9. Financial status of Regular Budget 1981
10. Working Capital Fund - Regular Budget
11. Proposal for the Commission to provide travel funds for the Chairmen of the Commission, STACFAD and SCRS to attend its meetings
12. Regular Budget for Biennial Period 1982-1983
13. Member country contributions to the Regular Budget 1982-1983
14. Financial status of the Skipjack Program
15. Working Capital Fund - Skipjack Budget
16. Review of the Skipjack Budget
17. Member country contributions to the Special Skipjack Budget
18. Training program for developing countries
19. Report of the Panel of Experts on Salaries and Benefits of the Secretariat Staff
20. Date and place of the next meeting of the Council or Special Meeting of the Commission
21. Items to be considered by the Council at its next meeting
22. Date and place of the next Regular Meeting of the Commission
23. Other matters
24. Election of the Chairman of the STACFAD
25. Adoption of Report
26. Adjournment

Appendix 2 to Annex 7

PANEL MEMBERSHIP
(as of November, 1981)

<i>Country</i>	<i>Panel 1</i>	<i>Panel 2</i>	<i>Panel 3</i>	<i>Panel 4</i>	<i>Total</i>
Angola	X	-	-	X	2
Benin	-	-	-	-	0
Brazil	X	-	X	-	2
Canada	-	X	-	X	2
Cape Verde	X	-	-	-	1
Cuba	X	-	-	X	2
France	X	X	-	-	2
Gabon	X	-	-	-	1
Ghana	X*	-	-	-	1
Ivory Coast	X	-	-	-	1
Japan	X	X	X*	X	4
Korea	X	X	-	X	3
Morocco	X	X*	-	-	2
Portugal	X	X	-	X	3
Senegal	X	-	-	-	1
South Africa	-	-	X	-	1
Spain	X	X	-	X*	3
United States	X	X	X	X	4
U.S.S.R.	X	-	-	X	2
Total	16	8	4	9	37

* Panel Chairman.

REGULAR BUDGET 1982-1983 (US\$)

	1982	1983 (10%)
<i>Chapter</i>		
1. Salaries	312,000	343,200
2. Travel	16,000	17,600
3. Annual Meeting	70,000	77,000
4. Publications	35,000	38,500
5. Office Equipment	7,000	7,700
6. General Operating Expenses	56,000	61,600
7. Miscellaneous Expenses	<u>6,000</u>	<u>6,600</u>
<i>Subtotal (1)</i>	502,000	552,200
8. Coordination of Research		
a) Salaries	156,000	171,600
b) Travel	16,000	17,600
c) Equipment	7,000	7,700
d) Data Processing	34,000	37,400
e) Meetings during the year (Sub-Committees, Working Groups)	24,000	26,400
f) Miscellaneous Expenses	<u>5,000</u>	<u>5,500</u>
<i>Subtotal (2)</i>	242,000	266,200
9. Contingencies	<u>6,000</u>	<u>6,600</u>
TOTAL	750,000	825,000

Table of Member Country Contributions to the 1982 Regular Commission Budget

Country	Total Budget (K) \$750,000										
	A No.	B %	C (1,000 MT)	D	E	F %	G \$	H \$	I \$	J \$	K \$
Angola	2	5.36	5.810	1.554	7.364	1.58	1,000	2,000	12,393	7,295	22,688
Benin	0	1.78	0.000	0.000	0.000	0.00	1,000	0	4,132	0	5,132
Brazil	2	5.36	8.098	.228	8.326	1.78	1,000	2,000	12,393	8,248	23,641
Canada	2	5.36	3.215	.444	3.659	0.78	1,000	2,000	12,393	3,625	19,017
Cape Verde	1	3.57	1.623	.157	1.780	0.38	1,000	1,000	8,262	1,763	12,025
Cuba	2	5.36	9.500	1.000	10.500	2.25	1,000	2,000	12,393	10,401	25,794
France	2	5.36	64.352	33.300	97.652	20.91	1,000	2,000	12,393	96,734	112,127
Gabon	1	3.57	0.000	0.000	0.000	0.00	1,000	1,000	8,262	0	10,262
Ghana	1	3.57	20.132	1.598	21.730	4.65	1,000	1,000	8,262	21,526	31,788
Ivory Coast	1	3.57	13.018	6.310	19.328	4.14	1,000	1,000	8,262	19,146	29,408
Japan	4	8.93	44.480	0.000	44.480	9.52	1,000	4,000	20,655	44,062	69,717
Korea	3	7.14	37.942	0.000	37.942	8.12	1,000	3,000	16,524	37,585	58,109
Morocco	2	5.36	2.163	.683	2.846	0.61	1,000	2,000	12,393	2,819	18,212
Portugal	3	7.14	6.712	6.121	12.833	2.75	1,000	3,000	16,524	12,712	33,236
Senegal	1	3.57	.943	2.960	3.903	0.84	1,000	1,000	8,262	3,866	14,128
South Africa	1	3.57	9.349	.496	9.845	2.11	1,000	1,000	8,262	9,752	20,014
Spain	3	7.14	103.208	31.231	134.439	28.78	1,000	3,000	16,524	133,175	153,699
U.S.A.	4	8.93	17.864	20.276	38.140	8.17	1,000	4,000	20,655	37,781	63,436
U.S.S.R.	2	5.36	10.533	1.757	12.290	2.63	1,000	2,000	12,393	12,174	27,567
<i>Total</i>	<i>37</i>	<i>100.00</i>	<i>358.942</i>	<i>108.115</i>	<i>467.057</i>	<i>100.00</i>	<i>19,000</i>	<i>37,000</i>	<i>231,333</i>	<i>462,667</i>	<i>750,000</i>

A - Panel membership.

B - Percentage of payments for annual membership and panel membership (G+H).

C - 1979 catch (live weight).

D - 1979 canned production (net product weight).

E - Total (C+D).

F - Percentage distribution of E.

G - Payment of \$1,000 annual membership contribution.

H - Payment of \$1,000 for each panel membership.

I - $\frac{1}{3}$ of \$694,000 = (750,000 - 56,000 (G+H)) distributed percentage-wise according to column B.J - $\frac{2}{3}$ of \$694,000 = (750,000 - 56,000 (G+H)) distributed percentage-wise according to column F.

K - Total (G+H+I+J).

Table of Member Country Contributions to the 1983 Regular Commission Budget

Country	A No.	B %	Total Budget (K) \$825,000					G \$	H \$	I \$	J \$	K \$
			C (1,000 MT)	D	E	F %						
Angola	2	5.36	5.810	1.554	7.364	1.58	1,000	2,000	13,732	8,083	24,815	
Benin	0	1.78	0.000	0.000	0.000	0.00	1,000	0	4,577	0	5,577	
Brazil	2	5.36	8.098	.228	8.326	1.78	1,000	2,000	13,732	9,139	25,871	
Canada	2	5.36	3.215	.444	3.659	0.78	1,000	2,000	13,732	4,016	20,748	
Cape Verde	1	3.57	1.623	.157	1.780	0.38	1,000	1,000	9,155	1,954	13,109	
Cuba	2	5.36	9.500	1.000	10.500	2.25	1,000	2,000	13,732	11,525	28,258	
France	2	5.36	64.352	33.300	97.652	20.91	1,000	2,000	13,732	107,188	123,920	
Gabon	1	3.57	0.000	0.000	0.000	0.00	1,000	1,000	9,155	0	11,155	
Ghana	1	3.57	20.132	1.598	21.730	4.65	1,000	1,000	9,155	23,852	35,007	
Ivory Coast	1	3.57	13.018	6.310	19.328	4.14	1,000	1,000	9,155	21,215	32,370	
Japan	4	8.93	44.480	0.000	44.480	9.52	1,000	4,000	22,887	48,824	76,711	
Korea	3	7.14	37.942	0.000	37.942	8.12	1,000	3,000	18,310	41,647	63,957	
Morocco	2	5.36	2.163	.683	2.846	0.61	1,000	2,000	13,732	3,124	19,856	
Portugal	3	7.14	6.712	6.121	12.833	2.75	1,000	3,000	18,310	14,086	36,396	
Senegal	1	3.57	.943	2.960	3.903	0.84	1,000	1,000	9,155	4,284	15,439	
South Africa	1	3.57	9.349	.496	9.845	2.11	1,000	1,000	9,155	10,806	21,961	
Spain	3	7.14	103.208	31.231	134.439	28.78	1,000	3,000	18,310	147,567	169,877	
U.S.A.	4	8.93	17.864	20.276	38.140	8.17	1,000	4,000	22,887	41,864	69,751	
U.S.S.R.	2	5.36	10.533	1.757	12.290	2.63	1,000	2,000	13,732	13,490	30,222	
<i>Total</i>	<i>37</i>	<i>100.00</i>	<i>358.942</i>	<i>108.115</i>	<i>467.057</i>	<i>100.00</i>	<i>19,000</i>	<i>37,000</i>	<i>256,333</i>	<i>512,667</i>	<i>825,000</i>	

A - Panel membership.

B - Percentage of payments for annual membership and panel membership (G+H).

C - 1979 catch (live weight).

D - 1979 canned production (net product weight).

E - Total (C+D).

F - Percentage distribution of E.

G - Payment of \$1,000 annual membership contribution.

H - Payment of \$1,000 for each panel membership.

I - $1/3$ of \$769,000 = (825,000 - 56,000 (G+H)) distributed percentage-wise according to column B.J - $2/3$ of \$769,000 = (825,000 - 56,000 (G+H)) distributed percentage-wise according to column F.

K - Total (G+H+I+J).

Appendix 5 to Annex 7

SPECIAL SKIPJACK BUDGET, 1982 - 1983 (US \$)

	<i>1982</i> <i>(approved in 1979)</i>	<i>1983 (Additional)</i> <i>(approved in 1981)</i>
<i>a) ACTIVITIES</i>		
Tagging with dart tags	10,000	0
Improved statistics & data collection	10,000	0
Biochemical stock identification (Genetics)	<u>0</u>	<u>0</u>
Sub-total	20,000	0
<i>b) ICCAT COORDINATION SERVICES</i>		
Salaries	99,011	65,200*
Office equipment & materials	5,000	0
Trip expenses	8,000	0
Operation expenses & contracts	15,000	14,800**
1983 Skipjack Conference	<u>0</u>	<u>20,000</u>
Sub-total	127,011	100,000
TOTAL	147,011	100,000

* Includes: Coordinator salary - \$45,200
 Secretarial services - \$20,000

**includes: Data processing - \$5,000
 Miscellaneous - \$9,800

MEMBER COUNTRY CONTRIBUTIONS TO THE SPECIAL SKIPJACK BUDGET - 1982

<i>Country</i>	<i>(US \$)</i>	<i>1982</i>
Angola		2,976
Benin		860
Brazil		2,871
Canada		3,627
Cuba		5,049
France		23,901
Gabon		860
Ghana		4,800
Ivory Coast		4,860
Japan		13,945
Korea		14,966
Morocco		3,906
Portugal		6,749
Senegal		3,691
South Africa		1,786
Spain		28,746
U.S.A.		16,789
U.S.S.R.		6,629
TOTAL		147,011

Table of Member Country Contributions to the 1983 Special Skipjack Budget

Country	Total Budget (K) \$100,000										
	A No.	B %	C (1,000 MT)	D	E	F %	G \$	H \$	I \$	J \$	K \$
Angola	2	5.36	5.810	1.554	7.364	1.58			1,786	1,051	2,837
Benin	0	1.78	0.000	0.000	0.000	0.00			596	0	596
Brazil	2	5.36	8.098	.228	8.326	1.78			1,786	1,188	2,974
Canada	2	5.36	3.215	.444	3.659	0.78			1,786	522	2,308
Cape Verde	1	3.57	1.623	.157	1.780	0.38			1,190	254	1,445
Cuba	2	5.36	9.500	1.000	10.500	2.25			1,786	1,499	3,284
France	2	5.36	64.352	33.300	97.652	20.91			1,786	13,939	15,724
Gabon	1	3.57	0.000	0.000	0.000	0.00			1,190	0	1,190
Ghana	1	3.57	20.132	1.598	21.730	4.65			1,190	3,102	4,292
Ivory Coast	1	3.57	13.018	6.310	19.328	4.14			1,190	2,759	3,949
Japan	4	8.93	44.480	0.000	44.480	9.52			2,976	6,349	9,325
Korea	3	7.14	37.942	0.000	37.942	8.12			2,381	5,416	7,797
Morocco	2	5.36	2.163	.683	2.846	0.61			1,786	406	2,192
Portugal	3	7.14	6.712	6.121	12.833	2.75			2,381	1,832	4,213
Senegal	1	3.57	.943	2.960	3.903	0.84			1,190	557	1,748
South Africa	1	3.57	9.349	.496	9.845	2.11			1,190	1,405	2,596
Spain	3	7.14	103.208	31.231	134.439	28.78			2,381	19,190	21,570
U.S.A.	4	8.93	17.864	20.276	38.140	8.17			2,976	5,444	8,420
U.S.S.R.	2	5.36	10.533	1.757	12.290	2.63			1,786	1,754	3,540
<i>Total</i>	<i>37</i>	<i>100.00</i>	<i>358.942</i>	<i>108.115</i>	<i>467.057</i>	<i>100.00</i>			<i>33,333</i>	<i>66,667</i>	<i>100,000</i>

A - Panel membership.

B - Percentage of payments for annual membership and panel membership (G+H).

C - 1979 catch (live weight).

D - 1979 canned production (net product weight).

E - Total (C+D).

F - Percentage distribution of E.

G - Not applicable.

H - Not applicable.

I - 1/3 of \$100,000 distributed percentage-wise according to column B.

J - 2/3 of \$100,000 distributed percentage-wise according to column F.

K - Total (I+J).

**REPORT OF THE STANDING COMMITTEE
ON RESEARCH AND STATISTICS (SCRS)**

Puerto de la Cruz, Tenerife, November 5-10, 1981

Table of Contents

Text of Report

Tables and Figures

Appendix 1 – Agenda

2 – List of Documents

3 – Report of the Sub-Committee on Skipjack

4 – Report of the Sub-Committee on Statistics

5 – Table of Assignments

6 – Bluefin Working Group Recommendations

Item 1. Opening of the Meeting

The Chairman, Mr. A. Fonteneau (France), opened the Twelfth Regular Meeting of the Standing Committee on Research and Statistics (SCRS).

Each member country introduced its scientific delegation (the List of Participants is attached as Annex 2 to the Proceedings of the Commission Meeting).

Item 2. Adoption of Agenda and arrangements for the Meeting

The Tentative Agenda, circulated in advance of the Meeting, was adopted (attached as Appendix 1).

The following scientists were appointed rapporteurs for Item 6 of the SCRS Report, "Review of condition of stocks, with brief presentation of major papers on this subject."

6-A Tropical Tunas
(AYF - Yellowfin)
(ABE - Bigeye)
(ASJ - Skipjack)

G. T. Sakagawa*
J. P. Wise
S. Kume
R. Pianet

*Head rapporteur.

6-B	Albacore	L. Antoine*, N. Bartoo
6-C	Bluefin	M. Parrack*, J. Cort, Z. Suzuki
6-D	Billfishes (DBL - Billfish) (DSW - Swordfish) (DSB - Southern Bluefin)	S. Kikawa*, M. Farber P. Hurley*, A. González-Garcés S. Kume
6-E	Small Tunas	P. M. Miyake
6-F	Multi-species -Tropical species -Temperate species	G. T. Sakagawa A. González-Garcés

Dr. P. M. Miyake (Secretariat) was nominated rapporteur for all other Agenda items and Dr. G. Sharp (FAO) was asked to coordinate the reports of Agenda Item 6.

Item 3. Admission of Observers

All the observers (see List of Participants) were introduced, admitted and welcomed to the SCRS session.

Item 4. Admission of Scientific Papers

In order to review the scientific papers presented to the SCRS for acceptance, the Chairman formed a small group made up of R. Letaconoux (Leader), A. González-Garcés, M. Farber and P. M. Miyake. He asked the group to apply insofar as possible the criteria previously agreed upon for admittance of papers but also to give some consideration to the papers that did not arrive by the deadline for various reasons, but did arrive in time for the rapporteurs to use as reference for their reports.

The group later reported their view concerning the admittance of papers. Mr. Letaconoux recommended acceptance of SCRS/81/55 and 46 which arrived late but were available early during the meeting and were used by the rapporteurs. He further referred to SCRS/81/45 and 70, eighty copies of which were made available on Wednesday, (November 4), but one copy was available before the deadline. Considering that the rapporteurs could refer to these reports in their deliberations, he recommended that these reports be accepted. One document was not recommended for acceptance as only one copy was presented on Thursday (November 5) after the rapporteurs had drafted their reports. Mr. Letaconoux suggested that this report be accepted as one of the 1982 documents immediately following the 1981 SCRS session.

The SCRS accepted these recommendations made by the Document Admittance Group. The List of Documents accepted by the SCRS is attached as Appendix 2.

*Head rapporteur.

Item 5. Review of national fisheries and research progress

5.1 ANGOLA

No report was submitted.

5.2 BENIN

No report was submitted.

5.3 BRAZIL

In Brazil, three fleets fish for scombrids and related pelagic species. The artisanal fleet, which operates in the northeast of Brazil, catches approximately 3,000 MT, mainly Serra Spanish mackerel. The longline fleet, made up of ten vessels, five Brazilian ones and five leased from Japan, caught approximately 2,500 MT between 1977 and 1979, but in 1980 the catch was 3,300 MT due to the increase in the catch of swordfish.

In 1979, 1,400 MT of skipjack were caught by the live-bait fleet using 23 vessels; in 1980, the catch was 6,300 MT made by 33 vessels, and in 1981 the expected catch is 20,000 MT of skipjack made by 80 vessels.

In the southeast and south of Brazil, research has been directed towards the ecological study of all the pelagic species caught by longline. Biological information is obtained on yellowfin, albacore, bigeye and marlins. Following the recommendations of the Skipjack Program, studies are being made on the stomach contents of large predators and on the presence of larvae, and skipjack tagging programs are under way.

5.4 CANADA

The tuna catch in 1980 amounted to 324 MT, consisting entirely of large bluefin tuna taken in Canadian inshore waters. Catches in the trap net fishery remained low while the rod-and-reel catch increased approximately 20 percent. Almost 750 small inshore vessels were involved in the rod-and-reel fishery. There was no purse seine effort in the Atlantic in 1980. Preliminary data indicate the 1981 large bluefin catch will be about the same as in 1980, while approximately 130 MT of small bluefin and 185 MT of skipjack have been taken by small purse seiners.

The swordfish longline fishery took 1,794 MT in 1980 while 91 MT were taken by harpoon. A total of 112 longliners were licensed in 1980 but not all of these fished for swordfish. The swordfish catch in 1981 will be considerably lower, about 500 MT, as a result of market problems and gear conflicts with foreign longliners.

Monitoring of both the bluefin tuna rod-and-reel fishery and the swordfish longline fishery continued in 1980, through the analysis of fishing logs. Growth studies of bluefin tuna were continued, and a major swordfish research survey was mounted to collect data for studies of stock discrimination, age determination and description of reproductive biology and general biology. A limited tagging program was also continued.

5.5 CAPE VERDE

The Cape Verde tuna fishing fleet is made up of three purse seiners with freezers converted into baitboats, in addition to 19 baitboats without freezers. Small artisanal vessels fish with handlines and harpoons.

By order of weight, the main species caught are skipjack, yellowfin tuna and bigeye tuna. Very small quantities of frigate tuna and Atlantic little tuna are also caught.

Industrial and semi-industrial catches for 1981 (end of September) amounted to:

Total	1,729.8 MT
Yellowfin	860.3 MT
Bigeye	17.8 MT
Skipjack	616.3 MT
Little tuna	235.4 MT

The three freezer-baitboats operated in waters off Angola in February and March. They have been fishing off Cape Verde since September. The other baitboats, without freezing facilities, do not fish outside the Cape Verde area.

The principal schools of fish are located in waters around the Cape Verde islands.

Statistics are being compiled this year following ICCAT recommendations. Under the International Skipjack Year Program, sampling was carried out at the ports of Praia and Sal Rei, situated in contiguous areas.

The first part of a skipjack tagging cruise was conducted at Cape Verde during the month of October for 16 days jointly covering Senegal and Cape Verde and financed by the EEC. The number of fish tagged was:

Skipjack with yellow tags	2,430
Skipjack with red tags and injected with tetracycline	242
Yellowfin with yellow tags	13

5.6 CUBA

Cuban tuna catches in the Atlantic reached 11,800 MT in 1980, with yellowfin comprising the major part of the total catch; 5,800 MT of yellowfin were taken, using mainly drifting longline.

With regard to research activities carried out in 1980-81, these were centered mainly on the International Skipjack Year Program. The research areas of the Skipjack Program in which Cuba collaborated were: port sampling, exploratory fishing, fishery oceanography, larval surveys, and tagging with dart tags. The results of the activities related to the aforementioned research areas can be considered satisfactory.

5.7 FRANCE

In 1980, French tuna catches increased to 72,800 MT due to an increase in yellowfin tuna (43,600 MT) and skipjack (22,500 MT) catches and in spite of a considerable drop in the albacore fishery (4,200 MT). Bluefin tuna catches remained stable (1,700 MT).

Research was carried out on the stocks of these species, and France made an important contribution to the International Skipjack Year Program.

Two cruises were undertaken in May-June and August, in order to study stock-age structure of albacore in the waters between the Bay of Biscay and the Azores. A total of 620 fish were tagged and two populations detected in the northeast Atlantic (Azores and "traditional") were studied. There was a sampling effort in conjunction with the collection of catch and effort data.

Out of the total catch of 1,500 MT Mediterranean bluefin tuna, 75 percent was sampled, and an overall study was made on the change in age compositions and stock abundance in the east Atlantic and Mediterranean during the last thirteen years.

Studies on tropical tunas were conducted on catch composition and abundance as well as on dynamics.

France took part in the International Skipjack Year Program through tagging (800), intensive sampling, age studies and studies on tropical Atlantic oceanography.

5.8 GABON

No report was presented.

5.9 GHANA

There were slight movements of vessels within the fleet in 1980. Two baitboats left the fleet for Venezuela. Two large purse seiners, one American-built, the other Norwegian-built, joined the fleet.

In 1981, three more large Norwegian-built and three small Norwegian-built dual purpose purse seiners have joined the fleet.

Ghanaian tuna catches amounted to some 13,000 MT in 1980. This figure is likely to increase in view of the developments stated above.

Ghana continued to sample the landings of tuna for length and weight on all Tema-based boats. Technicians were welcomed aboard three cruises in 1980 and three cruises in 1981 to conduct on-board sampling.

Tag recoveries were monitored, and in 1981, not only did Ghana recover one red tag, but a Ghanaian recovery won \$500 in the lottery run on recovered tags.

As a contribution to the Skipjack Year, Ghana continues to sample gonads and stomach contents. As of now, two gonad samples and about 500 stomach samples have been collected.

5.10 IVORY COAST

Tuna catches of the Ivory Coast fleet increased to 15,926 MT in 1980, with 62 percent yellowfin and 36 percent skipjack. In net weight, canned production represented 7,882 MT or 49.48 percent of the total catch.

The landings and transshipments at the port of Abidjan amounted to 101,226 MT. There was a 90 percent coverage rate for Task I and Task II data, and a 25-30 percent coverage rate for biological data.

The "Centre de Recherches Océanographiques" of Abidjan actively participated in the Skipjack Year Program with tagging cruises and biological sampling of gonads and stomach content analysis.

5.11 JAPAN

In 1980, the catches of tuna and tuna-like fishes by Japanese Atlantic tuna fleets amounted to about 48,000 MT, about 10 percent higher than the preceding year's catch. The longline catch, made by 300 boats, was about 34,000 MT, comprised mainly of bigeye tuna (62 percent). Tema-based Japanese baitboats (12 vessels) caught 14,000 MT of tropical tunas, of which 88 percent were skipjack. Both fleets have been under the ICCAT regulations for yellowfin, bigeye and bluefin tunas.

Scientific research on tunas and billfishes in the Atlantic has been conducted by the Far Seas Fisheries Research Laboratory. Fishery statistics, Task I, Task II and biological data were submitted routinely to the ICCAT Secretariat as requested by the SCRS.

The results of research on fishery biology and stock assessment analysis were presented to the SCRS in six documents. The Japanese contribution to the International Skipjack Year Program focused on tagging and resulted in the release of 7,000 skipjack and 591 bigeye tuna in the Gulf of Guinea.

5.12 KOREA

In 1980, the Korean commercial catch of tunas and tuna-like fishes in the Atlantic Ocean amounted to 28,853 MT by 70 fishing vessels, showing a decrease of 22.6 percent compared to the previous year.

A total of 54 longliners operated for tunas and caught 18,952 MT, a decrease of 5.6 percent from 1979. Sixteen baitboats based in Tema harvested 9,901 MT, indicating a decrease of 42.3 percent compared to the 1979 catch. Notably, the catch of skipjack which is the main target species of this fishery decreased 44.1 percent from the previous year.

The collection and analysis of catch and effort and biological data from Korean tuna fishing vessels were carried out as in past years. For the ICCAT Skipjack Year Program, Korean baitboats have carried out dart tagging and have collected biological information for tropical yellowfin and skipjack.

5.13 MOROCCO

No report was submitted.

5.14 PORTUGAL

Portuguese tuna catches for 1980 reached 6,129 MT, the major part of which is caught by baitboat. They are distributed as follows:

- 311 MT from Madeira of which 224 MT were bigeye;
- 5,260 MT from Azores which included 1,689 MT of skipjack and 3,484 MT of bigeye;

- 140 MT from the mainland (species breakdown not available);
- 418 MT from tropical waters caught by a Portuguese purse seiner.

Madeira catches in 1981 are estimated at 600 MT. This value is still very low, when compared to the average catch effected in the same islands in the 1970's. However, a decrease in effort was not observed.

Historical data on Portuguese tuna catches were sent to the Secretariat, thus completing the task of revision initiated in 1979 at Madeira and the Azores.

During 1981, biological sampling was done for the more important species caught, especially for skipjack, for the International Year. Sampling was extended in order to cover a more significant part of the landings.

In 1982, enlargement of biological sampling will proceed and effort will be made in trying to solve statistical problems, mainly in continental Portugal.

5.15 SENEGAL

In 1980, only the baitboat fleet (28 vessels) based at Dakar remained active. Total catch was 7,900 MT, slightly over the 1979 figure due to an increase in yellowfin and bigeye tuna catches, though effort was considerably lower. The small tuna catches (3,800 MT) are increasing probably due to an improvement in recording statistical data on landings. Sailfish catches rose to a record 300 MT in 1980.

There was a considerable amount of research carried out because of the Skipjack Program. On two tagging cruises, one of which was financed by the EEC, 2,600 tunas were tagged and 50 percent of these were skipjack. An acoustic tagging cruise took place with French participation and was especially successful. Important biological sampling of skipjack was carried out such as measurement, sampling of gonads (800) and dorsal fin spine samplings (500).

5.16 SOUTH AFRICA

No report was submitted.

5.17 SPAIN

In 1980, the total catch of tunas and tuna-like fishes reached 113,312 MT, 14,000 MT over the catches for the previous year. This is primarily due to the increase in catches of the tropical fleet fishing for skipjack. The Canarian local fisheries fleet maintained its catch level from last year, while in the Peninsular area catches increased slightly due to successful fishing for frigate tuna, Atlantic little tuna and Atlantic bonito.

In the area of research, efforts were directed towards the completion of SCRS recommendations, and the International Skipjack Year Program. Under the Program there was active participation in "intensive sampling," collection of gonads and dorsal spines, as well as the tagging of over 1,000 individuals.

A bluefin tuna tagging cruise also took place in the Bay of Biscay and a swordfish tagging cruise in the northeast Atlantic.

5.18 UNITED STATES

United States catches of tunas and tuna-like species in the Atlantic Ocean during 1980 increased 14 percent from 18,000 MT in 1979 to 20,000 MT in 1980. Tropical tuna catches decreased 9 percent from 6,500 to 5,900 MT. Bluefin tuna catches decreased 34 percent from 2,300 to 1,500 MT. Catches of swordfish increased 4 percent from 3,400 MT to 3,500 MT.

Both tropical tuna and bluefin tuna fleets of the United States operated under regulations. The tropical tuna fleet was subject to a 3.2 kg minimum size regulation on yellowfin tuna throughout 1980 and on bigeye tuna during the last quarter of 1980. The bluefin tuna fleet operated under a strict minimum size limit, quota and season regulation.

Research activities during 1980-1981 included stock assessment, age and growth and stock identification studies. An analysis of biological data was conducted to derive a length-weight relationship for Atlantic bigeye tuna. A technique to reduce bias inherent in age-frequency estimates using the deterministic growth relationship was investigated. A study was also conducted that examined the possible biases in the parameter estimates resulting from fitting the generalized stock production model by least squares and equilibrium approximation.

Collection of fishery and biological data from commercial and recreational United States fisheries for tuna and tuna-like species continued in 1980-1981. United States tuna imports from the Atlantic continued to be sampled for biological data in Puerto Rico.

5.19 U.S.S.R.

No report was submitted.

5.20 ITALY

In 1980, the Italian catches of tunas and tuna-like fishes were 12,000 MT, broken down as follows: 5,400 MT bluefin tuna, 1,400 MT frigate tuna, 1,100 MT bonito, 3,600 MT swordfish and 500 MT albacore. These were caught exclusively in the Mediterranean Sea.

The bluefin catch by purse seiners has increased, for small as well as for large fish, after the drop in catches suffered the previous years. The success of this fishery is very closely related to hydrological conditions and to fish behavior, and therefore, cannot be used for purposes of an abundance index. Trap fishing decreased slightly.

The principal bluefin fisheries (Tyrrhenian purse seiners, Adriatic purse seiners, Sicilian traps) were monitored by various scientists. Studies were carried out in certain areas on swordfish and albacore fisheries.

Studies on the hydrological conditions were conducted in giant bluefin fisheries areas of the Tyrrhenian Sea especially during the spawning season. These studies also included aerial and on-the-spot observations of tuna distribution, behavior, biology and fishing methods. Similar studies were also applied to Tyrrhenian and Ionian albacore.

Research was conducted on the feasibility of artificial reproduction methods for bluefin tuna for purposes of breeding and the restocking of natural habitat. Five reproducing tuna were kept in a floating cage for three months during which time a number of observations were made on these fish in captivity.

The Italian Government financed a research cruise for the entire Mediterranean to determine the spawning areas of bluefin tuna and other tuna-like species, particularly in the eastern Mediterranean, and also to assess the biomass of bluefin reproduction in the entire Mediterranean.

5.21 CHINA (TAIWAN)

The number of Taiwanese boats fishing in the Atlantic in 1980 was 168, all longliners. In the previous year, 1979, it was 194. The total hooks used in 1980 was estimated at about 42 million; the total in 1979 was 44 million hooks. Total landings in 1980 amounted to about 31,100 MT, of which albacore (24,700 MT) comprised about 83 percent of the total landings. The amount of yellowfin and bigeye landed was 580 MT and 2,260 MT, respectively. Logbook coverage for 1980 was about 70 percent, as compared to 48 percent in 1979. Some 44,000 albacore, 2,000 bigeye and 1,000 yellowfin were measured. In total, more than 1,600 billfishes were also measured.

5.22 CONGO

There were no tuna fishing activities in 1980-81. This was due to a decision adopted by the government to dissolve the "Société italo-congolaise d'Armement de Pêche" (SICAPE) which had conducted tuna fishing with three tuna boats (two of which had been inactive since 1979). This government decision was made after the administration meeting held in Rome in April, 1981, with the Italian partners.

An official trustee has now been appointed and a quantitative and qualitative assessment of the three tuna fishing vessels has already started.

It should be underlined, however, that under the Five-Year Plan (1982-1986), one of the major interests of the Department (Ministry of Industry and Fisheries) is still to encourage tuna fishing.

Insofar as the research program is concerned, it is to be noted that Congo participated, along with ORSTOM Pointe Noire scientists, in a skipjack cruise in 1981.

Item 6. Review of conditions of stocks, with brief presentation of major papers on this subject

6-A TROPICAL TUNAS

AYF-YELLOWFIN

AYF-1 Description of fisheries

Yellowfin tuna are caught throughout the tropical Atlantic and adjacent waters by surface (primarily purse seine and baitboat) and longline fisheries. The surface fisheries are concentrated in the eastern Atlantic, primarily along the African coast.

Trends in catch by area, gear and nation are shown in Table 1 and Fig. 1. The previous peak catch was about 133,000 MT in 1978, while the 1980 catch was estimated to be about 120,000 MT. The 1981 catch of some 140,000 MT will set a new record. The major reason for the large increase projected in 1981 is the very large Spanish purse seine catch, over 55,000 MT (compared to 30-40 thousand tons a year in 1976-80). The 1981 FIS projected baitboat catch is also roughly double when compared to 1979-80 and the largest since 1974. All of these increases are projected in the eastern Atlantic. Catches for other components of the fishery apparently did not change much from 1980 levels, although projected FISMP purse seine catches are the lowest since 1976. Small catches of yellowfin are being made in the rapidly developing Brazilian skipjack fishery.

No new data became available on discards of small yellowfin, but they probably continued at or near previous levels, something over 3,000 MT.

New information on the 1979 South African catch confirms the suggestion that this catch is from Indian Ocean stocks.

No marked short-term changes in fishing effort were reported, although the long-term increase continued. There has been, as previously noted, a long-term decrease in the number of baitboats and small purse seiners, accompanied by an increase in the number of large purse seiners, especially in the FISM fleet. Fleet carrying capacity has increased as shown in Table 2 and Fig. 4.

AYF-2 State of stocks

The question of a single stock or two stocks of yellowfin is unresolved. The following material treats the stock as a single one, but nearly all the surface fishery data come from the eastern Atlantic. No new analyses of the two-stock hypothesis were presented.

When raw CPUE is standardized, it appears that there has been a general downward trend of CPUE in the eastern Atlantic purse seine fishery during the 1970's. Fig. 2 shows the corrected FISM CPUE (used as a measure of abundance) as well as CPUE for the Japanese longline fishery, and two estimates of biomass based on cohort analyses. The surface data show trends similar to those shown in estimated biomass in recent years, but the longline data show almost no trend for the last ten years. On the other hand,

the initial sharp decline in longline CPUE is not reflected in the slow decline suggested by cohort analysis. New analysis supports the hypothesis that the biomass estimates from the cohort analysis more closely reflect the real population abundance trend. The Committee agreed that the real abundance of yellowfin in the area fished has decreased.

The Committee reviewed results of a production model analysis (Fig. 3) which used updated data including catches that were slightly different from those in Table 1. The analysis gave MSY estimates ranging from 118,000 to 219,000 MT with different values for the model parameter m and k . Estimates at the high end of this range are for $m = 0$. This range is wider than that estimated by the Committee last year, owing to the different time series of the data and higher k value used this year. A more realistic estimate of the upper level of MSY for the current fishery is 155,000 MT, with twice the current fishing effort (for the $m = 0$ model).

Results of a computer simulation analysis, that used input information for a simulated fishery with expanding fishing area and increasing fishing effort -such as has been experienced by the eastern tropical Atlantic yellowfin tuna fishery, showed that the MSY is overestimated when $m = 0$. The Committee, therefore, assumed that the upper range of the estimated MSY ($m = 0$) may be an overestimation by as much as 50 percent.

Considering the high projected catch for 1981 and the estimated fishing effort, the Committee believes that the stock is presently being fished near the upper estimated MSY, and that increased fishing effort with the current fishing pattern would not produce a proportionate increase in yield.

AYF-3 Effects of current regulations

The Committee noted that in spite of the 1973 yellowfin size regulation and the 1980 bigeye regulation (both establishing a minimum size of 3.2 kg (55 cm), with a 15 percent allowance by number per vessel) large catches of undersized yellowfin continue. A study of catches of undersized yellowfin in 1979 was reported in the ICCAT Biennial Report, 1980-81, Part I, p. 99. Mean percentages in numbers of fish, adjusted to the total catch, were 43 percent for baitboats and 35 percent for purse seiners. Although the study has not been updated, percentages of undersized yellowfin in unadjusted samples presented to the 1981 SCRS meeting were 81 percent for U.S. purse seiners, 74 percent for Tema-based baitboats, and 42 percent for FISM purse seiners. Data are missing from other fleets but comparable catches of undersized fish are likely. While it is not yet clear how these data will compare with the previous study, after appropriate adjustment, it is clear that substantial catches of undersized yellowfin (and bigeye) continue.

The Japanese National Report mentions dumping at sea of 700 MT of undersized fish. There is probably considerable unreported dumping by other fleets, as well as sale of undersized yellowfin outside regular market channels. The Committee believes that substantial catches and/or landings of undersized yellowfin continue to be a serious management problem.

Unreported catching and dumping (or otherwise disposing of) undersized yellowfin has other serious effects, such as:

- a) Total catches may be considerably larger than any statistics indicate.

- b) Assessments based on incomplete statistics are biased.
- c) Estimates of benefits of possible future regulations may be too low.

AYF-4 Recommendations

AYF-4.a Statistics

The Committee recommended the following actions be taken to improve the yellowfin tuna statistics:

- i) As a first priority, the catch-per-effort and biological data collected from the Spanish fleet should be made available, and proportions of yellowfin and big-eye included in the Spanish tropical tuna catch should be accurately accounted for.
- ii) The second priority data need is for adequate catch information (at least) from the growing fleet of purse seiners with "unconventional" registrations such as Grand Cayman, Congo, etc.
- iii) Better biological data are also needed from the Cuban longline fleet.
- iv) ICCAT should continue its present port sampling program.

AYF-4.b Research

The Committee recommended that the following research receive high priority in 1981-82:

- i) Estimation of indices of recruitment both from the CPUE of the surface fleets and from cohort analyses, and comparison of these two indices.
- ii) Estimation of the effects of non-reporting of catches of small fish on yield-per-recruit analyses.
- iii) Collection and analysis of information on growth of juvenile yellowfin, considering the use of new techniques.
- iv) Continuation of the work on investigations of alternative management schemes begun in 1980 and developed in 1981.

AYF-4.c Management

The Committee had no specific recommendations for additional management measures at this time.

ABE-BIGEYE

ABE-1 Description of fisheries

Bigeye tuna are distributed throughout the temperate and tropical regions of the Atlantic Ocean, and are harvested by both longline and surface (purse seine, baitboat) gears. The longline fishery operates over almost the entire bigeye tuna distribution area (Fig. 5). The main surface fisheries taking bigeye tuna are baitboat fisheries in local areas off Madeira, the Azores, the Canary Islands, Dakar, and in the Gulf of Guinea. Also, purse seine fleets catch bigeye tuna in the eastern tropical Atlantic. The historical catches by gear and country are shown in Table 3. The longline fishery has dominated the catch during the past 20 years (Fig. 6). The total Atlantic catch reached a record high 60,000 MT in 1974, and the catch in 1979 was 40,100 MT. The preliminary 1980 catch is 56,200 MT, which reflects the increased effort of the longline fisheries in 1980.

ABE-2 State of stocks

Since the stock structure for bigeye tuna is not well defined, the Committee assessed the state of the stock(s) under two hypotheses: (1) a single Atlantic-wide stock, and (2) two separate stocks in the north and south Atlantic. The Committee used production models to evaluate stock status for bigeye. The highest values of production estimates result from the case where $m = 0$, and this unlikely situation indicates the theoretical upper limit of production. Table 4 gives the estimates of MSY for values of $m = 0$, $m = 1$ and $m = 2$.

ABE-2.1 Total Atlantic stock

The total Atlantic stock appraisal made at this time by production model analyses suggests that the stock is currently exploited at a level within the range of MSY estimates (52,800—111,900 MT, depending on the form of the curves, Fig. 7). Consequently, increasing fishing effort would probably not result in a significant sustainable increase in yield given the current operating pattern of the fishery.

A multi-gear/multi-area simulation model was used to assess the effect of certain time and area closures for the bigeye tuna fishery. Based on synthetic cohorts of 1976-78 and under various assumptions, the results indicated that three kinds of schemes to reduce the catch of juvenile bigeye tuna would result in a minor gain of overall Y/R of up to 10 percent after 3 to 7 years (Table 5). However, the overall gain is distributed such that longliners experience an increase in yield-per-recruit, while the surface fleets, with the exception of the Canary Islands and Portuguese fleets, experience a decrease.

ABE-2.2 North Atlantic stock

The current fishery is believed to be operating at a level higher than that for 1979, the latest year for which complete catch and effort data are available, but below levels

corresponding to estimated MSY (33,100–72,000 MT, depending on the parameters of the model used, Fig. 8). An effort increase with the same fishery pattern would probably result in some sustainable increase in equilibrium yield.

ABE-2.3 South Atlantic stock

For the south Atlantic stock the present analyses indicate that in 1979, the latest year for which complete data are available, the fishery was operating at a level close to the levels associated with estimated MSY (20,600–47,700 MT, depending on the parameters of the model, Fig. 9). Catch and effort for 1980 are expected to be greater than that for 1979. This tentatively suggests that the expected increase in effort under present exploitation patterns would only result in a modest sustainable increase in yield.

ABE-3 Effects of regulations

In 1979, the Commission adopted a minimum size regulation of 3.2 kg for bigeye tuna, which is expected to result in an increase in overall yield-per-recruit. This regulation was put into effect in September, 1980. Size composition sampling results made available for 1980 indicated that percentages by number of bigeye tuna less than 3.2 kg in the catch for the entire year were 12 percent for the FISM surface fleet, 5 percent for the U.S. purse seine fleet and 75 percent for Atlantic transshipments, primarily from Tema, Ghana, to Puerto Rico. Even though data from some fleets are absent, small bigeye are likely also caught in similar amounts by them.

The Committee noted that though the size limit regulations could resolve the deliberate misreporting problem of undersized yellowfin tuna as bigeye tuna to some extent, the magnitude of discards and non-reported catches should be monitored carefully in the surface fishery in order to evaluate this.

The Committee recognized that the present size regulation on bigeye tuna would provide an increase in overall yield-per-recruit. However, the regulation has not been in place long enough to assess its intended effect. This delay in measureable results is clearly shown in the simulation model (Table 5).

ABE-4 Recommendations

ABE-4.a Statistics

The Committee recommended the following actions be taken to improve bigeye tuna fisheries data:

- i) The amount of bigeye tuna included in the Spanish tropical tuna catch should be accurately accounted for.
- ii) Catch, catch/effort, and biological data collected from the Spanish fleet since 1975 should be compiled and made available for stock assessment.
- iii) Biological data from catches of the Portuguese baitboat fleet should be collected.

- iv) Sampling of size and species compositions should be continued by those countries currently reporting, and encouraged for countries not currently engaged in this sampling activity.
- v) There is a major need for data on "dumping" and other unreported catches of under-sized bigeye tuna.
- vi) The effort information from the Madeira Island fisheries should be improved.

ABE-4.b Research

The Committee recommended that:

- i) Data pertinent to bigeye tuna collected during the International Skipjack Year Program should be thoroughly examined to provide further information on bigeye tuna stock structure, migration, abundance, growth, species composition and size within schools as well as other information that will improve resource and fishery assessments for bigeye tuna.
- ii) An index of abundance that incorporates information from the bigeye tuna surface fisheries should be developed.
- iii) In view of the practical problems regarding monitoring and enforcing the minimum size regulation, alternative management measures to reduce mortality on juvenile bigeye tuna should continue to be investigated.
- iv) Abundance indices on the bigeye fisheries of Madeira should be improved to clarify the recently verified decrease in catches for that archipelago.

ABE-4.c Management

The Committee had no new management recommendations to offer at this time.

ASJ-SKIPJACK

ASJ-1 Review of fishery data

Major skipjack tuna fisheries are concentrated in the east Atlantic (east of 30°W) as well as in the west Atlantic. Catches of the principal fleets are represented in Table 6, from 1966 to 1980, and have been plotted on Fig. 10. Estimates for 1981 have also been added to this figure. Skipjack catches for the total Atlantic increased regularly between 1960 and 1974 and since then fluctuated between 60,000 and 120,000 MT. The catch for 1981 is projected to attain an all-time high of 140,000 MT.

In 1980, more than 90 percent of the catch (101,000 MT) took place in the east Atlantic, the greater part of which (62,000 MT) was fished by purse seiners, primarily of the FIS (France, Ivory Coast, Senegal), Spanish and American fleets. The estimated skipjack tuna purse seine catch for 1981 is 76,000 MT, the increase over 1980 being

mainly due to the increased catches of large (more than 60 cm) skipjack caught offshore by the FIS fleet. Baitboats (Angola, FIS, Ghana, Japan, Korea, Spain, Cape Verde, Portugal) caught 38,000 MT in 1980, and estimates for 1981 are 39,000 MT.

Western catches are made primarily by Brazil, Cuba, U.S.A., and Venezuela, and reached 10,000 MT in 1980. The rapid expansion of the Brazilian baitboat fishery (23 vessels in 1979, 33 in 1980, 80 in 1981) suggests that its catch might reach 20,000 MT in 1981, giving a total for the west Atlantic of 23,000 MT.

ASJ-2 State of stocks

Data from the International Skipjack Year Program are being collected but are not yet analyzed. Therefore, no good index of skipjack tuna abundance is currently available, and no new analysis was presented this year. The 1980 SCRS Report discussed why the CPUE's for the FIS, U.S. fleets (Fig. 11) and the Japanese baitboats appeared to be unreliable indices. In the absence of any index of abundance (particularly because of the lack of standard effort data for the Japanese, Korean and Spanish fleets) it would be misleading to adapt a production model to skipjack stocks, even if this were possible.

No new analysis of yield-per-recruit of skipjack tuna was presented. The Committee noted that the only information available is that from earlier studies (Dakar Working Group, 1976, as presented in the Report of the Working Group on Juvenile Tropical Tunas, 1980). Based on 1972-73 cohorts, this report stated that under current fishing practices, an expected increase in size-at-first-capture could not improve yield-per-recruit.

However, according to the Committee, the pattern of fishing has changed greatly: there is an increase of more than 20 percent in average catches from 1979-80 compared with the 1973-75 period, an extension of width of fishing area, and capture of older skipjack tuna off and along the coast of Brazil. It is probable, therefore, that yield-per-recruit corresponding to this new scheme of exploitation will have increased. A new analysis taking into account the development of the fishery should then be made.

In conclusion, skipjack tuna in the eastern Atlantic are currently fished at a higher level than in the western Atlantic. The true potential yield from the stock(s) is unknown, but available information suggests that the potential is larger than current catch levels.

ASJ-3 Effects of current regulations

There are no regulations for skipjack tuna at this time. However, since skipjack tuna are often found in mixed schools together with young yellowfin and bigeye tunas, current regulations for the latter two species might affect skipjack yield.

Other measures being considered, such as the seasonal closure of fishing areas in the Gulf of Guinea, may have significant effects on the skipjack fishery. The Committee concluded last year that under the current fishing patterns used for the analysis, potential gains expected for yellowfin and bigeye tuna catches would probably not compensate for the reduction in skipjack tuna catches resulting from these measures.

ASJ-4 Recommendations

ASJ-4.a Statistics

In the context of the International Skipjack Year Program, the Sub-Committee on Skipjack had noted the specific needs for improvement of skipjack tuna statistics. The recommendations made last year are generally still valid:

- i) Catch statistics are relatively good. However, an attempt should be made to improve catch statistics from the purse seine fleets of Congo, Portugal, Morocco (those not yet covered by FISMP) and Grand Cayman Island, and also Moroccan baitboats.
- ii) While recognizing that data collection improved in recent years, the Committee recommended that Task II and biological data collected from Spanish purse seiners should be made available to the Committee to improve its evaluations in the future.
- iii) Finally, effort statistics from Japanese and Korean baitboats should include search time in order to make them compatible with those of other fleets.

ASJ-4.b Research

The International Skipjack Year Program was developed specifically to improve the scientific information on the species so that the Committee might have the best decision-making information at its disposal. The first reports of the Program, especially on tagging, have proved of value and further analysis will be continued in 1982.

These results should be presented at a conference to be convened in 1983 and a synthesis should be made. Details of these points are contained in the Sub-Committee's Report.

ASJ-4.c Management

The Committee noted that scientific information available on skipjack tuna is insufficient for developing informed management recommendations. Management of skipjack is interlinked with that of juvenile yellowfin and bigeye, as described in section 6-F (Multi-species, Tropical).

6-B ALBACORE

B-1 Description of fisheries

The Atlantic albacore population is assumed primarily to comprise northern and southern stocks divided at 5° N. Separate statistics are kept for each stock. Some interchange between northern and southern stocks and Indian Ocean and southern stocks may occur.

Total catches of Atlantic albacore appear to show a general declining trend since 1962 (Table 7 and Fig. 12). Combined surface and longline catches of the northern stock have declined from about 60,000 MT in the early 1960's to just below 50,000 MT in the recent decade. The 1980 estimated catch is about 37,000 MT. Catches from the southern stock (longline only) have generally remained in the 20,000 to 30,000 MT range since 1964. In 1980 surface catches exceeded 1,000 MT for the first time. The 1980 catch is about 21,000 MT (Table 7).

Fishing effort on the northern stock appears to be declining, especially since 1977. Longline effort (Fig. 13) appears to have peaked in 1977 and then decreased 40-50 percent by 1980, although this amount of fluctuation has been observed in the past. Surface fishing effort (Fig. 14) continues to decline. This trend began in 1958, and is observed particularly in the troll fishery which produces about half of the surface catches.

Fishing effort on the southern stock appears to continue the increasing trend started in 1959 (Fig. 15) although the 1980 effort level is about 15 percent less than the 1979 value.

B-2 State of stocks

B-2.1 North stock

Longline catch-per-effort (CPUE) for the northern stock, if taken as an abundance index, indicates the adult portion of the stock is remaining constant (Fig. 16) at about the 1976 level. Surface fishery CPUE in terms of weight suggests an increase in juvenile abundance since 1973 (Fig. 17 and 18). Surface fishery CPUE shows more year-to-year variability than longline CPUE.

The production model analysis done in 1980 shows an MSY ranging from 60,000 MT to 65,000 MT depending on the model used (Fig. 19). The 1979 and 1980 (preliminary) catches and efforts estimated by the Committee are added to Fig. 19, although the 1979 and 1980 data were not used in the fitting of the production curve. The 1980 catch, 37,000 MT, was produced by an estimated effort of about half that needed to produce MSY.

Previous analyses indicate that yield-per-recruit may be increasing due to a shift of effort towards larger fish. The last estimated yield-per-recruit was 4.1 kg for the 1974-1978 period.

Recruitment appears variable but no pronounced trend is evident (Fig. 20-a). Fig. 20-b shows low parent stock and high recruitment variability as mentioned in previous years. Recruitment values observed in Figs. 20-a and 20-b for 1977 and 1978 should be considered provisional. The parent stock index is based on Japanese longline CPUE and may differ somewhat from more precise estimates used in the past which were based on total effective longline effort. As before, the north stock should be closely watched.

The North Atlantic albacore is moderately exploited. Recent trends in the data indicate that catch and effort are declining while CPUE is remaining the same or increasing. This suggests that pressure on the stock is decreasing slightly, and increased catch should be available with increased effort. With the exception that parent stock abundance is relatively low, the northern stock appears healthy.

B-2.2 South stock

Catch-per-effort for the south Atlantic longline fishery has declined since 1960; however, CPUE in the latest years appears to be without trends (Fig. 21).

The Committee fitted a production model ($m = 2$) to catch and estimated nominal effort data (Fig. 22). The current MSY estimate is about 25,000 MT at an effort level of about 65 million hooks. This estimate is close to the 1978 estimated MSY of 30,000 MT. The 1980 catch of 21,000 MT was taken with an estimated nominal effort of 65 million hooks. Because catch and effort are near those associated with MSY, the Committee recommends a production model be done using effective longline effort, which adjusts effort to account for effort expended on non-target species. This may alter the results slightly.

Because of few changes in the fishery, yield-per-recruit estimates done previously are still valid. The fishery is realizing a yield-per-recruit of about 7.7 kg and it is unlikely that this can be increased, because it is near the eumetric fishing line. As the surface fishery develops, yield-per-recruit should change.

Neither recruitment nor stock-recruitment relations have been prepared for the southern stock.

Based on current data and previous analyses, the southern stock appears to be operating near MSY and producing a near maximum yield-per-recruit. Note that the development of a surface fishery may change both MSY and yield-per-recruit estimates.

B-3 Effects of regulations

Currently there are no management regulations on Atlantic albacore.

B-4 Recommendations

B-4.a Statistics

i) Surface fisheries

Surface fisheries in the south Atlantic (pole-and-line and purse seine) should be monitored closely because these could contribute a significant proportion to total catch if development increases.

ii) Longline fisheries

Total fishing effort of longline must be standardized for both the north and the south. This has not been done since 1979.

B-4.b Research

Recommendations made in 1980 are still valid:

- i) Production model analysis of the northern and southern stocks must be undertaken, using revised catch and adjusted effort statistics.
- ii) Recommendations made in 1979 and 1980 on sex and age determination in catches are still valid. This applies mainly to several fisheries for adult albacore. This may allow for an understanding of male and female ecology and eventually an explanation of different availability by sex in the longline fishery.
- iii) For the northern stock it is still necessary to monitor the stock-recruit and yield-per-recruit situation.
- iv) A comparison of the adult indices used for the northern stock should be made.
- v) An index of recruitment is needed for the southern stock. This index could be obtained from a surface fishery such as that of South Africa.
- vi) Research into the Mediterranean stock, and its relation to the North Atlantic stock needs to be initiated.

B-5 Management

The northern stock seems to be healthy. Recruitment is variable but it does not show any pronounced trend. There is no immediate concern. Therefore, there is no special recommendation concerning management.

The southern stock appears to be fished at MSY. Analysis to confirm this should be undertaken. No specific management is required.

6-C BLUEFIN

C-1 Description of fisheries

Bluefin tuna are exploited by numerous national gear-specific fisheries that are not only geographically and temporally distinct but also are specific as to the size of fish caught. Major fisheries are found in the North Atlantic in both eastern and western waters. The geographical distribution of longline catches has been continuous and mark-recapture data show some interchange of fish between eastern and western areas occurs, but the existence of two temporally and spatially separate spawning areas is certain. Although the magnitude or frequency of interchange is not yet known, the present evidence (which is still somewhat weak) is towards the hypothesis of separate eastern and western stocks with a small and variable interchange. However, the evidence is not sufficient to reject the hypothesis of a single Atlantic-wide stock. Atlantic fisheries were therefore separated according to the equal-distance line in ICCAT Report 1979-80 (see Addendum I to Appendix 5 to Annex 5 to the Proceedings). In the table below, reported catches from the Mediterranean Sea are also segregated from those of other east Atlantic waters.

	<i>Hundreds of metric tons</i>										
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
East Atlantic	57	43	57	46	58	99	58	70	83	64	47
Small fish	26	22	34	27	22	43	13	23	23	16	13
Large fish	31	21	23	19	36	56	45	47	60	48	34
Mediterranean	49	66	53	57	124	111	161	119	78	98	80
Small fish	18	37	29	34	57	45	99	59	52	63**	40
Large fish	31	29	24	23	67	66	62	60	26	35	40
West Atlantic	58	71	40	38	33	52	56	66	56	60	52
Small fish	38	37	20	16	12	23	14	14	12	12	6
Large fish	20	34	20	22	21	29	42	52	44	48	46
Total	164	180	150	141	215	262	275	255	217	222	179
Small fish	82	96	83	77	91	111	126	96	87	91	59
Large fish	82	84	67	64	124	151	149	159	130	131	120

* These estimates are preliminary.

**According to SCRS/81/51, this figure is 36. This was later confirmed by the rapporteurs and the ICCAT data base was changed accordingly.

All Atlantic catches continued to decrease from 1979 to 1980 in both eastern and western fisheries (Table 8).

C-2 State of stocks

The state of stocks was analyzed according to two assumptions: that of two separate stocks (one in the east and one in the west), and of a single stock. Abundance trends and exploitation rates were derived from virtual population (cohort) analysis. Results are sensitive to input parameters and abundance estimates are less reliable for recent recruitment; however, the analysis technique provides the best estimates of bluefin population dynamics available for large fish. Estimates of abundance of younger fish are based in part on longline catch and effort data, assuming age-specific catchability is constant between years. However, there is reason to believe that this assumption may not hold, hence these estimates for younger fish may contain appreciable bias.

C-2.1 East stock

Adult abundance decreased about 50 percent from 1960 to 1979 but the entry of abundant cohorts increased the 1980 adult stock to the 1971 level, or to about 74 percent of its former level (Fig. 23). The abundance of recruiting cohorts has fluctuated without trend, 1960-1979. Although accurate estimates of recent cohorts are evolving, they seem very abundant, hence stock-recruitment considerations are not necessary at this time. Although estimates of individual cohorts differ, these same general trends were

reported last year. Estimated rates of fishing mortality indicate that fishing rates of juvenile fish decreased during the period in general, although high rates are estimated for specific years. Exploitation levels of adults increased from 1969 through 1974 and no increase is evident since. Projections indicate that significant increases in rates of exploitation will reduce abundance below current levels.

C-2.2 West stock

The abundance of juvenile and adult fish decreased steadily since 1960; current levels are low (Fig. 24). Recruitment levels have dropped to 12 percent of the 1960 level, as has the juvenile stock although the estimate of recent recruitment is less reliable than former ones.

The very abundant 1973 year-class, although greatly reduced by heavy exploitation, makes up about 40 percent of the adult stock at this time. Its occurrence on known west Atlantic spawning grounds is not expected until 1983 (at age 10) and continued heavy exploitation of that year-class will reduce its numbers to insignificant levels before then. Estimates of fishing rates reflect a decrease in juvenile exploitation since the early 1970's and steady levels in the later 1970's. Adult fishing mortality rates increased considerably in the 1970's and have been at a high level since 1977.

Large decreases in adult stock abundance and possible concomitant depressed recruitment indicate stock-recruitment considerations are relevant (Fig. 25). The relation indicates that at current adult stock levels, recruitment abundances will be very low. Since there is no indication that adult stock abundance will increase in the immediate future, the probability of an abundant year-class in the near future seems very low.

Steady decreases in stock abundance concomitant with consistent catches indicate surplus production may be much lower than yields. Surplus production is the change in stock weight that will occur if there is no catch. Estimates of 1982 surplus production of adult fish (below) indicate little, if any, surplus at current abundance levels.

1982 Surplus Production (MT)	
Adults (Ages 5-30)	-410 to -379

C-2.3 Atlantic stock

Adult abundance (Fig. 26) dropped considerably since 1960. Adult stock size estimates for 1980 are 25 percent of the 1960 level. Recruitment strength has likewise undergone a downward trend. Juvenile abundance also decreased considerably from the early 1960's level. Stock-recruitment analysis (Fig. 27) indicates current adult stock levels could produce cohorts of low abundance. Surplus production projections for adult fish (below) indicate current stock levels do not produce high surplus production levels. Surplus production is the change in total stock weight that will occur if there is no catch.

1982 Surplus Production (MT)	
Adults (Ages 5-30)	9,483 to 9,553

Estimated fishing mortality rates reflect increases in the late 1970's for both the juvenile and adult segments of the stock; levels doubled. This rapid increase in mortality rates concomitant with decreases in recruitment levels contributed to the significant decreases in stock abundance.

C-3 Effects of current regulations

In August, 1975, the ICCAT regulation limiting fishing mortality went into effect so that the first full year of regulation was in 1976. If a single Atlantic stock exists, fishing mortality has slightly increased since 1976 on, and if these rates of exploitation continue in 1982, catches will exceed surplus production. If two stocks exist, fishing mortality in the east Atlantic decreased slightly on juveniles and adults and catches will not likely exceed surplus production at current exploitation levels. If two stocks exist, fishing mortality on adults doubled in the west from 1976 to 1977 then remained constant through 1980. At these current levels of catch or fishing mortality rates, yields will exceed surplus production.

A regulation limiting the catching of bluefin less than 6.4 kg. also went into effect in August, 1975. The regulation limits the catch of age 0 and 1 fish. Catches of these sizes as estimated from available size frequency data apparently decreased significantly after the regulation from the high in 1975. Atlantic-wide, the estimated catch of age 0 fish is now negligible and catches of age 1 fish are greatly reduced.

C-4 Recommendations

C-4.a Statistics

- i) Last year's recommendation concerning the informal exchange of data between national experts resulted in significant progress and this cooperation should be continued.
- ii) Longline nominal statistics do not include mutilated fish, hence landings are reported rather than catches. In the future, nominal statistics must include all caught fish and available reports of the numbers of mutilated fish included in the bluefin data base.
- iii) In order to complete the bluefin data base, the SCRS recommended continuing the collection of all data that can improve the knowledge of total landings and age structure of the catches. This recommendation applied for all countries, but particularly to ICCAT non-member countries.

C-4.b Research

- i) The amount and periodicity of interchange of bluefin between eastern and western waters is of prime concern. SCRS received a brief report on bluefin stock studies employing trace element chemistry. Chemical differences were found be-

tween fish of ages 2 and 3 caught in the Atlantic off Spain and the U.S.A. SCRS recommends that these studies be pursued by scientists from the various countries collaborating to provide samples from the eastern and western Atlantic and the Mediterranean. These samples of caudal peduncles should be statistically meaningful and cover all size classes from the east and west Atlantic and Mediterranean Sea.

- ii) The tagging of small fish in the Atlantic was very successful from 1978 through 1981. Tagging studies should be continued in the Mediterranean Sea, east Atlantic, and west Atlantic to verify growth estimates and monitor exchange rates.
- iii) Aspects of the reproductive biology of 130-200 cm fish, including time, location and reproductive success, are not described and emphasis should be placed on such investigations.
- iv) As mentioned previously, the population dynamics of younger fish in current years are poorly estimated with currently used techniques. Better methods absolutely must be developed to monitor the abundance of such cohorts. SCRS recommends a working group be established to investigate and develop accurate methods for predicting the abundance of younger fish in current years. Methods should contain recruitment mechanisms and underlying causal processes of spawning stock size and fishing mortality rates. The proposal is attached herewith as Appendix 6.

C-4.c Management

Scientific evidence is not yet sufficient to determine with certainty if there are two separate stocks or one stock, but present evidence is towards the hypothesis of separate eastern and western stocks.

I. If the resource is to be managed as though there are *separate stocks*:

A) East stock

The east stock seems stable at current exploitation level, hence current regulations controlling minimum size and fishing mortality seem sufficient (see Biennial Report 1978-79 (Part I) p. 128, paragraph C-vii-3.

B) West stock

i) The west stock of adult fish seems depleted to very low levels. The weight of evidence supports the conclusion that the total stock weight of adult fish will remain constant or perhaps slightly decrease if there is no catch in 1982. Therefore, based on the evidence available, a major reduction in catch is recommended so that catches of fish are as near zero as feasible in 1982.

ii) Year-classes of age 1-4 do not appear abundant, thus future contributions to the adult component will depend in part on the level of catches from these year-classes. Therefore, it is recommended that catches from these juvenile fish be reduced to as near zero as feasible, to improve the stock of adult fish in the future.

II. If the resource is to be managed as though there is a *single Atlantic-wide stock*:

- i) Stock abundance of adult fish has decreased to low levels. The weight of evidence supports the conclusion that 1982 catches of adult fish in excess of 9,500 MT will further reduce stock abundance. Therefore, based on available evidence, it is recommended that catches of adult fish be held to as near 9,500 MT as feasible in 1982.
- ii) Year-classes of age 1-4 do not appear abundant, thus future contributions to the adult component will depend in part on the level of catches from these year-classes. Therefore, it is recommended that catches from these juvenile fish be reduced to as near zero as feasible.

6-D BILLFISHES AND SOUTHERN BLUEFIN TUNA

DBL-BILLFISH

DBL-1 Description of fisheries

Blue marlin, white marlin and sailfish/spearfish are caught by many fisheries both directed and incidental throughout their ranges in the Atlantic Ocean. Major catches are incidental to the tuna longline fishery of several countries. Secondary fisheries are the directed sport fisheries of the U.S.A. and Senegal, among others. Also, there are developing industrial and artisanal fisheries, especially in Ghana, as well as incidental catches to the tropical tuna purse seine fisheries. The catch statistics of these fisheries are given in Table 9. The catch statistics of blue marlin and white marlin are given in Tables 10 to 13. These tables represent the best estimates of catch based on the billfish data base newly revised and compiled at the Inter-session Billfish Workshop, June, 1981, as recommended by the 1980 SCRS. This compilation was complicated due to incorrect or inconsistent reporting by national offices. It included estimating historical catches by countries, breaking down billfish catches into species and apportioning catches of blue marlin and white marlin into the north and south Atlantic.

DBL-2 State of stocks

In considering the catches, the Committee drew attention to the decline of catches over the past ten years (Figs. 28 and 29). CPUE trends were plotted for the blue and white marlins and these also reflect a declining trend since the early 1960's (Figs. 30 and 31). In interpreting CPUE data, the Committee used only two hypotheses on stock structures for analysis. These two hypotheses are: (1) a total Atlantic stock hypothesis, and (2) based on very limited biological and fishery evidence, a two-stock hypothesis. The two hypothesized stocks are separate north and south Atlantic stocks for both blue and white marlins. Also separate east and west Atlantic stocks for the sailfish/spearfish are hypothesized. These hypotheses have been used by the Committee in past years; therefore, because of their historical precedent of stock hypotheses, our figures present conjecture based on these geo-

graphical limits. Also, historically some "higher order" analyses (specifically, production models) have been applied to evaluate these fisheries. A production model was applied this year in an analysis of the blue marlin data.

Though considerable effort was expended in revising and compiling the catch data base during 1981 by the ICCAT Secretariat and member nations' scientists, stock assessment work on billfishes is still plagued with deficiencies for the applied estimates. The newly revised and compiled statistics are significantly different from those used in previous assessments. A major consideration is that the Japanese longline catches represent a decreasing percentage of the total catch in recent years; hence the analysis is based on increasingly greater extrapolations. Still, due to the spatial and temporal distribution of the Japanese longline data, they are the best available data for effort standardization. The Committee questions whether the catch-per-unit of adjusted Japanese effort represents an index of abundance. The Committee also recognized that caution must be exercised in using this statistic to index billfish abundance. As in previous years, the Committee does not believe that the applied methodology adequately accounts for temporal and spatial changes in fishing patterns, differences in deploying gear and types of bait. For the above reasons, the production model results were not used in this year's recommendations. However, longline nominal catch rates are useful for monitoring general stock conditions.

DBL-2.1 Blue marlin

CPUE and catch from Japanese data, which are used as a basis for estimating total effective fishing intensity, have shown continued downward trends in recent years for the total and north Atlantic. CPUE increased slightly in 1977-79 but the level is still below that of 1965-74 (Fig. 30). Japanese effective fishing effort also shows a declining trend (Fig. 32), with the levels of fishing effort during 1977-79 being at the lowest since the early 1960's (Fig. 32). The Committee is unsure of the exact status of blue marlin but with the low CPUE levels of recent years, concern is expressed about any increase of effort on the stocks. The Committee believed that fisheries taking blue marlin, either directed or undirected, i.e. sport vs. commercial fisheries, should be closely monitored and if further analysis confirms this apparent low level of abundance, consideration be given to methods of reducing fishing mortality on this species.

The relationship between total catch and standardized effort is given in Fig. 34. If the CPUE is an index of abundance, then recent reductions in effort should lead to some increases in abundance in the near future.

DBL-2.2 White marlin

CPUE and catch from Japanese data have shown continuing downward trends in recent years for the total and north Atlantic. CPUE has increased from 1977 through 1979 but the level is still below that of the previous ten-year average (Fig. 31). Japanese effective fishing effort also shows a declining trend, with the levels of 1977-79 being considerably below the previous ten-year average (Fig. 33). The Committee is unsure of the exact status of white marlin but with the declining trend and low CPUE levels

of recent years, concern is expressed about increased levels of effort on the stock.

The Committee believed that fisheries taking white marlin, either directed or undirected, i.e. sports vs. commercial fisheries, should be closely monitored and if further analysis confirms this low level of abundance, consideration be given to methods of reducing effort on this species.

The observed relationship between total catch and standardized effort is presented in Fig. 35.

DBL-2.3 Sailfish

Little is known about sailfish because the major sailfish catch statistics are mixed with spearfish statistics. Therefore, there are no means to evaluate these stocks at this time. Also, no report on sailfish was presented for consideration this year. In last year's SCRS Report, the CPUE from the Senegalese sport fishery, when compared with Japanese longline CPUE of the eastern Atlantic, did not show the same trends as noted in the other species. Close monitoring was recommended because of further increases in sport, artisanal and industrial fisheries along west Africa.

DBL-3 Effects of current regulations

DBL-3.1 Blue marlin

No regulations are in force for blue marlin.

DBL-3.2 White marlin

No regulations are in force for white marlin.

DBL-3.3 Sailfish/spearfish

No regulations are in force for sailfish/spearfish.

DBL-4 Recommendations

DBL-4.a Statistics

As a result of the Inter-sessional Billfish Workshop in 1981, the historical billfish data base has been thoroughly revised by individual species. This was necessary because: (1) inadequate or inaccurate reporting of total catch; (2) inadequate effort data; (3) lumping or combining all or certain species of billfishes when reporting catch statistics; and (4) species identification problems. The Committee wished to note the significant progress made with respect to billfish statistics and further recommended that:

- i) Catch and effort statistics from all countries be reported by 5° area and by month for each of these billfish species. If this proves impractical in the near

future, then statistics for each species should be reported by ICCAT billfish area and by month. These data should include catch-by-number as well as by weight for each species.

- ii) Catch statistics for sailfish and spearfish, in particular, be reported separately by all countries in order to facilitate stock assessment work on both of the species.
- iii) As recommended by the Inter-sessional Billfish Workshop, an attempt should be made to evaluate the Japanese longline historical sailfish/spearfish ratio in the mixed catch category in order to facilitate stock assessment work on sailfish.
- iv) Length frequency data by sex for all species be collected on a regular basis for all fisheries.
- v) That species and stock identification studies both be initiated to resolve the white marlin species and stock problems.

DBL-4.b Research

The lack of basic information on growth, mortality rates, species identification and stock structure severely hampers many of the conventional population dynamics analyses. To correct these deficiencies and to provide a better theoretical base for future analyses, the Committee recommended that:

- i) Studies be continued on age and growth of billfishes to provide accurate information for study of population parameters for cohort analyses and yield-per-recruit analyses; and that preliminary findings be reported.
- ii) Further data collection and analyses be done from both the commercial and recreational fisheries for billfishes to determine indices of abundance which take into account changes in target species of the longline fleets and the incidental catch problems. Particularly, investigations into possible alternatives to using Japanese longline catch rate data for standardization should also be begun.
- iii) The available tagging data be thoroughly analyzed to evaluate information on exploitation and growth rates and to determine whether or not available or further tagging data are useful in stock assessment.
- iv) There be continued close monitoring of the sailfish fishery off Senegal and development of monitoring in Ghana due to development of commercial fisheries on this species during the apparent spawning season.
- v) Investigation of data not associated with effort (e.g., average size) be conducted for longline as well as recreational fisheries.
- vi) Attempts be made by researchers to standardize effort of the Taiwanese longline fleet.

DBL-4.c Management

No management recommendations were made at this time except to stress the need to closely monitor the billfish fisheries, particularly the CPUE and catch, which have

ward trends in catch rates continue in billfishes with the present or increased level of effort, it might be necessary to regulate some or all stocks as previously noted.

DSW-SWORDFISH

DSW-1 Description of fisheries

Swordfish are taken primarily in directed fisheries using longline, harpoon and sport gear and as incidental catches on longline gear directed towards other tuna species. However, catches have been reported for almost all types of fishing gear. Total Atlantic catches declined 33 percent in 1971 when fishing was reduced as a result of imposition of mercury content restrictions by Canada and the U.S.A. Reported catches rose only slightly between 1971 and 1977 but then increased 38 percent in 1978 when these countries relaxed the restrictions. Catches decreased slightly in 1979 to 17,600 MT and then increased in 1980 to a peak of 20,700 MT (Table 14 and Fig. 36). Much of the catch comes from the Mediterranean Sea, which raises a question as to the relation between fish in the Atlantic and in the Mediterranean.

DSW-2 State of stocks

No information was presented which enabled the Committee to advance any hypothesis of stock structure in the Atlantic Ocean and the Mediterranean Sea.

CPUE data from the Spanish Atlantic longline fishery is relatively stable and shows no trend over the short period available (Fig. 37). Data from the Canadian longline fishery (which was resumed in 1979 after an 8-year period of closure) indicate only a minor increase in catch rates when compared to catch rates just prior to closure (Fig. 38). An indication of a slight increase in adjusted CPUE was observed in the Japanese longline fishery (Fig. 39) although this fishery has not targeted swordfish, except during 1963-73, so that the trend may not reflect a real change in the stock. It is uncertain from these analyses what the real status of the stock(s) of swordfish in the entire Atlantic Ocean may be at this time.

No new data were reported pertaining to production model or yield-per-recruit analyses. Therefore, the reservations expressed in last year's Report concerning the accuracy and applicability of the analyses presented at that time remain the same.

The lack of available data precludes any firm conclusions regarding status of the stock(s) or stock structure. However, preliminary analyses have indicated that all fisheries need close monitoring in view of recent increases in catch.

DSW-3 Effects of current regulations

No ICCAT regulations are currently in effect for swordfish.

DSW-4 Recommendations

DSW-4.a Statistics

Although significant advances were made in improving swordfish catch statistics during the Inter-sessional Billfish Workshop, the lack of detailed catch, effort and sampling data reported in adequate time and area units is still a major deficiency. The Committee recommended:

- i) Catch and effort statistics should be reported by 5° area and by month for swordfish. If this proves impractical in the near future, then statistics should at least be reported by ICCAT billfish area by month. These should include catch in number as well as in weight.
- ii) Length frequency data by sex should be collected for swordfish on a regular basis.
- iii) Attempts should be made to improve historical effort statistics from the major swordfish fisheries, particularly Italy, Spain (prior to 1975) and the U.S.A., in addition to catch statistics.
- iv) Catch and effort data for the Straits of Florida fishery should be made available.
- v) The magnitude of any swordfish catches made by Canada and the U.S.A. that were not recorded as a result of mercury content restrictions, should be investigated.

DSW-4.b Research

The lack of basic data on growth, mortality rates and stock structure severely hampers many of the standard analyses used in population dynamics. To correct these deficiencies, the Committee recommended that:

- i) Studies be continued on the age and growth of swordfish and detailed results be made available for review.
- ii) Criteria for defining stock structure of swordfish be identified and studies be initiated to examine the stock structure in the Atlantic and Mediterranean.
- iii) Studies be initiated to determine if some effort indicator other than that from the Japanese longline fishery can be used to produce more reliable abundance indices.

DSW-4.c Management

No management measures were recommended at this time.

DSB-SOUTHERN BLUEFIN TUNA

The southern bluefin tuna in the southern hemisphere is composed of a single stock, the spawning ground of which is located in the northeastern waters of the south Indian Ocean. Two fisheries have been operating to harvest the stock: the Australian surface fisheries (baitboat and purse seine), which catch young fish in the near-shore waters of Australia, and the Japanese longline fishery, which shifts its effort from year to year to various specific fishing grounds in the oceans, catching mainly adults distributed in the circumpolar Atlantic, Indian and Pacific Oceans.

In recent years, the overall annual catch by the Australian surface fisheries has been increasing and the catch by the Japanese longline fleet has leveled off with stable effort (90-110 million hooks per year from 1970 to 1979).

In the Atlantic, the catch of the species varied widely in the range between 600 MT and 6,200 MT during 1970-1980 (Table 15). The catch fluctuation in recent years is only a reflection of the shift in effort between oceans depending upon whether the fishing conditions for the species were better on the Atlantic Ocean side or on the Indian Ocean side. So-called "off-cape southern bluefin fishing grounds" extend between the mid-south Atlantic and the southwestern Indian Ocean as far as 50°E.

With regard to the status of the stock, recent analysis indicated that the southern bluefin stock has been heavily exploited and a further increase in fishing effort will not be accompanied by any further increase in the total catches. There is some concern about recruitment of young fish in the future because the parent stock has been decreasing and close monitoring of recruitment is urgently needed.

There were no specific management recommendations made by the SCRS. It was noted that no regulatory measures to conserve the stock on an international basis have been recommended. However, since 1971, the Japanese longline fishermen have voluntarily restricted themselves by setting up closed areas and seasons to avoid catching smaller fish in order to prevent a further decline in the average age-at-first-capture.

6-E SMALL TUNAS

E-1 Description of fisheries

Many of the small tuna catches are made as by-catches of large-sized tuna species by industrialized fisheries (surface and longline). Those by-catches are often disregarded in statistical reports, or even discarded into the sea as undesirable species (e.g., frigate tunas). Therefore, the catches reported would be much less than those actually caught.

On the other hand, there have been local fisheries which target these small tuna species. In western Africa, the artisanal fishery (drift gill-nets, hand lines, beach seines, etc.) catches significant amounts of frigate tuna and little tuna. In the Mediterranean Sea, very significant catches of bonito by seine and line fisheries have been reported as well as by trap fisheries. In the western tropical Atlantic (including Brazil) blackfin tuna are sought and caught by baitboats, and *Scomberomorus* and wahoo are also sought and caught by the local artisanal fisheries (longline, trolling, pole-and-line, etc.) as well as by sport fisheries.

The Mediterranean artisanal bonito catches have been relatively well reported but reporting of the catches from other areas or for other species has been inadequate.

Recent improvements in the statistical systems for the African artisanal fishery resulted in increase of reported catches of small tunas in this area.

The total reported catches of these species are given in Table 16.

E-2 State of stocks

No quantitative analyses of any of the small tunas stocks have been attempted. Only observations of catch trends, relative quantity of larvae and juveniles, general biological nature of the species, etc., were compared with other tunas.

At present, it seems that there is no need for concern about stock conditions for any small tunas with the exception of the bonito stock in the eastern Mediterranean (including the Black, Marmara and Aegean Seas). The eastern Mediterranean bonito catch has been reduced substantially in recent years, although the last two years show signs of recovery.

Any coast-oriented fish stocks (including blackfin tuna) may be readily affected by an expanding fishery for other more commercially important tunas. Therefore, blackfin tuna stocks should be monitored in relationship to the recent rapidly-growing skipjack fishery in the western Atlantic which is taking place where blackfin tuna are distributed.

For other stocks, a monitoring of fisheries development is recommended, since most of the small tunas are coastal and local in nature compared to other oceanic large-sized tunas. Therefore, a sudden substantial increase in effort in one area could have an adverse impact on local populations of any of these tunas.

E-3 Effects of current regulations

No regulations are currently in effect.

E-4 Recommendations

E-4.a Statistics

- i) All catch statistics should be improved, including those for discards. For the artisanal fishery, better estimates are recommended.
- ii) Species should be correctly reported, as often there are mix-ups in species, or some species are reported together (e.g. Cuban skipjack catch data include blackfin tuna; Caribbean *Scomberomorus* catches are often misreported as other species; bonito, frigate tunas, little tuna and skipjack are often confused or reported together).
- iii) Effort data should be collected (even if the effort is not directed).

- iv) Development of new fisheries should be well monitored.

E-4.b Research

- i) Spawning surveys through larvae collections and gonad analyses (off Brazil, West Africa, Caribbean Sea) should be continued for studies of stock structure and relative abundance.
- ii) Tagging studies (Spanish and U.S.) should be well documented and continued.
- iii) Studies on biological parameters (growth and mortality) and ecology should be encouraged.

E-4.c Management

The Committee noted that there are inadequate data for proper assessment of the condition of the stocks. Consequently, the Committee cannot offer any management recommendations at this time.

6-F MULTI-SPECIES

F-1 Introduction

Multi-species interactions fall into two broad categories; those relating to considerations of catch and effort data and those affecting the biology of the species under consideration. Examples of the former are:

—the actual fishing strategy selected, e.g., the choice between maximizing a mixed catch of several species or of maximizing the catch of a single species. This applies to both surface fisheries and to longline fisheries;

—variations in the catch rates of different species on the different depth levels of a longline;

—competition for baits between species, both on longline and when bait fishing mixed surface schools; and,

—loss of catch due to sharks, killer whales, and other predators taking fish caught in the gear.

Biological interactions involve such elements as:

—predator/prey relationships both directly between desired species (e.g., marlin/tuna) and indirectly (e.g., prey species feeding on the larval stages of commercial species);

—competition for a shared prey species;

—the effects of harvesting one species on the population dynamics of another species;

--factors such as differences in the physical environment (either vertically or horizontally) that vary interactions between species (or different size groups of the same species) even when they are in close geographical proximity with each other.

The various biological interactions form a very complicated web and one difficulty for SCRS is in focusing on those of a significant relevance to the Commission's interests. Thus, statistics on longline catches that are lost to sharks are relevant while studies on the populations of the sharks are probably not.

SCRS has tended to treat species interactions as being "tropical" or "temperate," however, different size groups of many species occupy quite a different ecological area of the oceans, and thus might be considered "tropical" during part of their life cycle and "temperate" during another (usually the older stages). The immediate questions facing SCRS can, however, generally be assigned to one or the other classification, with any overlaps assigned to one or the other category according to the particular species mix or gear type involved. Such separation does not preclude joint consideration of such problems, as they relate to general assessment theory.

F-2 Tropical species

Tuna fisheries are generally classified by the dominant species that is caught and the type of fishing gear that is used. Although this classification system is useful for identification, it has a serious drawback in not properly recognizing fisheries that exploit multi-species. An example is found in the tropical Atlantic where the tuna fisheries catch multiple tuna species with a variety of gears, but are identified by the dominant species caught by the fleets. Hence, we refer to a surface (purse seine and pole-and-line gears) fishery in the eastern tropical Atlantic as a yellowfin tuna surface fishery although it actually is conducted by a fleet that searches and fishes for yellowfin, bigeye, and skipjack tunas. This fleet lands all of the skipjack tuna catch, a major part of the yellowfin tuna catch and a significant part of the bigeye tuna catch from the eastern tropical Atlantic each year. Furthermore, significant proportions of the catches are obtained from mixed-species schools, which at times can include all three species. Usually these mixed-species schools are composed of juvenile and sub-adult fish and are found in near-shore areas of the tropics. As the fish increase in size, they tend to form single-species schools rather than mixed-species schools and are found further offshore in both tropical and temperate waters. Because juvenile and sub-adult tropical tunas tend to form mixed-species schools, some fleets have experienced difficulty in following ICCAT's minimum size regulations for yellowfin and bigeye tunas, and catches of undersized fish have remained high. The Committee has, therefore, been investigating alternative management measures for reducing the catch of undersized fish.

Research progress

The Committee made substantial progress during the year in evaluating alternative management measures for tropical tunas. Particularly noteworthy is a study that used updated data and cohort analysis for yellowfin tuna and investigated the effects on yield-per-recruit when certain fisheries, such as the Tema-based baitboat fishery, and/or seasons,

such as the third and fourth quarters of the year, are closed to fishing in order to protect undersized yellowfin tuna. A similar, but less complete, study was completed for bigeye tuna. Both studies indicate that modest gains in overall equilibrium yield-per-recruit, of as much as 10 percent for each species, are possible. The overall gains would be realized after the first year of such regulations for yellowfin tuna and after 3-7 years for bigeye tuna. Furthermore, not all fisheries will share in the gains. Some, like the Tema-based baitboat fishery, would experience a permanent loss in yield-per-recruit or be eliminated, and others would experience some gain but perhaps some loss in their skipjack tuna catches.

Although these studies and others to date have provided useful information on the possible effects of alternative management schemes under different assumptions and for single species, they fall short in not including the interaction component for the different species involved in the fishery. The Committee believes that substantially more information on species interaction will be required before this component can be included in future analyses because it is a complex element. In the meantime, however, the Committee believes that analyses using single species models for all three species should continue and that the International Skipjack Year Program should be supported because it is a source of information that could better describe the interaction component as well as the population biology of tropical tunas.

It can be hypothesized that because of the unique co-existence of these species in the eastern Atlantic, that competitive effects and interaction could actually limit the individual species production potential. It could be that fishing these species at small sizes actually increases the general potential catches available to the various species. Studies of the competition and interaction processes are necessary and should be initiated in order to evaluate these possibilities.

The Committee also notes that, from general information on the population biology of yellowfin, bigeye and skipjack tunas, skipjack tuna appear to have the highest net productivity rate per unit abundance and bigeye tuna the lowest. When these species are exploited by a common, non-selective fishery, the effects of fishing would be most severe on bigeye tuna and least severe on skipjack tuna. This suggests that there is a more urgent need for better information on the population biology of bigeye tuna than was evident in past years when less bigeye tuna were caught in the surface fishery.

Ongoing and future research

Studies using simulation analysis to evaluate yield-per-recruit of bigeye and yellowfin tunas under alternative fishing patterns and management schemes were recently undertaken. Continuation of this work will focus on testing hypotheses related to changes in population, biological and fishery parameters. The Committee also recommends that efforts to improve the evaluation of mixing of species and sizes within schools be undertaken, and that variations in the availability and vulnerability of tunas related to changes in environmental parameters be studied. To satisfy these recommendations, data collected through the International Skipjack Year Program (ISYP) are expected to be useful.

The Committee recommends that during 1982, the Working Group on Juvenile Tropical Tunas begin examining the ISYP data along with other available fishery and biological data for presentation at the 1983 ISYP conference. Following that conference,

the Working Group should develop a plan to address species ecological and interaction issues and establish an analytical framework for multi-species fishery management investigations.

F-3 Temperate species

Description of fisheries

Multi-species interactions take place between temperate tunas, billfish, swordfish and other pelagic species. Generally, multi-species catches occur because the fishing gears are unable to select the different species. This problem arises when the distribution of various species overlaps and two or more species are available simultaneously to the gear. There are two systems used in catching tuna in temperate waters, depending on water depth: deeper water systems and surface systems. Surface fishing may use a variety of methods such as trolling, live bait, surface longline, seines, traps, gillnets, hand lines, harpoons, etc., while the deeper water fishing system is mostly longline gear.

The configuration and use of longline gear varies to some extent according to the species sought. The "normal" tuna longline operation is a daytime one, the hooks being located at depths as great as 150 m. The catch in single operation includes several tuna and billfish species. By changing the gear structure, the hooks can be hung deeper, as deep as 300 meters, directed toward bigeye tuna, but such "deep" longline is not used much in the Atlantic. Another type of longline operation sets the hooks in shallower waters than normal operation and seeks swordfish at night.

The species fished by longline gears in temperate areas include primarily species like bluefin, albacore, bigeye, Atlantic bonito, swordfish and billfishes—but also includes occasional catches of species such as yellowfin, skipjack, wahoo, sharks and Atlantic little tuna.

For longline fishing in the southeast and south of Brazil during the fourth and first quarters of the year, fishing effort is directed towards yellowfin, whereas during the second and third quarters effort is directed towards albacore, bigeye and swordfish. However, in both cases a large variety of species is caught.

Live-bait boats which direct their effort towards albacore in the Bay of Biscay incidentally catch bluefin. Table 17 shows the catches of the Spanish fleet which directs its effort towards albacore in the Bay of Biscay. The percentage of bluefin in the catch shows no apparent trends with regards to changes in the catch of the principal species.

The surface longline fleet directed towards swordfish catches only small amounts of billfishes, tunas and tuna-like species and other species such as sharks, in Canada (SCRS/81/63) as well as in Spain.

The Moroccan sardine purse seine vessels sometimes catch bluefin. These catches seem to be associated with variations in the distance from the coast of oceanic waters, as indicated by the distribution and strength of the coastal upwelling.

Little information is available on the interaction in other fisheries such as the Mediterranean purse seine fishery which jointly catches bluefin, albacore and swordfish; the gillnet fishery which catches billfish, albacore, bluefin and sharks; the albacore troll fishery which catches small quantities of bluefin, bigeye and skipjack or any others.

The basic problem of the multi-species fisheries in temperate waters is not knowing how much effort is directed towards each species. In order to determine the longline effort on specific species, it is necessary to standardize nominal effective effort.

The effort directed towards one specific species is calculated by converting the nominal number of hooks proportionally to the number of hooks used in the area by the mean density of the stock. Document SCRS/81/55 proposes a method for the determining fishing effort directed towards bluefin tuna by the Japanese longline fishery, but limits this calculation to the areas where the longline caught 45 percent or more, in number of fish, of this species.

Research recommendations

More studies are necessary on the separation of effort for each species involved in the multi-species temperate fisheries.

Research is also needed to identify the limits of overlap of species habitat in space and time as well as research on species distribution and the need for specific environmental conditions.

Item 7. Review of the Report of the SCRS Officers Meeting

The Report (SCRS/81/7) was presented to the Committee by its rapporteur, Dr. P. M. Miyake (Secretariat). The Officers Meeting was held in Miami (U.S.A.) on June 11, 1981, together with the meetings of the Sub-Committee on Skipjack and the Billfish Workshop. The Officers reviewed the progress made by the SCRS scientists since the 1980 SCRS meeting. The organization of the 1981 SCRS meeting was discussed extensively.

In approving the Report, the Committee affirmed that the inter-sessional SCRS Officers Meeting is very useful and recommended that the practice be continued in the future.

Item 8. Review of the Report of the Billfish Workshop

The Report of the Billfish Workshop (SCRS/81/16 - Collective Volume, XVI) was presented by Dr. P. M. Miyake. The Workshop was held in Miami (U.S.A.) on June 15 to 19, 1981, following a decision made at the 1980 SCRS meeting, with the main objective that all the pertinent scientists would reach an agreement on a data base to be used in their population analyses.

It was reported that prior to the Workshop, the Secretariat had very critically reviewed the data base and proposed major changes including many estimates of catches by species and areas, which served as the base for review at the Workshop. The participants at the Workshop agreed that the new base, with further modifications, included the best estimates at this time.

The Committee adopted the report and concurred with all its recommendations. The Workshop participants and the Secretariat were commended for their contribution to improve the billfish data base.

Item 9. Review of the Report of the Sub-Committee on Skipjack and its progress

During the year, the Sub-Committee on Skipjack met on two occasions to review progress of research activities in 1981, the third year of ICCAT's four-year International Skipjack Year Program (ISYP). One meeting was held in Miami (U.S.A.), June 8-10, and the other in Tenerife, Spain (November 8-9). Reports for both meetings (COM-SCRS/81/25 and Appendix 3 to this report) were submitted to the Committee by the Convener, Dr. G. T. Sakagawa (U.S.A.).

In brief, the Sub-Committee reported that virtually all planned activities were executed this year with much success. More than 19,000 tunas were tagged during ISYP cruises; two experiments were executed to track skipjack tuna with sonic tags; new port sampling, using ICCAT procedures, commenced in Cape Verde, Cuba, Morocco, Portugal (Azores only) and Venezuela; fishery-oceanographic data were collected from conventional platforms, such as fishing vessels and research vessels, and from unconventional platforms, such as satellites and drifting buoys; exploratory fishing was conducted off Brazil, Cape Verde and Cuba; and several hundred fish were sampled for biological material to study age and growth, maturity-fecundity, predation, etc.

The Sub-Committee also devoted considerable effort to developing methods for computer management of the data collected, and in preparing a detailed plan for a proposed scientific conference in 1983. The conference is being planned to enable scientists to discuss their analytical results, and to evaluate these results with respect to the objectives that ICCAT adopted for the Program.

The Committee adopted both reports of the Sub-Committee together with its recommendations. The Convener of the Sub-Committee, members and the Skipjack Coordinator were commended for the achievements made by the Sub-Committee in successfully carrying out the International Skipjack Year Program.

Item 10. Report of the Sub-Committee on Statistics and review of Atlantic tuna statistics and data management systems

The Convener of the Sub-Committee on Statistics, Mr. S. Kume (Japan), presented the group's report (Appendix 4). The Committee adopted the report and concurred with all its recommendations. The Convener, members of the Sub-Committee and the Secretariat statistical staff were commended for their contributions to the improvement of statistics.

Item 11. Review of SCRS research programs and consideration of future plans

Dr. N. Bartoo (U.S.A.), the Convener of the Working Group on SCRS Organization

noted that the 1981 SCRS meeting was well organized and ran very smoothly. He suggested continuing the present reporting system (A and B Reports) once more in 1982.

Mr. R. H. Pianet (France) proposed a few minor changes, such as noting on the reports in what language the original draft was written. In those cases where more than one language was utilized, the language used by the head rapporteur should be noted. Another proposal by Mr. Pianet was that any changes introduced to the drafts should be well marked when the revised draft is distributed again. The Committee noted that this can be done by inserting a check mark () in the left margin indicating the correction, and recommended that this procedure be adopted for the 1982 SCRS meeting. The Committee requested that rapporteurs make sure that all the corrections proposed are incorporated when the revised version is prepared. The Working Group on SCRS Organization was asked to monitor carefully that these new procedures are being carried out.

The SCRS Chairman reported that the Commissioners are very pleased with the present format of the SCRS Report whereby they also receive the species sections—Report A—as background information.

The Committee reviewed the inter-sessional meetings proposed for 1982: SCRS Officers Meeting and the Meeting of the Working Group on Juvenile Bluefin Tuna.

The Committee noted a proposal of the Working Group on Juvenile Bluefin Tuna to hold its first meeting in 1982 and fully endorsed it. It also endorsed the inter-sessional meeting of the SCRS Officers.

Prior to evaluating the results of the symposium and discussing the orientation of tuna research for the long term, Dr. G. Sharp (FAO, 1981 Symposium organizer), introduced correspondence exchanged among Dr. J. A. Gulland (FAO, former ICCAT general rapporteur), Dr. B. Rothschild (U.S.A., former SCRS Chairman) and himself.

There was a consensus among the aforementioned correspondents that symposium topics should relate directly to the objectives of the SCRS, which are to assess the status of tuna stocks and propose management measures when necessary. At the same time, the need to base assessments and management advice on sound knowledge of the biology of tunas was recognized and endorsed by these correspondents.

The one-day symposium held on Thursday, November 5; was then evaluated by the Committee together with the orientation of ICCAT research programs for the future. Mr. R. Letaconnoux (France) pointed out that the development of computer technology has made the application of models to data very easy; however, correct interpretation of these population model analyses can only be achieved by acquiring more knowledge on the biology and ecology of tunas and their eco-system. He also pointed out that most of the present population analyses are carried out on a single-population basis while tunas represent only a fraction of a complete eco-system. These two points were also raised at the recent ICES meeting. This idea was supported by many participants, including Brazil, Ivory Coast, and Portugal.

In view of the preceding discussions, the Committee reached a consensus that the symposium was useful for understanding the eco-biology of tunas and that in 1982, the Thursday of the SCRS week should be set aside to hold another symposium. It was also agreed that the subject matter of the symposium be relevant to SCRS business.

While many scientists were in favor of selecting the multi-species problem as next

year's Symposium subject, other subjects were also suggested, such as biological parameter studies, comparative growth studies, tagging analyses, criteria for defining stocks, and evaluation of abundance indices in relation to the effects of environmental elements.

The SCRS Chairman, following Mr. Letaconnoux's suggestion, set up a "Working Group on Eco-biological Aspects of Tuna". The Group has to study these aspects in relation to the use of population evaluation techniques and the overall ICCAT management scheme. The Group also has to choose the topic for the 1982 Symposium, select speakers, review contributions and organize the Symposium. The Working Group should be established for a two-year period.

Dr. G. T. Sakagawa (U.S.A.) proposed the formation of a small technical group to review the procedures used in estimating statistical data. This subject was discussed by the Committee in detail. The Committee recognized that the SCRS and the Secretariat have developed and used a number of procedures for estimating missing or incomplete statistics for some fisheries in order to conduct assessments on the condition of the stocks. Some of these procedures have been documented in SCRS reports, but others have not. The reliability and relevance of the procedures have not been reviewed, although the procedures may be having a major effect on the outcome of our assessment results.

On the other hand, the Committee also recognized that this type of work has been more or less assigned to the Secretariat and to the Sub-Committee on Statistics. It was recognized that the Sub-Committee lacks sufficient time to carry out such assignments during the SCRS sessions.

The SCRS, therefore, proposed that the Sub-Committee on Statistics and the Secretariat review procedures used by the Committee in estimating the statistics and document their findings and recommendations for rectifying the situation. The Sub-Committee should perform its work during the year, through correspondence. If the necessity arises, the Convener is authorized to form an *ad hoc* group within the Sub-Committee. The head rapporteurs for each species were asked to cooperate with the Sub-Committee in this assignment.

Item 12. Cooperation with other organizations

The Assistant Executive Secretary reported on the relationships which ICCAT has maintained in the past with FAO and its affiliated bodies (CECAF, WECAF, IOFC, IPFC, GFCM), the Inter-American Tropical Tuna Commission (IATTC), the South Pacific Commission (SPC), the International Council for the Exploration of the Sea (ICES), the International Commission for the Southeast Atlantic Fisheries (ICSEAF), the Intergovernmental Oceanographic Council (IOC), the Northwest Atlantic Fisheries Organization (NAFO), etc. The Committee thanked FAO for the assistance given by various FAO attendants at ICCAT meetings and expressed hope that cooperation with these international agencies will continue.

Mr. M. Ansa-Emmim (FAO-CECAF) noted the above relationship between CECAF and ICCAT and said that he hoped for closer cooperation in the future. Mr. Letaconnoux (France), as an observer from ICES, noted that ICES has disbanded its bluefin working group and left all tuna analyses to ICCAT.

Mr. A. González-Garcés (Spain) proposed that summaries or at least a list of the various scientific papers relating to tuna presented to ICES and other organizations, be made available to the ICCAT scientists. The Committee recommended that the Secretariat carry out this task either through correspondence with the Secretariats of these various international organizations or through the ICCAT scientists who were at these meetings.

Item 13. Review of scientific publications

All the scientific publications which the Commission issues were reviewed. The Committee expressed its satisfaction with the quality, format and characteristics of these publications and recommended that the present publication policy be maintained.

The Committee recommended that all the papers presented at the symposium along with the symposium summary be included in the "Collective Volume of Scientific Papers" together with SCRS documents accepted for the meeting. The usual procedure of asking permission of the authors to include their papers in this series should be carried out by the Secretariat.

Item 14. Recommendations

The recommendations which resulted from the species groups' discussions are listed in Appendix 5 (Table of Assignments).

Item 15. Date and place of next meeting

The Committee decided that the 1982 SCRS meeting would be held at the same place as the Commission Meeting, starting on the Monday of the week preceding the 1982 Commission Meeting.

The SCRS noted that holding a meeting outside Madrid this year did not present any inconvenience to the scientists while it did provide a pleasant working atmosphere.

Item 16. Other matters

Mr. A. Fonteneau, Chairman, reported that the Officers Meeting held in Miami proposed that no specific training course should be organized by the ICCAT for the near future. On the other hand, the Officers recommended that the developing countries which require training for their scientists and/or technicians should request the Secretariat's assistance. The Secretariat may arrange for the training to take place in a particular country, using its own staff or neighboring countries' scientists at the Commission's expense. An alternative could be to invite the scientist(s) who needs training to a neighboring research center, also at the Commission's expense.

Dr. Sharp also pointed out that FAO had developed several manuals for population analyses (e.g. cohort analysis techniques). Those are available on request.

Item 17. Election of Chairman

The SCRS Chairman, Mr. Fonteneau, requested Mr. R. Letaconoux (France) and Mr. I. Barrett (U.S.A.) to review the procedures of election for the next SCRS Chairman. Procedures adopted for the election were: (1) one vote per delegation, (2) the first round involving secret nomination of a candidate by each delegation, (3) the second round involving secret balloting for a candidate on the slate, and (4) the candidate receiving a simple majority of the votes of the delegations present would be elected Chairman.

Twelve member countries were present for the voting. The delegate from Ivory Coast informed the Committee that the Senegalese delegate who had to leave early for flight connection reasons, had requested that Ivory Coast cast the Senegalese vote by proxy. Ghana questioned the validity of this procedure, since the candidates were not even known beforehand. The Committee decided that voting by proxy is valid.

Mr. J. S. Beckett (Canada), Dr. G. Sakagawa (U.S.A.) and Mr. R. H. Pianet (France) were nominated as candidates for Chairman of the SCRS. After one ballot, Mr. J. S. Beckett was elected Chairman of the SCRS for the next biennial period.

The Committee congratulated the newly-elected Chairman of the SCRS, Mr. J. S. Beckett, and wished him success in the future. There was a round of applause for Mr. Fonteneau, the outgoing SCRS Chairman, for the excellent leadership he demonstrated during his two biennial terms in office.

The new Chairman, Mr. Beckett, nominated the following Conveners: Mr. Z. Suzuki (Japan) for the Sub-Committee on Statistics, Dr. G. T. Sakagawa (U.S.A.) for the Sub-Committee on Skipjack, Mr. J. B. Amon Kothias (Ivory Coast) assisted by Dr. F. X. Bard (Ivory Coast) for the Working Group on Juvenile Tropical Tunas, and Mr. A. González-Garcés (Spain) for the Working Group on Eco-biological Aspects.

Item 18. Adoption of Report

The Committee thanked the Secretariat for its efficiency in successfully carrying out all the business of the SCRS session and for its work throughout the year. The Report was adopted.

Item 19. Adjournment

The meeting was adjourned.

Table 1. Atlantic yellowfin tuna catch (1,000 MT) (as of February 10, 1982)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*	1981**
TOTAL	82.9	93.7	75.1	73.0	93.7	94.3	106.3	124.3	125.6	127.7	133.4	124.6	120.8	139.9
East Atlantic	74.4	82.1	61.2	58.0	79.0	79.7	92.5	108.1	111.8	114.5	118.3	110.7	111.0	126.8
– Surface	51.9	61.0	43.9	44.4	60.6	60.5	75.3	94.5	99.0	98.9	107.1	103.7	97.8	117.1
Baitboat.	22.1	15.9	9.4	10.4	12.8	14.3	19.4	9.3	12.8	11.0	8.7	9.7	7.2	9.6
Angola	1.1	.4	.3	.5	.6	.6	.8	.1	1.0	1.9	2.0	.8	.5	.5
FIS	18.7	14.3	7.5	7.6	7.5	5.5	6.3	2.9	3.7	3.4	2.8	2.1	2.1	4.0
Ghana.	0.	0.	0.	0.	.0	.1	.3	.7	.8	.6	.3	.3	.3	.7
Japan	2.2	1.0	.8	2.0	3.5	6.5	7.1	1.1	4.9	2.6	1.4	1.0	.7	.8
Korea-Panama .	0.	0.	0.	0.	.4	.8	2.8	3.5	2.0	2.1	1.7	4.0	2.2	2.2
Spain . . . . .	.2	.3	.7	.4	.7	.8	2.0	1.0	.2	.3	.2	.1	.1	.1
Others	0.	0.	0.	0.	0.	0.	.0	.0	.0	.1	.2	1.3***	1.3	1.3
Purse seine	29.7	45.1	33.9	32.6	47.8	44.9	53.4	83.4	86.2	87.6	97.6	92.9	90.2	107.1
FISMP	12.7	15.2	17.2	19.2	24.6	26.7	32.9	45.1	50.5	47.9	53.7	48.9	50.6	45.5
Ghana.														2.0
Japan	7.5	4.7	1.1	2.0	2.5	1.2	.8	.1	0.	0.	0.	0.	0.	0.
Spain	3.1	5.5	6.4	7.2	8.6	13.2	13.7	23.8	33.1	33.2	35.1	40.2	36.5	57.3
U.S.A.	5.8	18.8	9.0	3.8	12.0	3.0	5.6	14.0	1.7	6.4	8.1	2.9	1.6	2.0
Others . . . . .	.7	.9	.2	.4	.2	.8	.4	.4	.8	.2	.6	1.0	1.4	.3
Other gears.	0.	.0	.5	1.4	.0	1.2	2.5	1.9	.0	.3	.8	1.2	.4	.4
– Longline	22.5	21.1	17.3	13.6	18.3	19.2	17.3	13.6	12.8	15.6	11.3	6.9	13.2	9.7
China (Taiwan). .	6.6	7.0	3.9	3.4	3.5	1.5	1.0	1.3	.6	.2	.2	.2	.1	.1
Cuba	1.9	1.6	1.6	1.7	3.6	4.5	3.4	1.7	1.8	2.9	1.9	2.6	5.6	5.6
Japan	9.8	6.4	2.5	1.6	2.3	1.3	.7	1.7	.3	.1	.3	.3	1.7	.4
Korea-Panama .	1.6	4.2	9.3	6.9	7.8	11.9	12.2	8.8	8.5	10.7	8.4	3.1	5.6	3.4
Others	2.7	1.9	0.	0.	1.1	.0	0.	0.	1.6	1.8	.5	.7	.2	.2

West Atlantic	8.5	11.6	14.0	15.0	14.7	14.6	13.8	16.2	13.9	13.2	15.0	13.9	9.8	13.1
– Surface . . . . .	.1	0.	0.	0.	3.4	2.3	1.6	2.0	.6	1.1	4.7	3.9	4.9	4.8
Venezuela														4.3
Others . . . . .														.5
– Longline	6.2	9.3	11.5	13.5	11.2	12.4	12.2	14.2	12.6	11.3	9.5	9.0	4.9	8.3
China (Taiwan).	1.3	3.8	3.2	1.0	1.2	1.2	1.3	1.1	1.1	.1	.2	.8	.5	.5
Cuba	0.	0.	0.	0.	0.	0.	0.	.6	1.2	.9	.7	.2	0.	.0
Japan	4.2	3.6	4.3	9.1	4.2	2.5	2.8	2.4	3.1	1.4	1.6	1.7	1.1	2.4
Korea-Panama . . . . .	.7	1.8	4.0	3.0	3.3	6.5	6.5	8.9	5.9	7.1	5.0	4.4	2.7	4.9
Others . . . . .	.1	.1	0.	.5	2.6	2.2	1.5	1.1	1.3	1.7	2.0	1.9	.5	.5
– Unclassified gears.	2.2	2.3	2.4	1.5	0.	0.	0.	.1	.7	.8	.9	1.0	.0	0.
Unclassified region.	0.	0.	0.	0.	.1	0.	0.	0.	0.	0.	0.	0.	0.	0.
– Surface	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
– Longline	0.	0.	0.	0.	.1	0.	0.	0.	0.	0.	0.	0.	0.	0.
– Unclassified gears.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

* Preliminary.

** Projected.

***7.0 from Indian Ocean stocks caught in the Atlantic not included.

Table 2. Estimated carrying capacity (thousands of MT) and fishing effort for yellowfin tuna of the eastern Atlantic Ocean.

	1968 ¹	1969 ²	1970 ²	1971 ²	1972 ²	1973 ²	1974 ²	1975 ²	1976	1977	1978	1979	1980	1981 ⁶
Carrying capacity														
BB — Ivory Coast-Senegal, . . .	3.9	3.6	3.4	2.8	2.7	2.1	2.0	1.8	1.0	0.9	1.0	0.7	0.7	0.7
BB — Tema-based ⁴	1.2	0.9	0.9	1.2	2.6	4.0	5.4	3.6	5.4	5.4	5.4	3.6	4.5	4.5
Total BB	5.1	4.5	4.3	4.0	5.3	6.1	7.4	5.4	6.4	6.3	6.4	4.3	5.2	5.2
Others ⁵											1.0	1.0	1.0	1.0
PS — FIS.	1.6	4.8	5.8	7.2	9.2	12.4	14.5	17.2	17.5	17.0	18.9	19.5	18.3	18.8
PS — Spain	1.1	1.2	2.7	3.6	5.6	7.5	9.1	14.0	17.2	20.4	24.3	25.2	28.0	27.7
PS — U.S.A. ³	0.6	4.4	5.4	3.8	7.9	2.9	5.5	10.4	1.7	4.2	10.5	3.2	2.2	1.6
PS — Others ⁷													10.2	12.0
Total PS	3.3	10.4	13.9	14.6	22.7	22.8	29.1	41.6	36.4	41.6	53.7	49.8	58.7	60.1
Total BB and PS	8.4	14.9	18.2	18.6	28.0	28.9	36.5	47.0	42.8	47.9	61.1	53.8	64.9	66.3

1. Estimates for ICCAT Biennial Report, 1974-75, Part II (1975).
2. Estimates for 1969-75 from P. Miyake (SCRS/77/13) (except FIS).
3. U.S.A. estimate weighted by the number of months on the spot.
4. Includes Japan, Korea, Panama and Ghana.
5. Angola, Cape Verde.
6. Provisional estimates.
7. Ghana, Congo, U.S.S.R., Cuba, Morocco, Portugal, Venezuela, Gran Cayman.

Table 3. Atlantic bigeye catch (1000 MT) (as of February 10, 1982)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*1981**	
TOTAL	23.0	33.6	39.2	52.1	42.8	53.9	59.4	56.7	38.4	45.7	45.3	39.6	56.2	48.3
North Atlantic	9.5	15.5	24.8	29.0	22.1	30.0	39.8	39.0	22.6	28.1	26.8	20.5	28.0	12.2
– Surface	3.0	8.6	9.6	10.4	7.3	10.9	14.3	14.4	8.6	12.1	13.6	9.8	10.9	12.2
Baitboat	3.0	8.5	9.4	10.2	7.2	10.8	14.1	13.9	8.3	10.6	12.9	8.2	9.9	11.0
FIS	0.	1.4	.7	.3	.1	.5	.5	1.2	1.2	2.5	3.6	1.9	2.3	3.7
Portugal	1.6	5.6	5.1	2.9	4.0	5.9	10.5	7.0	2.9	4.5	5.4	3.3	3.5	3.8
Spain	1.4	1.5	3.6	7.0	3.1	4.4	3.2	5.7	4.2	3.6	3.9	3.0	4.0	3.5
Others	0.	0.	0.	0.	0.	0.	0.	.0	.0	.1	.2	.0	.0	–
Purse seine	0.	.0	.3	.2	.1	.1	.1	.4	.3	1.5	.7	1.2	.8	.8
FISMP	0.	.0	.2	.1	.1	.1	.1	.3	.1	.9	.4	.7	.1	.8
Spain	0.	0.	.0	.1	.0	.0	.0	.1	.1	.6	.2	.5	.2	–
Others	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	0.	.0	.4	–
Other gears	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.3	.2	.4
– Longline	6.5	6.9	15.1	18.6	14.8	19.1	25.6	24.6	14.0	16.1	13.2	10.8	17.1	–
China (Taiwan).	1.5	3.0	5.1	2.4	.8	1.3	1.1	1.5	.8	1.0	.5	.3	.4	–
Cuba . . . . .	.9	1.0	4.1	1.2	.8	1.0	.9	.7	.8	1.4	.5	.8	0.	–
Japan	4.0	2.4	4.7	13.1	11.8	11.1	17.6	12.4	5.9	5.3	5.8	5.1	11.1	–
Korea-Panama . . . . .	.1	.5	1.2	1.8	1.4	5.7	5.9	8.5	5.0	6.6	6.3	4.0	5.6	–
U.S.S.R.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.2	0.	–
Others	0.	0.	0.	0.	0.	0.	0.	1.5	1.5	1.8	.2	.3	.0	–
– Unclassified gears.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
South Atlantic	13.4	18.2	14.5	23.0	20.7	24.0	19.6	17.7	15.8	17.6	18.5	19.1	26.8	1.2
– Surface	1.1	2.0	1.5	2.6	3.0	5.1	6.0	1.5	2.4	4.5	3.5	2.7	4.2	1.2

Table 3 (continued)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*	1981**
Baitboat . . . . .	.6	.5	.5	.8	1.5	2.4	2.8	.7	1.4	2.1	1.4	1.1	1.0	.4
FIS	0.	.3	.2	.3	.4	.4	.1	0.	0.	0.	0.	0.	0.	0.
Ghana	0.	0.	0.	0.	0.	.0	.1	.1	.1	.2	.1	.1	.1	.0
Japan . . . . .	.6	.3	.2	.5	.9	1.7	1.9	.1	.9	1.0	.6	.2	.2	.0
Korea-Panama .	0.	0.	0.	0.	.1	.2	.7	.4	.4	.8	.7	.8	.6	.1
Others	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	.1	.3
Purse seine . . . . .	.4	1.5	1.1	1.7	1.5	2.7	3.2	.9	1.1	2.5	2.1	1.5	3.0	.8
FISMP	0.	.1	.5	.5	.5	1.8	1.5	.6	.6	1.3	1.1	.7	1.0	.8
Japan . . . . .	.4	1.3	.3	.5	.7	.3	.2	.0	0.	0.	0.	0.	0.	-
Spain	0.	0.	.1	.2	.2	.4	.7	.2	.4	.8	.6	.6	1.8	-
U.S.A. . . . .	.0	.1	.2	.5	.2	.1	.9	.1	.0	.3	.2	.2	.1	-
Others	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	.1	0.	0.	0.
Other gears	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.1	.1	.2	-
- Longline	12.3	16.2	13.0	20.5	17.7	18.8	13.5	16.2	13.4	13.0	15.0	16.4	22.5	-
China (Taiwan).	3.8	4.5	2.4	3.1	4.2	2.5	2.0	2.5	2.5	2.0	2.2	1.9	1.9	-
Cuba	0.	0.	0.	2.0	1.2	1.6	1.5	1.2	.5	.5	1.8	1.5	0.	-
Japan	6.2	7.9	4.3	7.1	6.3	8.8	3.2	5.0	1.4	3.8	3.5	6.8	9.4	-
Korea-Panama .	.2	1.4	3.5	5.5	4.3	2.8	3.3	3.6	3.7	2.2	4.9	3.8	7.9	-
Others	2.0	2.4	2.7	2.8	1.6	3.1	3.6	3.9	5.3	4.6	2.6	2.3	3.4	-
- Unclassified gears.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.1	-
Unclassified region. . .	.2	0.	0.	0.	0.	.0	0.	0.	0.	0.	0.	0.	1.4	34.9
- Surface . . . . .	.2	0.	0.	0.	0.	.0	0.	0.	0.	0.	0.	0.	.0	1.2
- Longline	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.4	32.8
- Unclassified gears.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.9

* Preliminary.

**Projected.

Table 4. Population indices estimated by production model analysis for the Atlantic bigeye tuna fishery, 1961-79 (k = 4)

	<i>m</i>	<i>Degree of fit index</i>	<i>f_{opt}</i> (10 ⁶ hooks)	<i>Y_{max}</i> (10 ³ MT)	<i>1979 catch</i> (10 ³ MT)
Whole Atlantic	0	0.5396	∞	111.9	41.1
	1.001	0.5327	434	58.2	
	2	0.5277	306	52.8	
North Atlantic	0	0.3533	∞	72.0	20.5
	1.001	0.3515	286	37.1	
	2	0.3516	196	33.1	
South Atlantic	0	0.6155	∞	47.7	20.6
	1.001	0.6293	182	23.8	
	2	0.6396	119	20.6	

Table 5. Projected change (%) in eastern Atlantic bigeye catch, under hypothesized closure of purse seine and Tema-based baitboat fisheries. High (F_{\max}) and low (F_{\min}) fishing mortality rates were assumed (SCRS/81/48)

		<i>Percent change after closure</i>		
		<i>1 year</i>	<i>3 years</i>	<i>7 years</i>
Surface	F_{\min}	-19.1 to -12.2	-16.2 to -8.8	-14.2 to -7.2
	F_{\max}	-19.1 to -12.2	-13.3 to -3.7	-9 to -3
Canary Islands & Portuguese BB fleets.	F_{\min}	0	3.2 to 5.9	6.6 to 8.7
	F_{\max}	0	4.7 to 6.6	12.4 to 12.6
Longline	F_{\min}	0	.7 to 2.7	3.6 to 7.0
	F_{\max}	0	4.6 to 7.2	11.1 to 16.8
Total.	F_{\min}	-5.7 to -3.6	-3.1 to -2.1	0 to 1.1
	F_{\max}	-5.7 to -3.6	.9 to 1.6	7.0 to 9.7

Table 6. Atlantic skipjack tuna catch (1,000 MT) (as of February 10, 1982)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*	1981**
<i>TOTAL</i>	48.4	29.9	50.4	79.3	76.3	78.2	118.1	61.5	76.9	117.9	107.4	90.7	114.6	138.8
Surface - East Atlantic . .	45.7	28.0	47.8	76.6	74.7	75.0	114.1	57.4	73.1	114.3	100.4	84.6	101.9	115.5
- Purse seine	24.2	14.8	31.1	50.0	50.6	51.3	76.5	37.6	35.2	63.9	59.4	38.7	60.9	76.1
FIS	5.1	2.8	8.8	14.2	14.8	8.4	24.0	11.5	16.3	30.9	24.8	17.8	27.2	34.0
Japan	6.3	.7	3.5	6.2	3.4	1.5	.9	.1	0.	0.	0.	0.	0.	0.
Spain	8.7	6.4	6.5	12.2	20.2	18.7	31.6	18.1	16.8	27.0	24.9	18.5	28.8	30.0
U.S.A.	3.2	4.7	11.8	16.2	12.2	21.2	20.0	7.4	1.8	5.9	6.8	2.1	2.6	3.0
Ghana	0.	0.	0.	0.	0.	.2	0.	.2	.1	0.	0.	0.	.3	} 5.4
Portugal	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.2	.1	.2	
Others . . . . .	.9	.1	.6	1.2	.1	1.2	.1	.3	.2	.1	2.7	.2	1.8	
Ghost														3.7
- Baitboat	21.5	13.2	16.7	26.5	23.9	23.7	37.5	15.3	28.3	42.6	40.3	44.5	37.3	39.4
Angola	4.2	1.8	.9	1.9	1.5	1.3	3.4	.6	1.5	3.8	3.2	3.6	3.5	3.5
FIS	7.3	3.7	4.4	5.8	3.8	3.3	4.5	1.8	2.2	2.7	3.3	3.3	3.1	2.4
Ghana	0.	0.	0.	0.	0.	.1	.7	1.3	2.1	3.5	2.6	3.9	4.5	5.6
Japan	7.3	4.9	7.5	11.7	10.1	13.0	18.7	3.7	15.0	16.8	14.6	14.7	12.3	14.1
Korea-Panama	0.	0.	0.	0.	.7	1.1	3.1	6.3	4.4	7.6	11.1	13.7	7.9	8.1
Spain . . . . .	.8	.8	1.8	2.7	4.1	2.6	5.4	.8	.6	.7	.6	1.3	2.2	1.7
Portugal	1.1	1.7	1.0	4.2	3.7	2.2	1.7	.6	2.1	4.4	4.4	3.0	1.7	} 4.0
Cape Verde	0.	0.	0.	0.	0.	0.	0.	0.	.3	.9	.5	1.0	2.1	
Others . . . . .	.8	.1	1.1	.1	.0	.1	.1	.3	.0	2.2	0.	0.	.0	
- Other gears . . . . .	.0	.1	0.	.1	.1	.0	.1	4.5	9.6	7.8	.7	1.4	3.8	-

Table 6. (continued)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*	1981**
Surface - West Atlantic . .	.1	.1	0.	1.6	1.3	2.5	3.1	3.2	3.5	3.0	6.3	5.4	12.5	23.3
— Purse seine . . . . .	.1	.1	0.	0.	1.3	.3	.1	.4	.7	.6	3.5	1.5	2.9	
U.S.A. . . . .	.1	.1	0.	0.	.1	0.	0.	.2	.5	.3	1.6	.7	1.0	} 3.3
Others	0.	0.	0.	0.	1.1	.3	.1	.2	.2	.3	1.8	.8	1.9	
— Baitboat.	0.	0.	0.	1.6	0.	1.9	3.0	2.8	2.8	2.4	2.8	4.0	9.6	} 20.0
Brazil	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.4	6.3	
Cuba	0.	0.	0.	1.6	0.	1.5	1.8	2.3	2.8	2.4	1.8	2.0	2.3	
Others	0.	0.	0.	0.	0.	.4	1.2	.5	0.	0.	1.0	.5	1.0	
— Other gears.	0.	0.	0.	0.	0.	.3	.0	0.	0.	0.	0.	0.	.0	0.
Surface - Uncl. region. . .	0.	0.	0.	.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LL+TRAWL, all Atl. . . .	.0	.0	.0	.1	.1	.1	.2	.2	.0	.1	.1	.0	.0	0.
Unclassified gears	2.5	1.8	2.6	.8	.2	.6	.7	.6	.3	.5	.7	.7	.1	0.

* Preliminary.

**Projected.

Table 7. Atlantic albacore catch (1,000 MT) (as of February 10, 1982)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
TOTAL	72.0	76.6	70.5	83.2	83.5	75.8	72.6	59.5	77.3	74.9	72.2	72.5	61.3
North Atlantic	45.3	47.2	46.2	57.6	49.4	47.0	52.3	41.4	57.3	52.8	48.5	49.7	38.6
— Surface	37.9	32.5	30.1	39.7	34.7	28.8	37.6	28.7	34.3	32.0	34.3	38.1	29.5
Baitboat	13.9	14.6	14.4	15.7	8.2	10.1	16.7	19.2	20.4	15.6	11.7	15.9	16.2
France	2.2	1.7	1.7	1.5	.5	1.1	.6	.7	1.1	.6	.4	.2	.4
Spain	11.6	12.4	12.5	13.9	7.3	8.2	14.9	17.6	18.7	14.9	11.3	15.6	15.7
Others . . . . .	.1	.5	.2	.3	.4	.9	1.2	.9	.6	.1	.1	.1	.1
Trolling	24.0	17.9	15.7	24.0	26.5	18.7	21.0	9.5	13.9	16.5	22.6	22.1	13.4
France	11.0	7.7	4.5	7.7	8.7	5.8	7.9	5.0	5.7	6.2	8.4	7.8	3.9
Spain	13.0	10.2	11.3	16.3	17.8	12.9	13.1	4.5	8.2	10.3	14.1	14.2	9.5
Others	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Other gears	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.1	.0
— Longline	7.4	14.7	16.1	17.9	14.7	18.1	14.6	12.7	23.0	20.8	14.2	11.6	9.1
China (Taiwan) . .	1.9	2.4	4.7	2.9	4.4	9.5	9.5	8.1	14.8	13.7	9.3	7.0	7.1
Japan	3.3	4.7	5.9	6.5	1.3	1.5	2.1	1.3	1.3	.8	.5	1.2	1.0
Korea-Panama . .	1.6	6.8	5.0	7.7	8.2	7.2	3.0	3.1	6.6	6.1	3.8	3.4	1.0
Others . . . . .	.6	.8	.5	.8	.8	0.	0.	.2	.2	.1	.5	.0	0.
South Atlantic	25.6	28.5	23.7	25.0	33.2	28.2	19.7	17.5	19.2	21.1	23.0	22.2	22.0
— Surface	0.	0.	0.	0.	.1	.1	.1	.2	.0	.1	.2	.4	1.4
— Longline	25.6	28.5	23.7	25.0	33.1	28.1	19.6	17.4	19.1	21.0	22.8	21.8	20.6
China (Taiwan) . .	6.8	12.5	12.2	17.5	25.0	22.2	16.7	13.4	14.6	16.1	20.5	20.3	18.7
Japan	11.9	6.3	5.9	3.2	2.1	.3	.1	.3	.1	.1	.1	.1	.3
Korea-Panama . .	5.7	9.2	5.0	3.8	5.8	5.6	2.6	3.5	4.1	4.1	1.7	1.0	.9
Others	1.2	.4	.5	.5	.2	.1	.2	.2	.3	.6	.5	.4	.7

Table 7. (continued)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
Mediterranean. . . . .	.5	.7	.6	.5	.7	.5	.5	.5	.6	.6	.6	.5	.5
Unclassified region. . . .	.5	.1	0.	0.	.1	.0	0.	.0	.1	.3	.1	.0	.1
— Surface . . . . .	.0	0.	0.	0.	0.	.0	0.	.0	0.	.0	.1	.0	.0
— Longline . . . . .	.4	.1	0.	0.	.1	0.	0.	0.	.1	.3	.0	0.	.1
Unclassified gears . . . .	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1

*Preliminary.

Table 8. Atlantic bluefin tuna catch (1,000 MT) (as of November, 1981)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
TOTAL	15.4	17.0	16.1	18.1	14.9	14.3	21.5	25.6	26.7	25.1	19.5	21.8	16.5
West Atlantic	1.3	2.6	5.7	7.3	4.1	4.1	3.4	5.1	5.8	6.7	5.8	6.3	2.0
Small fish. . . . .	.8	1.2	3.7	3.7	2.0	1.6	1.2	2.2	1.4	1.4	1.2	1.1	.7
—Purse seine . . . . .	.8	1.1	3.7	3.6	1.9	1.6	.9	2.1	1.4	1.4	1.2	1.0	.6
Canada	0.	0.	1.2	.9	.3	.6	.1	.3	.3	.3	.2	0.	0.
U.S.A. . . . .	.8	1.1	2.5	2.7	1.6	1.0	.8	1.8	1.1	1.1	.9	1.0	.6
—Rod & Reel	0.	.1	.1	.1	.1	.0	.3	.1	.0	.1	.1	.1	0.
U.S.A.	0.	.1	.1	.1	.1	.0	.3	.1	.0	.1	.1	.1	.1
Large fish. . . . .	.5	1.4	1.9	3.5	2.0	2.3	2.0	2.8	4.2	5.2	4.5	5.0	4.7
—Purse seine	0.	0.	.8	.5	.5	.2	.1	.3	.2	.2	.1	.4	.1
U.S.A.	0.	0.	.8	.5	.5	.2	.1	.3	.2	.2	.1	.4	.1
—Rod & Reel . . . . .	.2	.9	.5	1.0	1.0	.5	.6	.2	.6	.6	.4	.4	.4
Canada . . . . .	.2	.2	.2	.1	.2	.2	.4	.2	.3	.3	.2	.2	.3
U.S.A.	0.	.7	.4	.8	.8	.2	.1	0.	.2	.3	.2	.2	.2
—Longline . . . . .	.0	.0	.1	1.7	0.	1.1	.9	1.5	2.9	3.7	3.2	3.6	3.7
Japan	0.	0.	.1	1.5	0.	1.1	.9	1.5	2.9	3.7	3.1	3.6	3.7
Others . . . . .	.0	.0	0.	.1	0.	.0	.0	0.	0.	.0	.0	.0	.0
—Other gears. . . . .	.3	.5	.5	.4	.5	.5	.5	.8	.6	.8	.8	.7	.5
Canada . . . . .	.3	.4	.3	.1	0.	.1	.3	.1	.2	.4	.2	.0	.1
U.S.A.	0.	.1	.2	.3	.5	.4	.3	.7	.4	.4	.6	.6	.5
—Unclassified gears	0.	0.	.1	.1	.1	.2	.2	.1	.2	.1	.1	.2	0.
East Atlantic	5.9	6.1	5.7	4.5	5.8	4.6	5.9	9.7	5.1	6.8	5.2	4.7	2.3
Small fish.	1.7	2.2	2.6	2.2	3.4	2.7	2.2	4.3	1.3	2.3	2.3	1.6	0.
—Baitboat	1.2	1.5	2.2	2.2	2.9	2.2	1.6	1.7	.9	1.6	2.3	1.4	.3
France . . . . .	.4	.5	.7	.7	.7	.5	.5	.7	.3	.6	.7	.3	.3
Spain . . . . .	.8	1.0	1.5	1.5	2.1	1.7	1.1	1.0	.7	1.0	1.6	1.1	0.

Mediterranean.	7.9	8.0	4.5	6.2	4.9	5.3	12.0	10.7	15.6	11.4	8.4	10.7	8.0
Small fish.	3.6	3.3	1.3	3.2	2.4	2.7	5.1	4.0	9.4	5.5	5.2	6.4	4.0
—Purse seine.	3.0	2.9	1.2	3.1	2.3	2.6	5.0	3.9	9.3	5.3	5.1	6.2	4.0
France.	2.5	1.5	1.1	2.2	1.1	1.4	1.8	1.6	3.8	3.2	1.6	1.5	1.7
Italy . . . . .	.3	1.1	0.	.5	1.0	1.0	2.9	2.1	4.9	1.2	2.4	3.5**	1.8
Morocco . . . . .	.2	.3	.1	.4	.2	.2	.3	.2	.6	.9	1.0	1.2	.5
Yugoslavia	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
—Other gears. . . . .	.6	.4	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	0.
Italy	0.	0.	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	0.
Spain . . . . .	.6	.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Large fish.	4.3	4.7	3.2	3.0	2.5	2.6	6.9	6.7	6.3	6.0	3.2	4.3	4.0
—Purse seine. . . . .	.4	.7	1.2	.8	1.0	1.2	3.1	4.2	4.1	4.2	2.1	2.9	3.4
Italy . . . . .	.4	.7	1.2	.8	1.0	1.2	3.1	4.2	4.1	4.2	2.1	2.9	3.4
—Trap	2.9	3.4	1.7	1.9	1.2	.8	1.4	1.1	1.0	1.1	.8	1.0	.2
Italy	1.7	1.3	1.0	1.0	.8	.4	.7	.7	.7	.7	.2	.2	.2
Libya	1.0	2.0	.5	.6	.3	.4	.5	.3	.3	.3	.6	.6	0.
Morocco . . . . .	.0	0.	0.	.0	.0	.0	.0	0.	0.	0.	0.	0.	0.
Spain	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Tunisia . . . . .	.2	.1	.2	.2	.1	.1	.1	.1	.1	.1	0.	.1	0.
—Longline	0.	0.	.1	.1	.2	.5	2.4	1.4	1.1	.6	.1	.2	0.
Spain	0.	0.	.1	.1	.1	.3	.2	.1	.1	.1	.1	.1	0.
Japan	0.	0.	0.	0.	.1	.2	2.2	1.3	1.0	.5	.1	.1	0.
Others.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
—Other gears.	1.0	.6	.2	.1	.0	0.	.1	.1	.1	.1	.1	.3	.5

* Preliminary.

**According to SCRS/81/51, this figure is “.9”. This was later confirmed by the rapporteurs and the ICCAT data base was changed accordingly.

Table 9. Atlantic billfish catch (1,000 MT) (as of February 10, 1982)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
<i>TOTAL</i>	7.1	7.4	7.7	8.2	7.1	6.6	5.9	5.8	5.9	5.4	5.5	5.8	4.1
Argentina . . . . .	.0	0.	0.	.0	.1	.1	0.	0.	.0	.0	0.	0.	0.
Barbados	0.	0.	0.	0.	0.	0.	0.	0.	.4	.3	.3	.3	.1
Brazil . . . . .	.1	.1	.1	.1	.2	.1	.1	.1	.3	.3	.2	.2	.2
China (Taiwan)	1.7	2.5	2.0	2.0	2.4	1.8	1.3	.9	1.2	.4	.6	.4	.6
Cuba . . . . .	.7	.3	.3	.3	.2	.5	1.2	1.4	.7	.6	.5	.8	.8
Ghana	0.	0.	0.	0.	0.	.0	.0	.0	.0	.6	1.6	2.2	1.2
Grenada	0.	0.	0.	0.	0.	0.	0.	0.	0.	.3	.4	.0	0.
Japan	3.0	2.3	2.3	2.8	1.1	.8	.8	1.2	.9	.3	.1	.2	.5
Brazil-Japan	0.	0.	0.	0.	0.	0.	0.	0.	0.	.2	.2	.1	.0
Korea . . . . .	.7	1.2	1.8	1.8	1.8	1.4	1.2	.9	1.0	1.0	.4	.2	.2
Brazil-Korea	0.	0.	0.	0.	0.	0.	0.	0.	.0	.1	0.	0.	0.
Panama	0.	0.	0.	0.	.1	.6	.2	.1	.3	.3	.1	.0	0.
Senegal . . . . .	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.1	.3
South Africa	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0
U.S.A. . . . .	.5	.5	.5	.5	.5	.6	.6	.6	.6	.7	.7	.7	0.
U.S.S.R. . . . .	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.1	0.
Venezuela . . . . .	.3	.4	.5	.6	.5	.4	.3	.3	.2	.2	.3	.4	.2
Species Breakdown:													
Blue marlin	2.4	3.1	2.9	3.2	2.4	3.2	2.8	3.0	2.2	2.2	1.6	1.3	1.2
Black marlin	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0
White marlin	2.0	2.2	2.1	2.2	2.3	1.8	1.7	1.6	1.8	1.1	1.0	1.0	.8
Sailfish	2.6	2.1	2.7	2.8	2.4	1.6	1.3	1.2	1.5	1.9	2.6	3.2	2.0
Uncl. billfishes	0.	0.	0.	0.	0.	0.	0.	0.	.4	.3	.3	.3	.1

*Preliminary.

Table 10. Landings (MT) for blue marlin in the total Atlantic Ocean, 1957-79 (SCRS/81/57)

<i>Year</i>	<i>Brazil</i>	<i>China (Taiwan)</i>	<i>Cuba</i>	<i>Japan</i>	<i>Korea</i>	<i>USA</i>	<i>USSR</i>	<i>Venezuela</i>	<i>Panama</i>	<i>Grenada</i>	<i>Korea- Brazil</i>	<i>Japan- Brazil</i>	<i>Total</i>
1957				764									764
1958				772									772
1959				841									841
1960				2712		103							2815
1961	41			3768		116		152					4077
1962	24	20		7044		115		99					7302
1963	12	48	145	8600		128		101					9034
1964	12	13	154	7590	2	161	1	74					8007
1965	12	4	176	5751	7	163	4	36					6153
1966	12	69	118	3370	93	149	6	35					3852
1967	6	291	444	1073	145	197	16	62					2234
1968	15	722	280	946	186	168	15	96					2428
1969	17	1364	165	960	312	207	16	43					3084
1970	39	929	149	1005	488	204	14	30					2858
1971	21	762	166	1395	479	179	17	178					3197
1972	26	928	89	420	466	191	43	188	22				2373
1973	8	692	298	346	989	209	62	124	452				3180
1974	16	552	686	284	834	234	9	83	134				2832
1975	12	527	789	608	658	241	18	82	95				3030
1976	33	409	409	264	566	265	1	78	154		10		2189
1977	52	171	320	135	663	295	10	79	190		29	113	2057
1978	14	258	210	79	325	295	5	93	74		0	24	1377
1979	25	190	336	145	145	295	44	132	13		0	3	1328

Table 11. Landings (MT) for blue marlin in the North Atlantic Ocean, 1957-79 (SCRS/81/57)

<i>Year</i>	<i>China (Taiwan)</i>	<i>Cuba</i>	<i>Japan</i>	<i>Korea</i>	<i>USA</i>	<i>USSR</i>	<i>Venezuela</i>	<i>Panama</i>	<i>Grenada</i>	<i>Total</i>
1957			91							91
1958			240							240
1959			231							231
1960			581		103					684
1961			379		116		152			647
1962	9		3223		115		99			3446
1963	27	123	4759		128		101			5138
1964	8	128	4434	1	161		74			4806
1965	2	144	3330	4	163	1	36			3680
1966	34	91	1677	46	149	1	35			2033
1967	131	223	485	66	197	3	62			1167
1968	337	167	474	93	168	3	96			1338
1969	348	122	658	214	207	3	43			1595
1970	369	108	758	368	204	2	30			1839
1971	158	149	1223	221	179	3	178			2111
1972	300	67	335	215	191	7	188	10		1313
1973	155	223	229	457	209	10	124	208		1615
1974	183	516	267	385	234	1	83	62		1731
1975	105	594	551	304	241	3	82	44		1924
1976	169	250	260	174	265	0	78	47		1243
1977	64	220	118	307	295	1	79	87		1171
1978	81	97	63	185	295	1	93	42		857
1979	51	156	88	67	295	7	132	6		802

Table 12. Landings (MT) for white marlin in the total Atlantic Ocean, 1957-79 (SCRS/81/57)

Year	China			Japan	Korea	USA	USSR	Venez.	Panama	Argen.	Grenada	Korea-	Japan-	Total
	Brazil	(Taiwan)	Cuba									Brazil	Brazil	
1957				160										160
1958				161										161
1959				112										112
1960				253		60								313
1961	60			692		60		11						823
1962	34	6		1915		74		30						2059
1963	17	14	44	2418		64		55						2612
1964	17	6	62	3495	3	70		78						3731
1965	17	4	102	4631	8	76	2	63						4903
1966	17	61	141	3002	109	76	2	93						3501
1967	9	181	194	668	169	81	7	104		3				1416
1968	21	385	118	1088	209	87	7	107		14				2036
1969	24	568	65	843	381	76	7	268		0				2232
1970	54	566	69	703	570	104	4	15		0				2085
1971	15	438	49	980	560	95	7	82		20				2246
1972	94	713	40	440	545	99	16	258	26	100				2331
1973	10	532	133	355	271	104	24	170	123	57				1779
1974	36	527	304	390	229	108	3	114	36	0				1747
1975	31	339	349	418	180	107	7	113	26	0				1570
1976	56	519	106	543	284	109	0	107	76	2		8		1810
1977	15	163	124	106	182	109	3	108	51	2		19	76	958
1978	22	276	170	87	38	109	2	127	9	0		0	120	960
1979	21	217	273	82	40	109	16	181	3	0		0	93	1035

Table 13. Landings (MT) for white marlin in the North Atlantic Ocean, 1957-79 (SCRS/81/57)

Year	China (Taiwan)	Cuba	Japan	Korea	USA	USSR	Venezuela	Panama	Grenada	Total
1957			25							25
1958			62							62
1959			16							16
1960			25		60					85
1961			30		60		11			101
1962	1		271		74		30			376
1963	4	35	754		64		55			912
1964	3	45	1493	1	70		78			1690
1965	2	69	1913	1	76		63			2124
1966	32	118	1417	51	76		93			1787
1967	47	127	174	44	81	1	104			578
1968	58	103	273	52	87	1	107			681
1969	132	58	451	204	76	1	268			1190
1970	97	61	419	340	104	0	15			1036
1971	178	45	915	219	95	1	82			1535
1972	244	34	339	213	99	1	258	10		1198
1973	120	112	328	106	104	2	170	48		990
1974	248	256	381	90	108	0	114	14		1211
1975	84	294	404	71	107	1	113	10		1084
1976	142	68	540	64	109	0	107	17		1047
1977	44	67	80	71	109	0	108	20		499
1978	79	43	78	33	109	0	127	8		477
1979	62	68	72	16	109	1	181	1		510

Table 14. Atlantic and Mediterranean swordfish catch (1,000 MT) (as of February 10, 1982)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
<i>TOTAL</i>	14.5	16.7	17.7	11.8	12.6	13.2	13.4	13.6	13.0	13.4	18.5	18.0	20.4
<i>Atlantic</i>	11.4	13.2	14.6	7.1	7.1	8.8	8.8	9.7	8.8	8.5	13.1	12.8	15.5
Argentina . . . . .	.3	.5	.4	.1	.1	.0	.0	.0	.1	.1	.0	0.	0.
Brazil . . . . .	.1	.2	.2	.1	.1	.1	.3	.3	.4	.3	.1	.2	1.1
Bulgaria	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	0.	0.
Canada	4.4	4.3	4.8	0.	0.	0.	0.	.0	.0	.1	2.3	3.0	1.9
China (Taiwan). . . . .	.5	.9	1.2	.8	.7	1.1	.8	.9	.9	.7	.6	1.3	.6
Cuba . . . . .	.6	.3	.3	.2	.1	.5	1.1	.5	.6	.7	.6	.4	.6
France	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0
Ghana	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.1
Ireland	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	0.	0.	0.
Italy	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	0.
Japan	1.1	2.3	3.2	1.6	1.8	1.0	1.4	1.5	.8	.8	.9	1.0	2.1
Brazil-Japan	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	.1	.1	.3
Korea . . . . .	.1	.4	.4	.4	.4	1.0	.7	.5	1.1	1.2	1.3	.6	.7
Brazil-Korea	0.	0.	0.	0.	0.	0.	0.	0.	.0	.0	0.	0.	0.
Mexico	0.	0.	0.	0.	.0	.0	.0	0.	0.	0.	.0	0.	0.
Morocco . . . . .	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Norway . . . . .	.2	.6	.4	.2	0.	0.	0.	0.	0.	0.	0.	0.	0.
Panama	0.	0.	0.	0.	.0	.4	.1	.1	.3	.1	.2	.1	0.
Poland	0.	0.	0.	0.	0.	.1	0.	0.	0.	0.	.0	0.	.0
Portugal . . . . .	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0
Romania	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	0.
South Africa	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	.0
Spain	3.6	3.5	3.2	3.4	3.2	3.8	2.9	3.7	2.8	3.3	3.6	2.6	4.2
U.S.A. . . . .	.3	.2	.3	.0	.2	.4	1.1	1.7	1.4	.9	3.0	3.4	3.5
U.S.S.R. . . . .	.2	.1	.2	.2	.2	.2	.1	.3	.2	.1	.2	.1	.2
Venezuela . . . . .	.0	.1	.0	.1	.0	.0	.0	.1	.0	.0	.0	.1	.0

Table 14 (continued)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
Mediterranean.	3.1	3.5	3.1	4.7	5.5	4.4	4.6	3.9	4.2	4.9	5.5	5.2	4.9
Algeria	0.	0.	0.	0.	.0	.1	.2	.5	.4	.4	.3	.5	0.
Cyprus	0.	0.	0.	0.	0.	0.	0.	.0	.1	.1	.1	.1	.1
Italy	1.4	2.0	1.8	2.9	3.7	2.8	3.3	3.0	3.3	3.3	4.0	3.4	3.7
Japan	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	.0	.0	.0
Libya . . . . .	.5	0.	0.	.1	0.	0.	0.	0.	0.	0.	0.	0.	0.
Malta	0.	0.	.1	.2	.2	.2	.2	.2	.2	.2	.1	.1	.2
Morocco . . . . .	.2	.3	.2	.3	.2	.2	.2	.1	.2	.1	.2	.2	.1
Spain	1.0	1.1	.9	1.1	1.3	1.1	.7	.1	.1	.7	.7	.8	.8
Tunisia	0.	0.	0.	0.	0.	0.	.0	0.	.0	0.	0.	0.	0.
Turkey	0.	.1	.1	.1	.1	0.	.0	0.	.0	.0	.0	.0	.0

*Preliminary.

Table 15. Catch of southern bluefin by gear and country (MT) (as of February 10, 1982)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Atlantic (by gear and country)											
LL.....	4,287	2,026	4,270	2,518	2,558	636	692	3,168	4,651	6,192	2,116
BB.....	0	0	0	0	1	0	0	0	0	0	13
PS.....	0	0	0	0	0	0	0	0	0	0	0
Troll.....	0	0	0	0	0	0	0	0	0	0	0
Trap.....	0	0	0	0	0	0	0	0	0	0	0
Surface.....	0	0	0	0	0	0	0	0	0	0	0
Sport.....	0	0	0	0	1	0	0	0	0	0	0
Uncl.	0	0	0	0	0	0	84	7	0	0	0
Germany (F.R.)	0	0	0	0	0	0	84	7	0	0	0
Japan.....	4,287	2,026	4,270	2,518	2,558	636	692	3,168	4,651	6,192	2,116
S. Africa ...	0	0	0	0	2	0	0	0	0	0	13
All oceans											
LL.....	47,500	50,900	56,000	48,400	46,138	33,900	33,751	27,555	21,531	21,830	--

Table 16. Atlantic small tuna catch (1,000 MT) (as of February 10, 1982)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980*
Blackfin tuna (<i>T. atlanticus</i>)													
Total . . . . .	.2	.2	.2	.2	.4	.5	.3	.2	.1	.3	.3	.6	0.
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic. . . . .	.2	.2	.2	.2	.4	.5	.3	.2	.1	.3	.3	.6	0.
Atlantic little tuna (<i>E. alletteratus</i>)													
Total	3.2	3.5	8.6	5.6	3.1	2.2	5.2	3.9	3.6	7.5	16.6	12.0	16.2
Mediterranean. . .	.2	1.0	.9	.4	.6	.7	.7	.8	1.2	1.5	1.5	1.3	.2
Atlantic.	3.0	2.6	7.7	5.1	2.5	1.5	4.5	3.1	2.3	6.0	15.0	10.8	16.0
Atlantic bonito (<i>S. sarda</i>)													
Total	31.9	61.8	29.7	24.8	16.4	12.4	24.9	16.1	15.6	20.2	14.0	17.9	31.7
Mediterranean. . .	26.2	55.7	21.7	9.0	7.6	6.8	11.7	6.8	6.5	8.7	8.5	12.8	18.9
Atlantic.	5.7	6.1	8.0	15.8	8.8	5.7	13.3	9.3	9.1	11.5	5.5	5.1	12.8
Frigate tuna (<i>A. thazard</i>)													
Total	9.5	11.0	12.7	11.2	13.4	10.1	13.9	10.2	9.4	19.2	4.8	7.7	11.8
Mediterranean. . .	3.1	2.8	3.5	4.1	3.3	3.5	4.3	2.4	2.9	2.6	1.3	1.4	1.4
Atlantic.	6.4	8.2	9.2	7.1	10.2	6.7	9.6	7.9	6.5	16.6	3.5	6.3	10.4
King mackerel (<i>S. cavalla</i>)													
Total	10.3	9.5	8.8	7.7	11.1	14.2	12.2	10.3	10.2	10.8	10.0	10.1	9.6
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	10.3	9.5	8.8	7.7	11.1	14.2	12.2	10.3	10.2	10.8	10.0	10.1	9.6
Spotted Spanish mackerel (<i>S. maculatus</i>)													
Total	7.1	7.3	9.1	9.1	11.4	13.4	9.3	10.6	11.2	11.0	9.8	7.8	10.3
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	7.1	7.3	9.1	9.1	11.4	13.4	9.3	10.6	11.2	11.0	9.8	7.8	10.3

Cero (<i>S. regalis</i>)													
Total . . . . .	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	0.
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic. . . . .	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	0.
West African Spanish mackerel (<i>S. tritor</i>)													
Total	1.8	2.7	3.7	1.3	2.1	1.6	4.7	.8	1.9	2.6	6.8	4.2	4.9
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	1.8	2.7	3.7	1.3	2.1	1.6	4.7	.8	1.9	2.6	6.8	4.2	4.9
King mackerel unknown (<i>S. spp</i>)													
Total	2.1	3.4	4.2	1.0	.9	1.0	.8	1.1	.9	.9	.7	.7	3.5
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	2.1	3.4	4.2	1.0	.9	1.0	.8	1.1	.9	.9	.7	.7	3.5
Wahoo (<i>A. solandri</i>)													
Total . . . . .	.8	1.1	1.0	1.4	1.6	2.2	1.6	1.4	1.6	1.5	1.6	2.4	2.2
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic. . . . .	.8	1.1	1.0	1.4	1.6	2.2	1.6	1.4	1.6	1.5	1.6	2.4	2.2
Others**													
Total	12.6	13.9	13.9	11.9	16.6	8.3	8.6	12.3	10.5	16.0	9.8	8.9	16.9
Mediterranean. . .	1.2	1.2	.6	.3	.3	.4	.7	.8	.7	.7	.5	.0	.0
Atlantic.	11.4	12.7	13.3	11.6	16.3	7.9	7.9	11.6	9.7	15.3	9.3	8.9	16.9
GRAND TOTAL. . . .													
Total	79.6	114.4	92.0	74.3	77.1	66.0	81.8	67.2	65.1	90.2	74.5	72.3	107.0
Mediterranean. . .	30.7	60.7	26.7	13.8	11.8	11.4	17.4	10.8	11.4	13.5	11.9	15.6	20.5
Atlantic.	48.9	53.8	65.3	60.4	65.3	54.7	64.4	56.4	53.7	76.7	62.6	56.7	86.5

* Preliminary.

** OTH (might include big tunas, billfishes and sharks), BOP, SMT, BGT, and SLT.

Table 17. Catches by the Spanish fleet which directs effort towards albacore in the Bay of Biscay

<i>Year</i>	<i>Albacore (MT)</i>	<i>Bluefin (MT)</i>	<i>%</i>
1965	14,846	420	2.8
1966	12,678	432	3.4
1967	13,400	169	1.3
1968	11,269	446	3.9
1969	11,980	131	1.1
1970	12,231	174	1.4
1971	13,494	27	0.2
1972	6,562	932	14.2
1973	6,394	227	3.5
1974	11,157	106	0.9
1975	8,547	127	1.5
1976	12,346	93	0.7
1977	9,245	68	0.7
1978	10,113	312	3.1
1979	14,974	100	0.7
1980	14,680	200	1.4

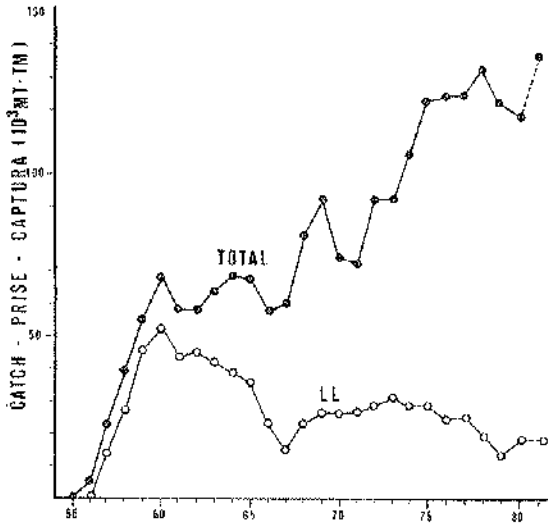


Fig. 1. Catch of yellowfin tuna in the Atlantic Ocean by longline and all gears combined, 1955-81.

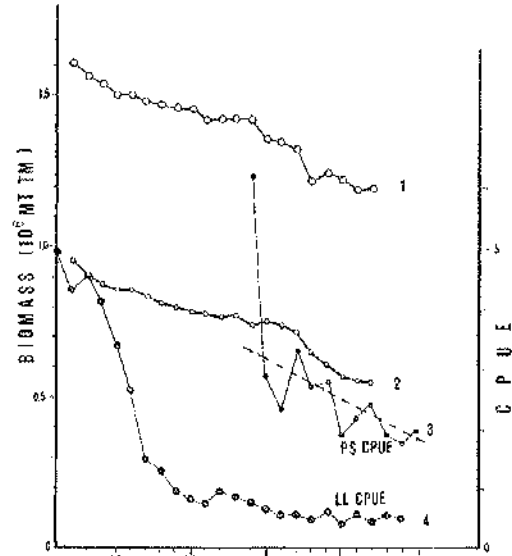


Fig. 2. Comparison of yellowfin abundance estimates based on:

- 1) cohort analysis, low exploitation rate hypothesis (w/under-exploited stock);
- 2) cohort analysis, high exploitation rate hypothesis (w/completely exploited stock);
- 3) surface CPUE FISM (trend adjusted by eye, for standardized fishing days);
- 4) longline CPUE (Japan, per 1000 hooks).

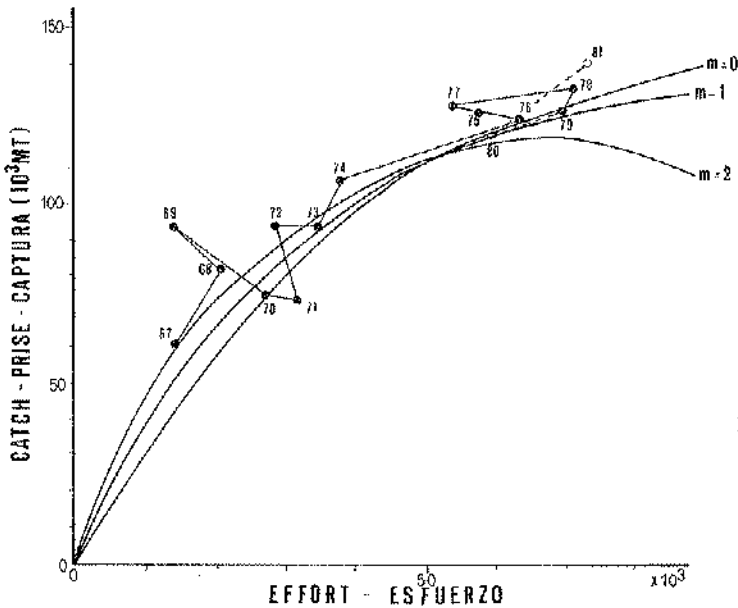


Fig. 3. Observed catch and effective effort relationship for the entire Atlantic yellowfin stock, and estimated equilibrium (with $k = 5$ and $m = 0, 1.0$ and 2.0).

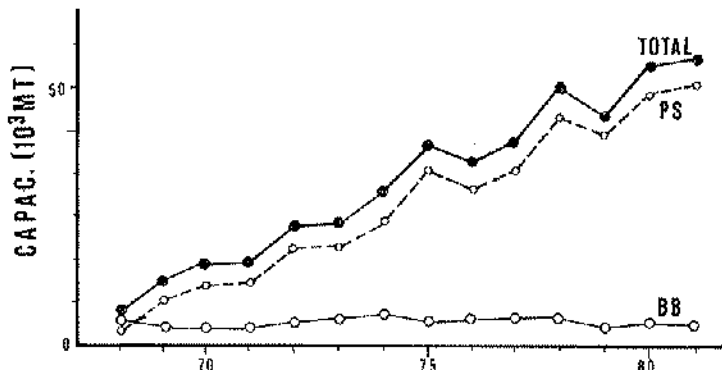


Fig. 4. Carrying capacity of the tropical fleet (baitboats, purse seiners, total) fishing in the east tropical Atlantic.

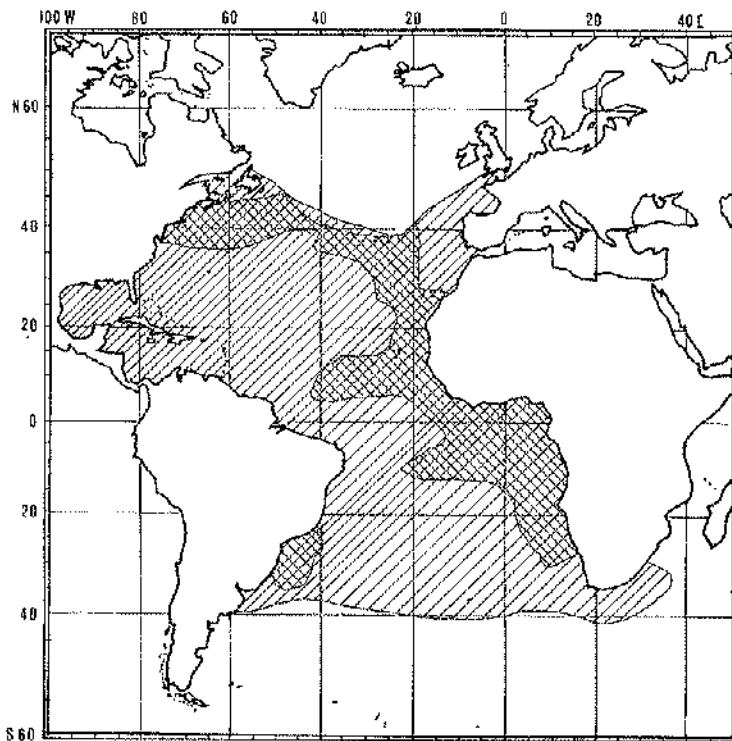


Fig. 5. Areas of the Atlantic Ocean currently or historically fished for bigeye tuna and areas of high production.

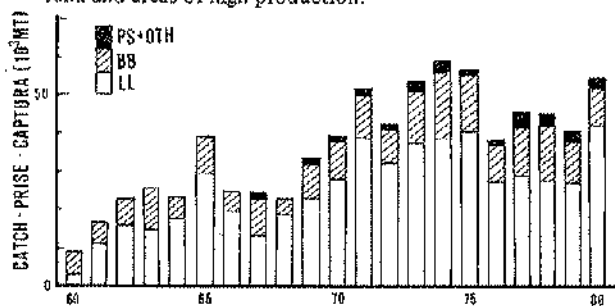


Fig. 6. Yearly bigeye catch by gear in the Atlantic, 1960-80.

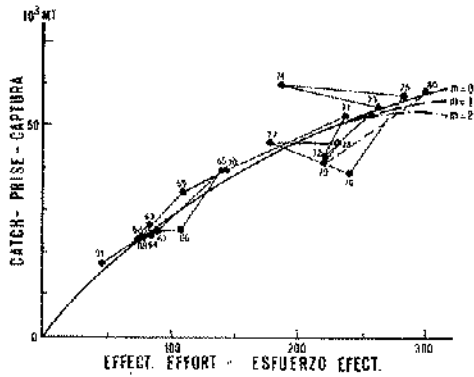


Fig. 7. Yield curves obtained from the production model analysis for bigeye tuna in the whole Atlantic, 1961-79. (Effective effort in 10^6 hooks and catch in 10^3 MT.)

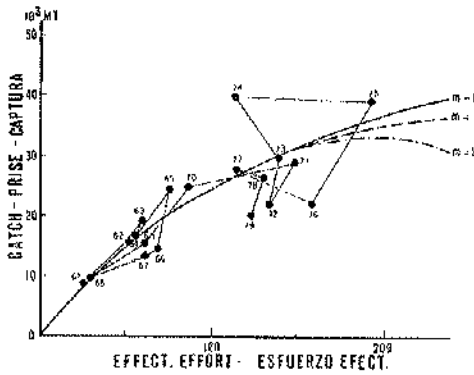


Fig. 8. Yield curves obtained from the production model analysis for bigeye tuna in the N. Atlantic, 1961-79. (Effective effort in 10^6 hooks and catch in 10^3 MT.)

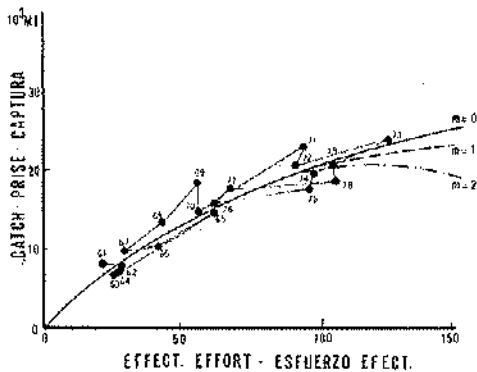


Fig. 9. Yield curves obtained from the production model analysis for bigeye tuna in the S. Atlantic, 1961-79. (Effective effort in 10^6 hooks and catch in 10^3 MT.)

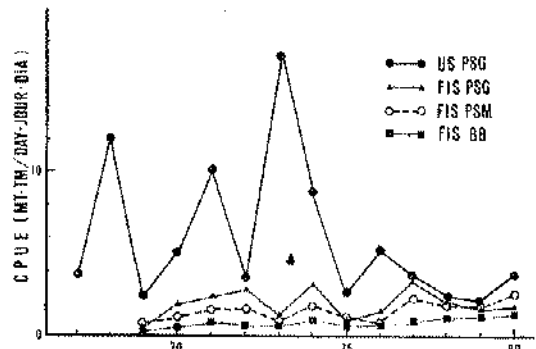


Fig. 10. Atlantic skipjack catches in the east and west Atlantic (baitboats, purse seiners, total). The figures for 1981 are provisional estimates.

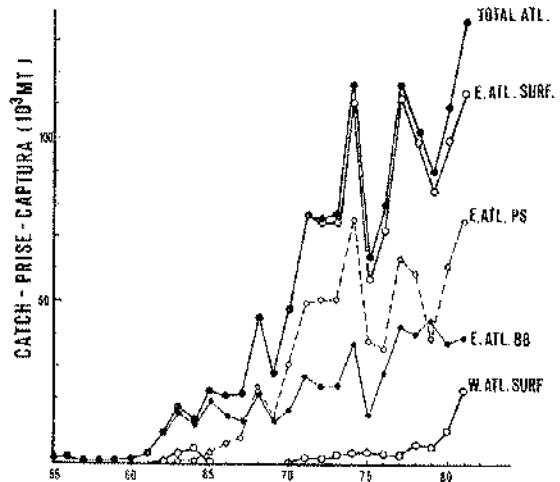


Fig. 11. CPUE indices (in catch per standard fishing day) of skipjack in the east Atlantic, 1967-80.

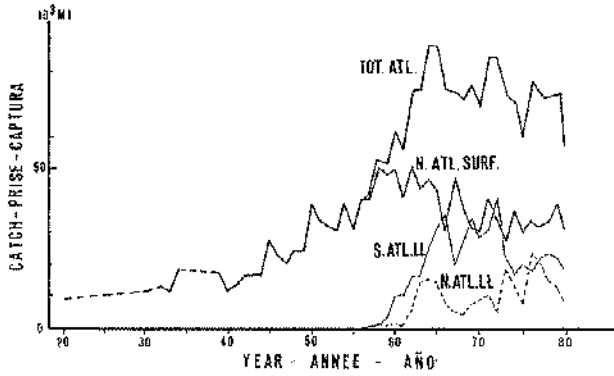


Fig. 12. Catches of Atlantic albacore by stock and principal fishery vs. time. Some 1980 values are preliminary.

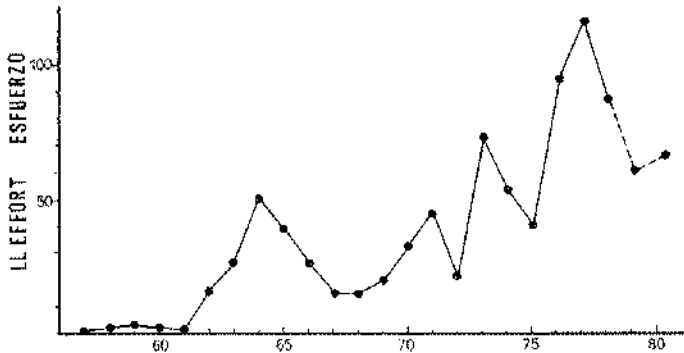


Fig. 13. Albacore north stock effective longline effort (millions of hooks) for 1957-78 and estimated longline effort based on nominal Taiwanese catch-per-effort and total catch for 1979-80.

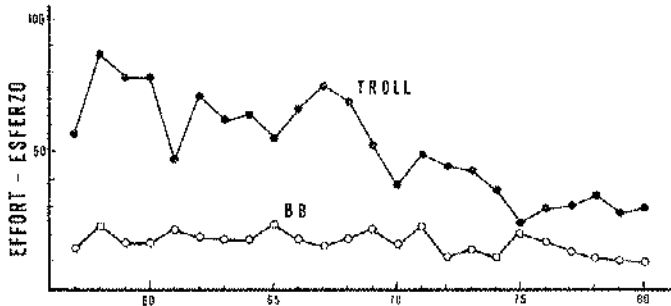


Fig. 14. Albacore north stock nominal baitboat and troll effort (in 1000 fishing days).

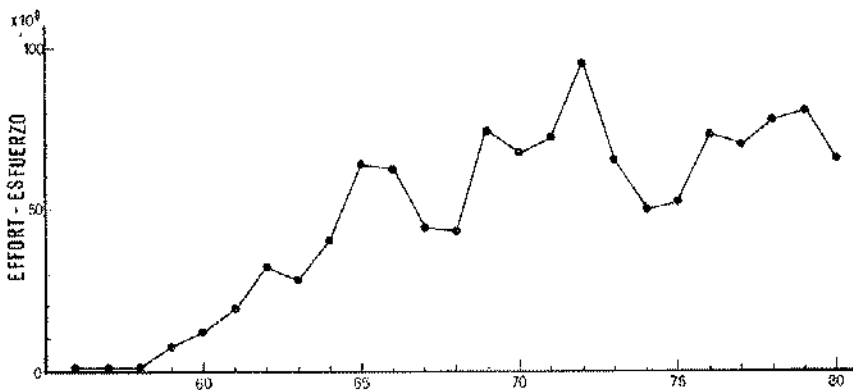


Fig. 15. Estimated nominal longline fishing effort for south Atlantic albacore in millions of hooks.

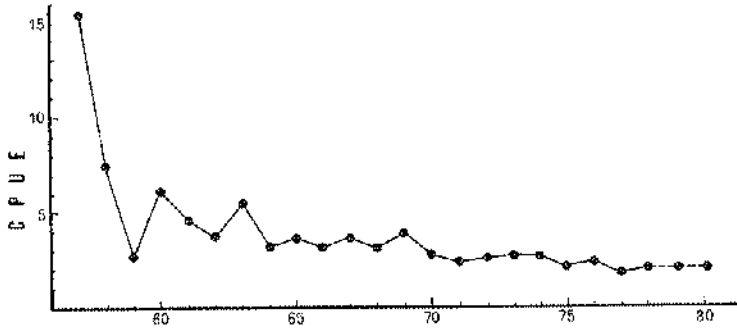


Fig. 16. Longline CPUE (MT per 1000 hooks) of N. Atlantic albacore. The 1957-78 CPUE is based on total longline catch and total effective longline catch. The 1979-80 CPUE is estimated from Taiwanese longline CPUE.

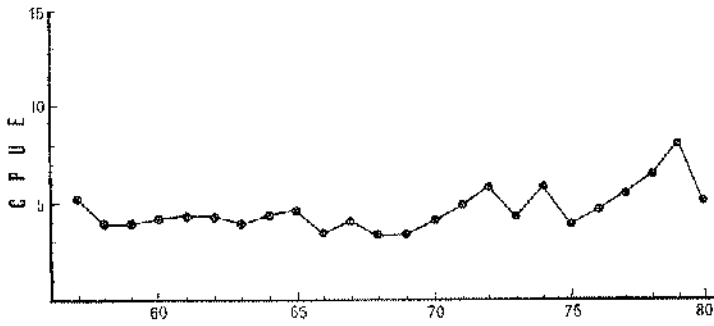


Fig. 17. CPUE (MT per days fishing) by the troll fishery of N. Atlantic albacore, 1957-80.

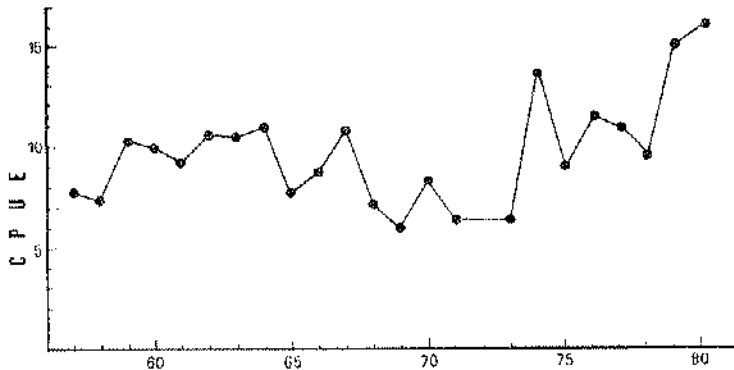


Fig. 18. CPUE (MT per day of fishing) by the baitboat fishery of N. Atlantic albacore, 1957-80.

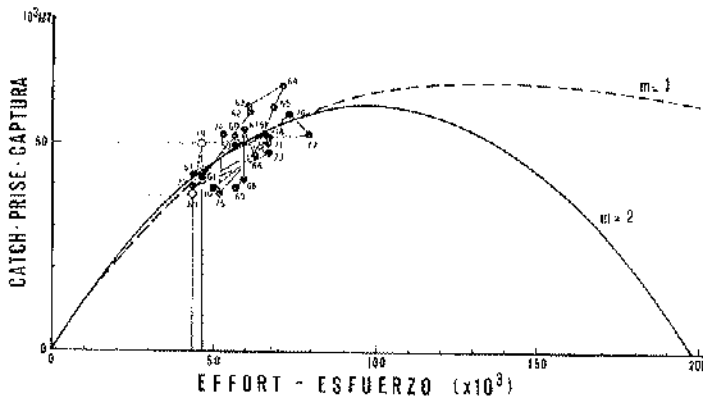


Fig. 19. Fitting of production model to catch and effort data of the N. Atlantic albacore fishery, 1957-78. 1979 and 1980 data are not included in the model.

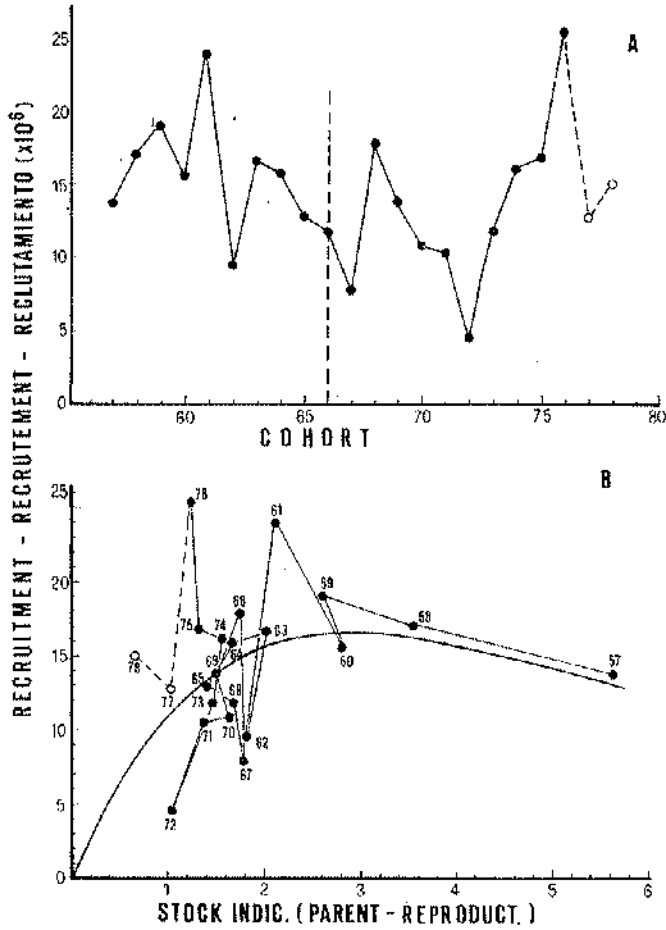


Fig. 20. A) Recruitment of age 2 fish, derived from cohort analysis;
 B) Stock-recruitment relation - North Atlantic albacore.
 1977 and 1978 are preliminary estimates.

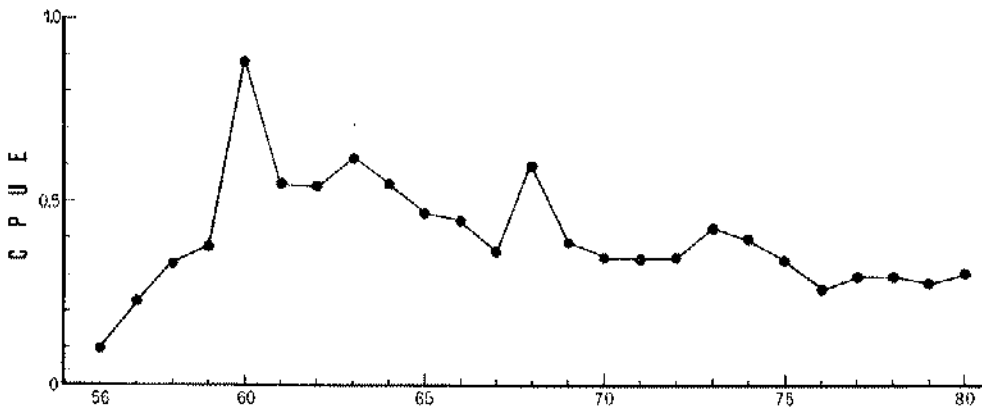


Fig. 21. Estimates catch-per-unit effort (MT/10³ hooks) for the South Atlantic albacore longline fishery based on nominal longline effort.

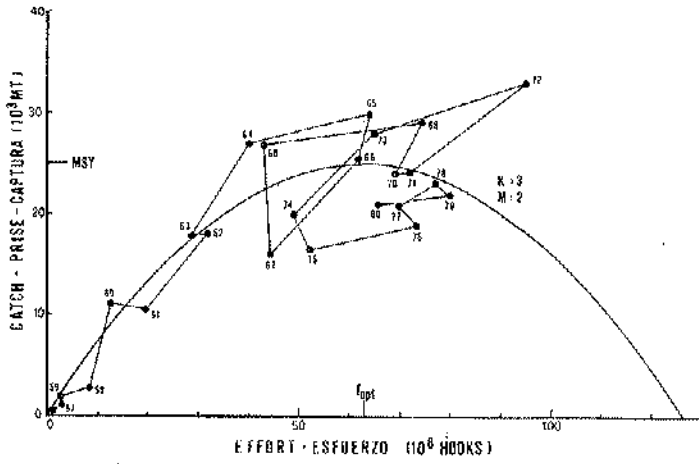


Fig. 22. Production model fitted to South Atlantic albacore catch and nominal effort data.

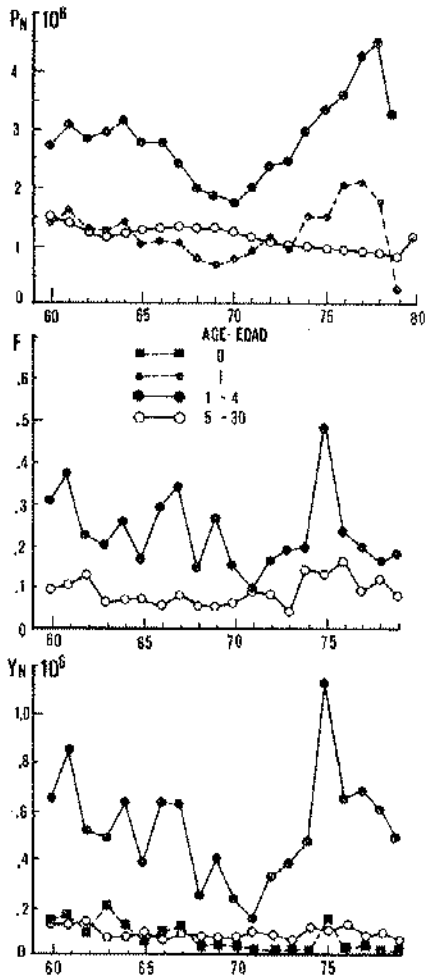


Fig. 23. East Atlantic bluefin tuna stock size (in 10^6 fish), average fishing mortality rates, and catches (in 10^6 fish) by age groups.

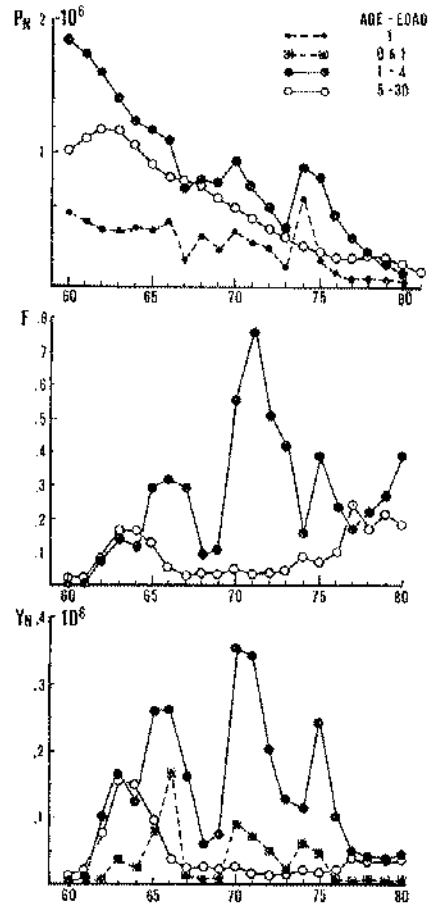


Fig. 24. West Atlantic bluefin tuna stock size (in 10^6 fish), average fishing mortality rates, and catches (in 10^6 fish) by age groups.

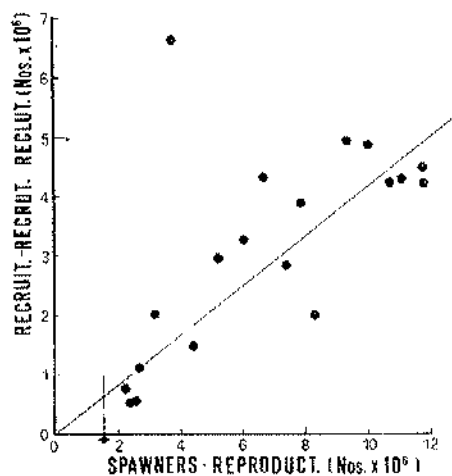


Fig. 25. West Atlantic bluefin tuna spawner- (10^6 fish of ages 5-30) recruitment (10^6 fish of age 1) relation. Arrow indicates 1981 stock size of spawners.

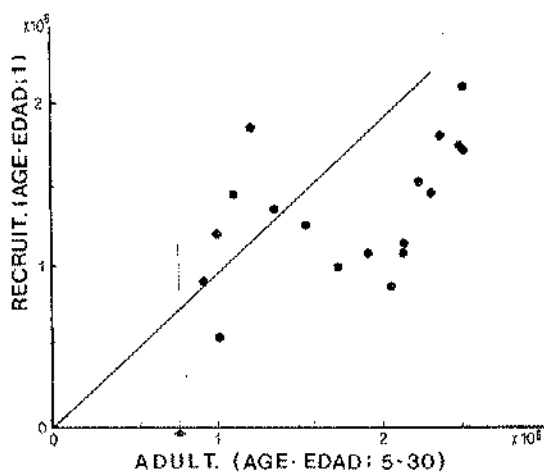


Fig. 27. Total Atlantic bluefin tuna adult- (millions of age 5-30 fish) recruitment (millions of age 1 fish) relation. Arrow indicates 1981 adult abundance level.

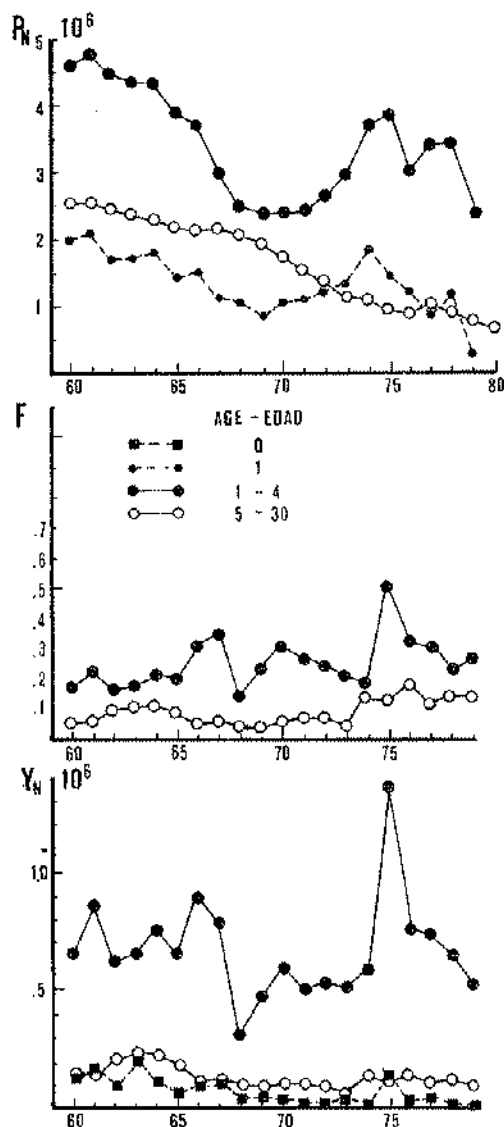


Fig. 26. Total Atlantic bluefin tuna stock size (in 10^6 fish), average fishing mortality rates, and catches (in 10^6 fish) by age groups.

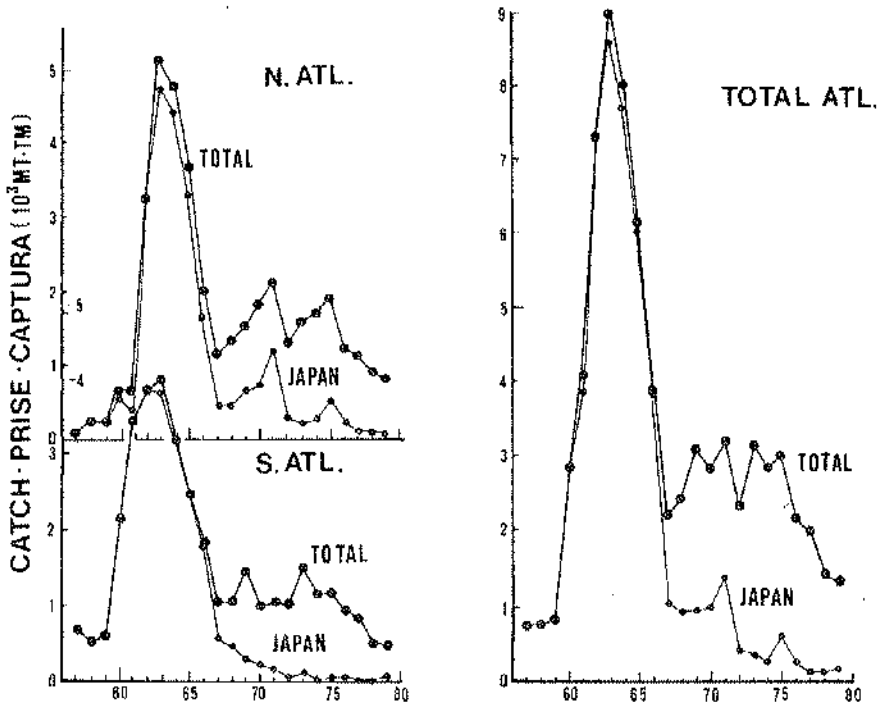


Fig. 28. Change in Japanese and aggregate Atlantic blue marlin catches in the north, south and total Atlantic (SCRS/81/31).

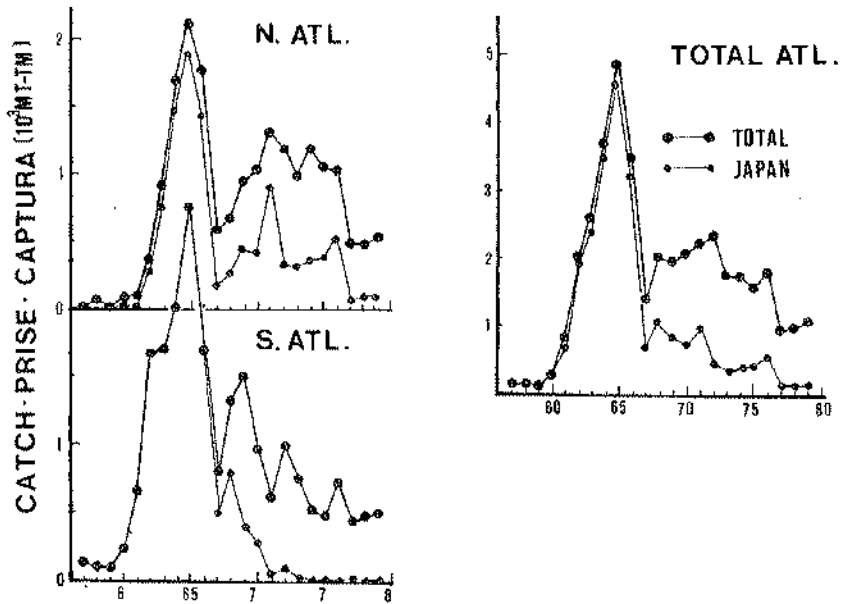


Fig. 29. Change in Japanese and aggregate Atlantic white marlin catches in the north, south and total Atlantic (SCRS/81/31).

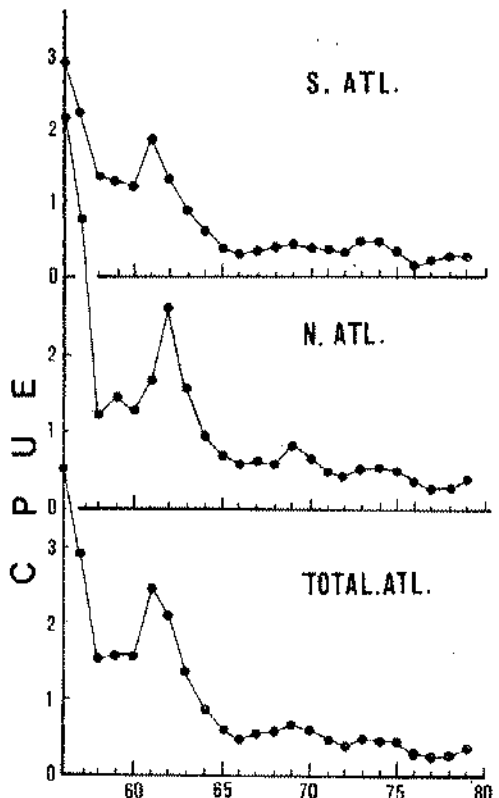


Fig. 30. Change in CPUE (no. fish/1000 hooks) of the Japanese longline fishery for blue marlin (SCRS/81/31).

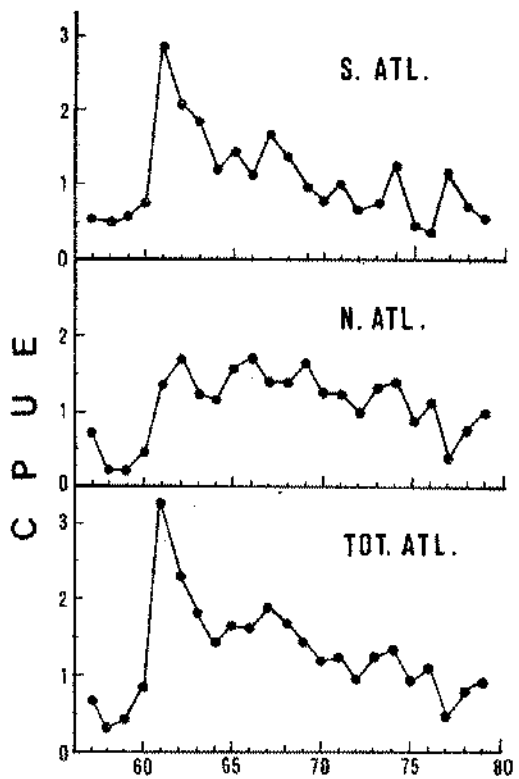


Fig. 31. Change in CPUE (no. fish/1000 hooks) of the Japanese longline fishery for white marlin (SCRS/81/31).

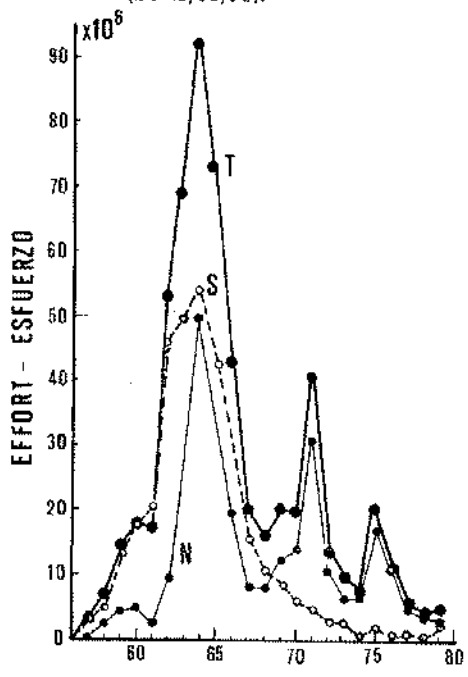


Fig. 32. Change in effective fishing effort (in 10^6 hooks) of the Japanese longline fishery for blue marlin (SCRS/81/31). N = north Atlantic; S = south Atlantic; T = total Atlantic.

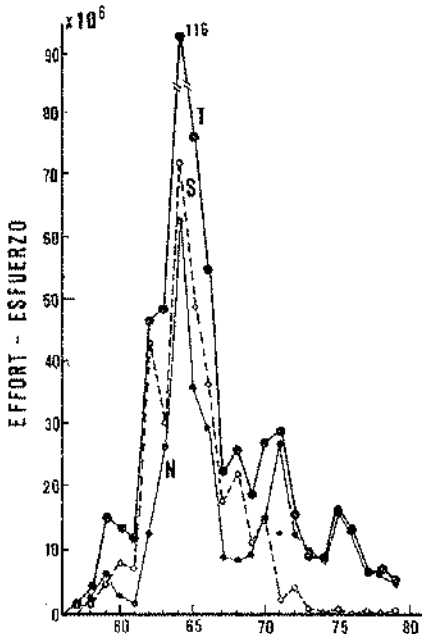


Fig. 33. Change in effective fishing effort (in 10^6 hooks) of the Japanese longline fishery for white marlin (SCRS/81/31). N = north Atlantic; S = south Atlantic; T = total Atlantic.

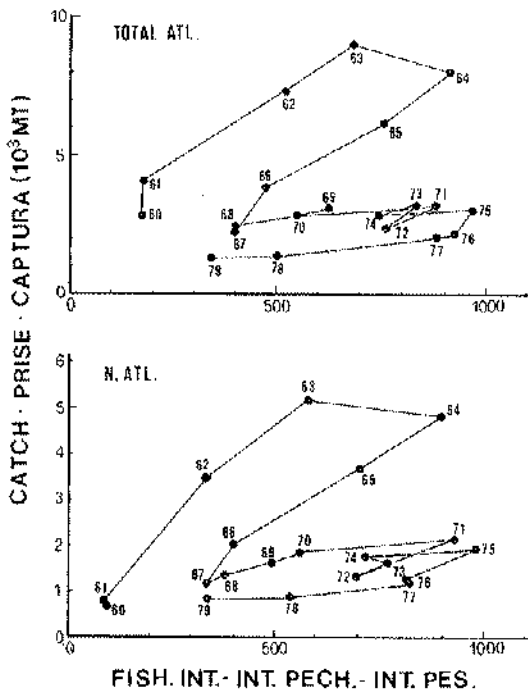


Fig. 34. Catch (in 1000 MT) vs. fishing intensity (in 1000 hooks per 5^0 area) for five significant year-classes of blue marlin under two stock hypotheses (SCRS/81/57).

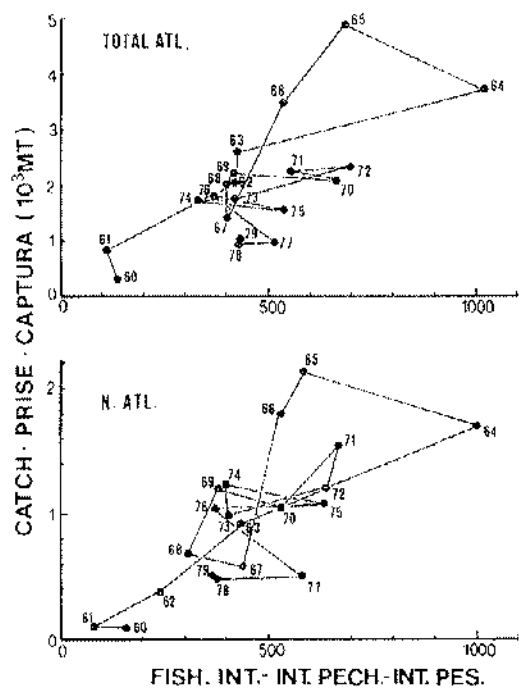


Fig. 35. Catch (in 1000 MT) vs. fishing intensity (in 1000 hooks per 5^0 area) for white marlin under two stock hypotheses (SCRS/81/57).

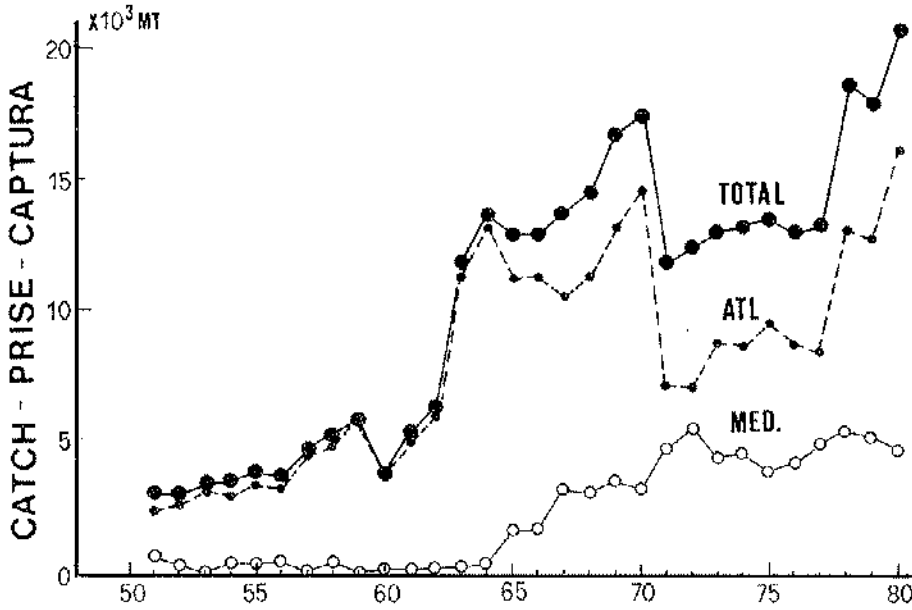


Fig. 36. Atlantic, Mediterranean and total swordfish catch (1000 MT).

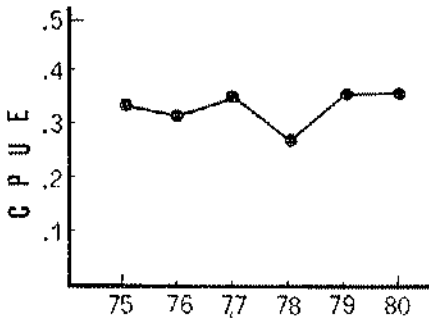


Fig. 37. CPUE for the Atlantic Spanish longline fishery for swordfish (MT/1000 hooks).

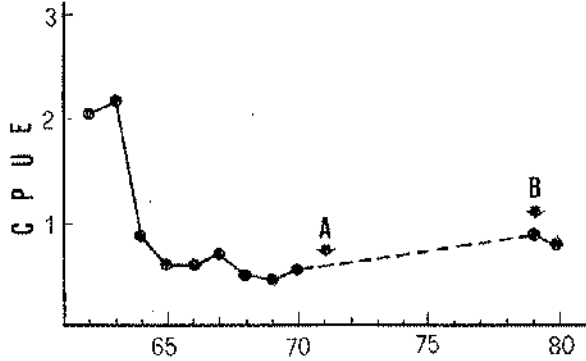


Fig. 38. CPUE data (MT dressed weight/1000 hooks) from the Canadian longline swordfish fishery. A = when mercury content restrictions imposed; B = when restrictions relaxed.

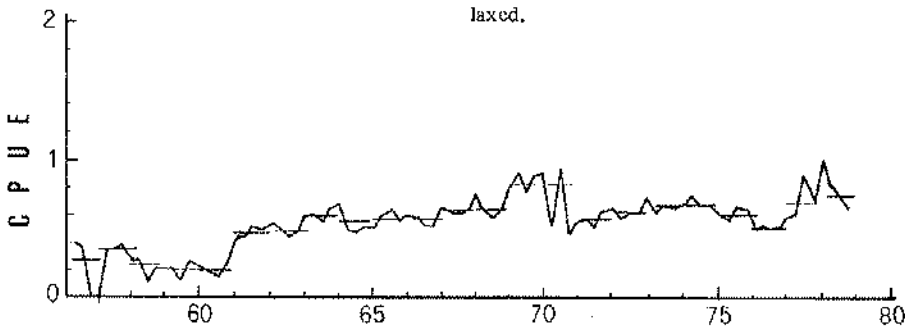


Fig. 39. Annual CPUE data (fish/1000 effective hooks) of swordfish in the whole Atlantic Ocean for the Japanese longline fishery, 1956-78 (SCR5/80/70).

**AGENDA FOR THE STANDING COMMITTEE ON
RESEARCH AND STATISTICS (SCRS)**

1. Opening of the meeting
2. Adoption of Agenda and arrangements for the meeting
3. Admission of observers
4. Admission of scientific papers
5. Review of national fisheries and research programs
6. Review of conditions of stocks, with brief presentation of major papers on this subject
 - A) Tropical Tunas
(AYF-Yellowfin)
(ABE-Bigeye)
(ASJ-Skipjack)
 - B) Albacore
 - C) Bluefin
 - D) Billfishes and Southern Bluefin Tuna
(DBL-Billfish)
(DSW-Swordfish)
(DSB-Southern Bluefin)
 - E) Small Tunas
 - F) Multi-Species
 - Tropical Species
 - Temperate Species
7. Review of the Report of the SCRS Officers Meeting
8. Review of the Report of the Billfish Workshop
9. Review of the Report of the Sub-Committee on Skipjack and its progress
10. Report of the Sub-Committee on Statistics and review of Atlantic tuna statistics and data management system
11. Review of SCRS research programs and consideration of future plans
12. Cooperation with other organizations
13. Review of scientific publications
14. Recommendations
15. Date and place of next meeting
16. Other matters
17. Election of Chairman
18. Adoption of Report
19. Adjournment

LIST OF DOCUMENTS

- SCRS/81/ 1 Tentative Agenda of the SCRS.
2 Annotated Tentative Agenda of the SCRS.
3 Tentative Schedule of the SCRS.
4 Tentative Agenda for the Sub-Committee on Statistics.
5 Organization of the 1981 SCRS Meeting.
6 Document Policy.
7 Report of the 1981 Inter-sessional SCRS Officers Meeting.
8 Port Samplers' Manual.
9 Shipboard Samplers' Manual.
10 Laboratory Manual.
11 Review of Task II Catch and Effort Data for Taiwanese Longline Fleet, 1976-1978.
12 Compendium of Answers to the Questionnaires on Methods of Measuring Billfish.
13 Collective Volume, Vol. XIV – 1980 SCRS Report "A" (Species Reports).
14 Collective Volume, Vol. XV (1) 1980 SCRS – Tropical Species.
15 Collective Volume, Vol. XV (2) 1980 SCRS – Temperate Species.
16 Collective Volume, Vol. XVI – Report of the ICCAT Inter-Sessional Workshop on Billfish.
17 Data Record, Vol. 17.
18 Data Record, Vol. 18.
19 Statistical Series -10.
20 Report for the Biennial Period, 1980-81 (Part I, 1980).
21 1981 SCRS Report "A" (working document).
22 1981 SCRS Report "B" (summary presented to the Commission).
23 Statistical Bulletin, Vol. 11.
24 Secretariat Report on Statistics and Coordination of Research.
25 Report of the Sub-Committee on Skipjack (Miami, June 8-10, 1981).
26 Skipjack Progress Report.
27 Proposals for the Portuguese Tuna Catch Statistics.
28 Small Tuna-like Fish Stocks.

- 29 Footnotes to the Statistical Bulletin.
- 30 Mercado de atunes (*Thunnus thynnus*) en el Golfo de Vizcaya durante el verano de 1981 – J. C. Rey, J. L. Cort.
- 31 A review of the stock status of the Atlantic marlins – S. Kikawa, M. Honma.
- 32 Overall fishing intensity, catch and catch by size of yellowfin tuna in the Atlantic longline fishery, 1956-1979 – M. Honma.
- 33 Catch, fishing effort and length composition of the Atlantic bluefin caught by Japanese longline fishery – K. Hisada, Z. Suzuki.
- 34 Overall fishing intensity on Atlantic bigeye tuna caught by longline fishery and evaluation of the stock status by production model analysis – S. Kume.
- 35 Progress report on Japanese research activity on Atlantic skipjack in the International Skipjack Year, 1981 – M. Yamaguchi, S. Kikawa.
- 36 Japanese tuna fishery and research in the Atlantic, 1980-1981 – S. Kume.
- 37 South African National Report, 1980.
- 38 A preliminary note on the results of the Japanese tagging cruise for ISYP in 1980 – Far Seas Fisheries Research Laboratory.
- 39 Situación de las pesquerías de jóvenes atunes rojos (*Thunnus thynnus*) de Marruecos y Golfo de Vizcaya y evolución en la parte atlántica del stock este – J. L. Cort.
- 40 Commentaires sur l'état du stock de germon (*Thunnus alalunga*) nord-atlantique – L. Antoine, A. González-Garcés.
- 41 Résumé de la situation de la pêche aux thonidés – République du Cap Vert, 1981 – H. Santa Rita Vieira.
- 42 Etude de la croissance du listao (*Katsuwonus pelamis*) de l'Atlantique au moyen des rayons de la nageoire dorsale. Mise au point d'une méthodologie – Résultats préliminaires – L. Antoine, P. Cayré, J. Mendoza.
- 43 Campañas de mercado SKJ 8107 y 8110 en Canarias. Resultados preliminares – Al. Santos Guerra, S. Torres Nuñez.
- 44 Portuguese tuna catch and effort statistics – M. do Carmo Gomes.
- 45 Informe sobre la presencia de bonito-listado (*Katsuwonus pelamis*) en el contenido estomacal de predadores capturados con palangre en el sudeste y sur del Brasil – L. A. Zavala-Camin.
- 46 Rapport sur une expérience de marquage par microémetteur, de listaos (*Katsuwonus pelamis*) dans le golfe de Guinée, en juillet 1981 – F.X. Bard, D. Pincock.
- 47 Rapport de recherche – France.
- 48 Aménagement de la population de patudo (*Parathunnus obesus*) de l'Atlantique – M. Potier, A. Fonteneau.
- 49 Statistiques de la pêche thonière FISM durant la période 1969 à 1980 – A. Fonteneau, P. Cayré.

- 50 Rapport sur la pêche et la recherche thonnières au Sénégal en 1980-1981 – P. Cayré.
- 51 La pêche à la senne tournante du thon rouge, *Thunnus thynnus* (L.), dans les bassins maritimes occidentaux italiens – P. Arena.
- 52 Size and species compositions of Atlantic tunas from imports landed in Puerto Rico during 1980 – S. Herrick.
- 53 Stochastic age-frequency estimation using the von Bertalanffy growth equation – N. Bartoo, K. Parker.
- 54 Rapport national de la Côte d'Ivoire – L. Koffi, J. B. Amon Kothias, F. X. Bard.
- 55 Atlantic bluefin tuna resource update – M. Parrack.
- 56 Informe nacional del Brasil – L. A. Zavala Camin.
- 57 An assessment of the status of stocks of blue marlin (*Makaira nigricans*) and white marlin (*Tetrapturus albidus*) in the Atlantic Ocean through 1979 – M. Farber.
- 58 Histological gonad analyses of late summer/early winter collections of bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares*) from the Northwest Atlantic and the Gulf of Mexico. NOAA-TM-NMFS-SWFC-14 – S. Goldberg, H. Herring-Dyal.
- 59 Length-weight relations for bigeye tuna captured in the eastern Atlantic Ocean – W. Parks, F. X. Bard, P. Cayré, S. Kume, Al. Santos Guerra.
- 60 Canadian National Report, 1980-1981 – P.C.F. Hurley, T. D. Iles.
- 61 Changes in the bluefin tuna stock in the Gulf of St. Lawrence in 1980 and their implications – P.C.F. Hurley, T. D. Iles.
- 62 An unusual bluefin tuna tag return – P.C.F. Hurley, T. D. Iles.
- 63 A summary of the 1980 Canadian swordfish survey – P.C.F. Hurley.
- 64 Étude de la structure des populations d'albacores (*Thunnus albacares*) dans l'Atlantique tropical par l'analyse des chiffres d'infestation parasitaire – F. Lardeux.
- 65 Report of the Ad-hoc Inter-agency Consultation on Atlantic Fishery Statistics.
- 66 Eléments pour l'aménagement des pêcheries d'albacore (*Thunnus albacares*) de l'Atlantique – A. Fonteneau.
- 67 Données nouvelles sur l'évolution des populations de germons dans le nord-est atlantique – F. Delaporte.
- 68 Some data of the Spanish swordfish (*Xiphias gladius*) fishery – J. C. Rey, A. González-Garcés.
- 69 Informe sobre la pesca e investigación españolas de túnidos en 1980 y 1981 – A. González-Garcés.

SCRS DOCUMENT LIST

- 70 Distribution and abundance of skipjack (*Katuwonus pelamis*) larvae in eastern Brazilian waters -- Y. Matsuura.
- 71 Korean tuna fisheries and research activities in the Atlantic Ocean in 1980-1981.
- 72 Ghana National Report--Tuna Fishery, 1980.
- 73 Note préliminaire sur l'opération sénégalaise de tracking de listao -- J. J. Levenez.
- 74 Review of United States fisheries and research activities on tunas and tuna-like fishes of the Atlantic Ocean for 1980-1981 -- SWFC, SEFC.
- 75 The catch distribution and catch per unit of effort by ICCAT skipjack area caught by Korean baitboats for 1978-1980 -- J.U. Lee, W. S. Yang.

REPORT OF THE SUB-COMMITTEE ON SKIPJACK

The Sub-Committee on Skipjack met on November 8 and 9 at the Hotel Semiramis, under the convenership of Dr. G. T. Sakagawa (U.S.A.), Dr. P. E. K. Symons (Secretariat) served as rapporteur.

Three main items were noted for discussion: The 1983 Skipjack Conference, Progress of activities in 1981, and Development of data analysis.

The Convener drew attention to the following documents containing information directly pertinent to the Skipjack Program: SCRS/81/14, 25, 26, 35, 38, 42, 43, 46, 50 and 73.

1983 Skipjack Conference

The Sub-Committee agreed on the following objectives and format for the Conference in 1983. The Conference should provide a forum for formal presentation of papers describing the results of each of the activities. By special invitation, experts in particular fields, who are not necessarily participants in the International Skipjack Year Program, should be asked to review historical or other pertinent data on Atlantic skipjack tuna. After presentation of these papers, working groups would integrate results of each of the activities into draft documents addressing each of the four objectives of the program: 1) Can catches of skipjack be increased?, 2) If so, where?, 3) What effects would this have on stocks?, and 4) How can assessment of stocks be improved? After adjournment of the conference, these drafts would continue to be refined and they, as well as all the participants' documents, would be assembled into a scientific report for the Commissioners.

The above objectives and Conference format necessitate that the meeting not conflict with the SCRS Meeting. Therefore, the Sub-Committee recommended a preferred date of June or July, 1983. Since there are potentially as many as fifty papers from participants, at least three days and possibly concurrent sessions will be required for their presentation. An additional three days may be required for drafting the documents which integrate these results. The Coordinator was requested to fix the time and place of the Conference as soon as possible. Possible host countries are Spain and France.

The desirability of simultaneous translation at the Conference was recognized, but so also was the cost of such services. The Secretariat was requested to examine the financial implications of the requirement. In the absence of simultaneous translation, translation aids (slide presentations with tri-lingual notations, translated abstracts, and consecutive translation provided by ICCAT personnel) must be provided.

The Conference is to be organized and managed by co-conveners. One of these, from the host country, will organize facilities at the Conference site. The other must attend to the reception and preparation of papers to be presented; the Skipjack Coordinator was nominated for this work.

Progress of activities

a) *Tagging*

The countries which tagged tunas during the year were as follows:

<i>Country</i>	<i>No. of fish tagged in 1981</i>
Brazil	52
Cuba	591
Japan	7,519
Spain	744
Senegal	2,534
Cape Verde	2,685
Ivory Coast	5,571
Korea	195
Portugal (Azores)	11

For the purpose of discovering tag recovery rates after recapture of tagged fish, the following numbers of dead skipjack were tagged aboard commercial vessels and surreptitiously added to the vessels' catch in the holds:

Ivory Coast	106
Japan	18
Senegal	19
Spain	5

All countries reported total or near total recovery of these tags.

Korea has cooperated to improve measurements of fish recaptured with tags by their fishermen, a problem identified earlier (COM-SCRS/81/25).

The Sub-Committee agreed that skipjack T-shirts previously given only as rewards for tags may be sold at cost by the Secretariat after January 1, 1982.

b) *Sonic tagging*

Two cruises were executed for sonic tagging in which four skipjack and one bigeye tuna were tracked.

Ivory Coast-France-Canada	- 2 skipjack
Senegal	- 2 skipjack, 1 bigeye

c) *Port sampling*

New coverage in 1981: Cape Verde, Cuba, Morocco, Portugal (Azores only) and Venezuela.

d) Intensive sampling

Observers were placed aboard commercial vessels for this activity by the following countries:

FIS (purse seine) - 8 cruises
 Ghana (baitboat) - 2 cruises
 Japan (baitboat) - 2 cruises
 Spain (purse seine) - 5 cruises

e) Fishery oceanography

France reported collecting information from four sources:

- XBT aboard commercial fishing vessels
- Cruises by oceanographic vessels in June, July (with sonic tagging) and October
- Drifting buoys (2) in Gulf of Guinea
- Satellite photographs

Brazil collected oceanographic data during larval survey cruises and Senegal collected oceanographic data during sonic tagging cruises.

f) Maturity-fecundity

Collections of gonads have been made by all countries listed in the Report of the Sub-Committee on Skipjack (COM-SCRS/81/25).

g) Biochemical stock identification

Fourteen samples were collected by Brazil. In view of the few samples collected and difficulty in getting samples analyzed, further work and analysis for this activity have been abandoned.

h) Ageing

A preliminary study of the use of spines for ageing has been made (SCRS/81/42). For verification of ageing techniques, recovery of red-tagged fish injected with tetracycline is important. The following red-tag recoveries have been made:

<i>Country applying tag</i>	<i>No. recovered</i>
Cape Verde	1 (tag only)
U.S.A.	1 with fish and 2 without fish
Ivory Coast	65 with fish, 20 without fish

i) Predator stomach analysis

The following collections have been made:

<i>Country</i>	<i>No. predator stomachs</i>	<i>No. skipjack found</i>
Brazil	758	6
Japan	180	0
U.S.S.R.	500	?

j) Larval surveys

Surveys were conducted by Brazil and Cuba.

Development of data analysis

The Sub-Committee recognized the need to specify explicitly the analyses to be conducted. For each of the activities listed below, there is first given a general question to be answered by the results of that activity, then a tentative list of papers and proposed authors. The Sub-Committee recommended that the co-convenor in charge of developing the program (P. E. K. Symons) be requested to develop this list further as needs become apparent.

a) Port sampling -- How much sampling is "enough"?

- Review of ports where skipjack catches are being landed (P. E. K. Symons)
- Review of data collected in the eastern Atlantic (F. X. Bard)
- Review of data collected in the western Atlantic (S. Herrick)
- Analysis of sample coverage (J. P. Wise)
- Analysis of detailed logbook and interview data (National correspondents)

b) Intensive sampling -- What is a good index of abundance?

- Review of data collected by Japan-Observer program (S. Kume)
- Review of data collected by FIS-Observer program (A. Fonteneau)
- Review of data collected by Spain-Observer program (A. Fernández)
- Analysis of how purse seiners operated under different levels of abundance of fish (A. Fonteneau and A. Fernández)
- Analysis of how baitboats operate under different levels of abundance of fish (S. Kume)

c) Dart tagging -- What are estimates of population parameters?

- Review of tagging in the east Atlantic:

Japan	S. Kume
FIS	F. X. Bard
Korea	J. U. Lee
Cape Verde	H. Santa Rita Vieira
Spain	Al. Santos Guerra
U.S.S.R.	Yu. Vialov
Portugal	J. Pereira

– Review of tagging in the west Atlantic:

Brazil	J. A. Negreiros Aragao
Cuba	S. Valle
U.S.A.	S. Herrick

- Analysis of growth from tagging data (F. X. Bard and S. Kume)
- Analysis of mortality rates from tagging data (F. X. Bard and S. Kume)

d) *Sonic tagging* – What kinds of habitat-selection behavior affects availability?

- Review of behavior-physiology of skipjack (guest speaker)
- Review of tagging in the Gulf of Guinea (F. X. Bard)
- Review of tagging off Senegal and Cape Verde (P. Cayré and H. Santa Rita Vieira)

e) *Fishery oceanography* – How does the environment affect availability?

- Review of skipjack-environment studies conducted in the Atlantic (guest speaker)
- Analysis of skipjack distribution in relation to oceanographic parameters in the Gulf of Guinea (M. Roy)

f) *Maturity-fecundity* – What is the fecundity and maturity profile for skipjack?

- Review of historical data (P. Cayré)
- Analysis of data collected in the east Atlantic (P. Cayré)
- Analysis of data collected in the west Atlantic (D. Au and J. A. Negreiros Aragao)

g) *Exploratory fishing* – Are there new fishing areas in the Atlantic?

- Overview of possible areas for exploration – view in 1979 (P. E. K. Symon)
- Exploratory fishing off Brazil (J. A. Negreiros Aragao)
- Exploratory fishing off Cape Verde (H. Santa Rita Vieira)
- Exploratory fishing off Cuba (L. Crespo)

h) *Ageing* – What is the age-growth profile for skipjack?

- Analysis of otoliths and spines for age and growth of skipjack from the east Atlantic (L. Antoine)

- Analysis of otoliths and spines for age and growth of skipjack from the west Atlantic (to be decided by P. E. K. Symons)
- Verification of marks with tetracycline tagging experiments (L. Antoine)

i) Predator stomach analysis -- Where are juvenile skipjack found?

- Analysis of predator stomachs from fish caught by Japanese longline (S. Kikawa)
- Analysis of predator stomachs from fish caught by Brazilian longline (L. A. Zavala-Camin)
- Analysis of skipjack stomachs from fish caught in the east Atlantic (to be decided by P. E. K. Symons)

j) Biochemical stock identification -- What is the stock structure?

- Review of historical data (to be decided by P. E. K. Symons)

k) Larval survey -- Where are larval skipjack found?

- Review of historical data (to be decided by P. E. K. Symons)
- Review of data collected in the west Atlantic (Y. Matsuura)
- Review of data collected in the east Atlantic (to be decided by P. E. K. Symons)

Others

Senegal asked whether the Secretariat's systems analyst could be made available to work in Dakar for a period of about three weeks in March-April, 1982, at the Commission's expense, to assist in developing computer data management and analysis programs for use by the International Skipjack Year Program. This request was being made because data from the International Skipjack Year Program activities of several countries are being processed on the computer in Senegal so that the data can be made available to ICCAT and to all participating countries. This data processing would assist the Secretariat in one phase of its assigned responsibility. The Sub-Committee recommended that the request be considered by the Secretariat and that, if possible, preliminary work be done by correspondence to reduce the duration of the mission. Also, the Secretariat is requested to ensure that all programs developed by the analyst during this mission be available for ICCAT's use.

Film

Brazil has taken some movies on longline and baitboat fishing, Senegal and Cape Verde on baitboat fishing, and Japan also has some film. When more movies have been taken, the Sub-Committee recommended that a committee be formed to develop procedures for assembling an ICCAT film on the International Skipjack Year Program.

List of unnumbered information reports submitted to the Sub-Committee Meeting

- Types of analysis considered for the intensive sampling activity (A. Fonteneau)
- Statistical data processing on fisheries under the International Skipjack Year Program (A. Fonteneau)
- Report of the port sampling analysis team (A. L. Coan and A. Fonteneau)
- Report on the Cape Verde research cruise, October 4 - 21, 1981 (J. J. M. Leal, P. M'Fina, A. C. Pereira, M. Potier and H. Santa Rita Vieira)
- Report of the activities of the working group on stomach contents examination (L. A. Zavala-Camin)
- Data analysis of maturity fecundity activity (P. Cayré)

*Appendix 4 to Annex 8***REPORT OF THE SUB-COMMITTEE ON STATISTICS****1. Opening of the meeting**

The meeting was opened on November 8, 1981, by the Convener, Mr. S. Kume (Japan). He noted that considerable progress has been made by the scientists and the Secretariat since the last meeting. In collecting adequate and correct statistics, he noted that as the population studies progress, more refined, detailed statistics are required.

2. Adoption of Agenda and arrangements for the meeting

The Agenda (Addendum 1) was adopted without change and Dr. P. M. Miyake and Mr. J. P. Wise (Secretariat) were appointed rapporteurs.

3. Examination of progress made by national offices*3.1 Member countries' routine reporting*

Each country's progress in reporting statistics through 1980 and 1981 was reviewed by the Sub-Committee. The Secretariat Report on Statistics and Coordination of Research (COM-SCRS/81/24 - hereafter referred to as the Secretariat Statistics Report), together with its attached table, was also reviewed with respect to the progress made. The table showing the progress made was updated and is attached herewith as Table 1.

Though not shown in the Table, the Sub-Committee noted that there has been good progress made in reporting artisanal fishery catches of small tunas by African countries (Senegal and Ghana). The Sub-Committee recommended that in 1982 the Secretariat include in this table a small tunas section.

As recommended at the 1980 meeting, the original sample coverage for catch and effort data was reported, and a column was added to show whether the data submitted were raised, unraised, or both. In addition, countries were listed for which there were presumably tuna catches even though no data are available.

3.2 Spanish tropical fleet statistics

The Sub-Committee reviewed the statistical problems associated with the catch and effort and biological data from the Spanish tropical fleet. It was reported that by the end of 1981, the catch and effort data would be made available for 1980 and that size sampling data for the same period would be made available by early 1982. Task II data for 1979 have been processed and will also be made available before the end of 1981.

The question was raised concerning the proportion of yellowfin and bigeye in the nominal reported yellowfin catch. The delegate from Spain stated that Spain has developed a port sampling program, with the assistance of the scientists in Dakar and Abidjan. Further, it was noted that biological sampling from the Spanish fleet, provided by scientists at Abidjan and Dakar, have correct species identifications and may be used as the base for estimating the proportion of bigeye in the yellowfin catch.

3.3 Revised Portuguese statistics

The Sub-Committee reviewed two papers proposing revisions for Portuguese tuna statistics (SCRS/81/27 and 44). The Assistant Executive Secretary proposed that the new Portuguese statistics be accepted as the best currently available, and the Sub-Committee agreed.

3.4 Non-member country statistics

The recurring question of statistics from non-member countries, especially those which have significant tuna catches (particularly Italy and Venezuela) was discussed. Task I data are available for Italy (bluefin only) but not Task II catch and effort; data are not available for Venezuela. This problem was discussed further, together with the problem of unconventional fleet statistics (see Section 4.3 of this report).

3.5 Changes in reported statistics by national scientists

Changes in statistics contained in research papers presented at the meeting and the difficulties these changes present were discussed. The Sub-Committee requested strongly that all the figures appearing in the Statistical Bulletin be checked by national scientists every year well in advance of the meeting to eliminate such difficulties.

The Sub-Committee reiterated the previous recommendation that all corrections of national data by scientists be clearly indicated and documented separately from any scientific papers, together with the bases for such changes, and presented to the SCRS or the Secretariat. These should in turn be circulated by the Secretariat to all the national statistical correspondents.

4. Examination of the problems of the quality of statistics and promptness of reporting

4.1 Two sets of data for the same fishery

The Assistant Executive Secretary reported that there are two sets of data for the following fisheries: Korean and Taiwanese longline catch and effort and biological data (ICCAT port sampling vs. Government data); Japanese and Korean baitboat catch and effort and biological data (Ghana port sampling vs. Government data). It was noted that discrepancies between two sets of data for Taiwanese longline catch and effort for 1976 through 1978 were finally solved (SCRS/81/11). It was agreed that the method proposed for combining two data sets used in the document was a good one, and that the

combined file should be used in future work. The Secretariat reported that the two sets of data for this fishery show only small discrepancies for 1979 and 1980.

The Secretariat reported that there are very few discrepancies between the two sets of catch and effort data for Korean longline, except that the port sampling has higher data coverage.

However, the Committee noted that there have been consistent discrepancies in the size frequencies of Korean baitboat catches taken by Ghanaian scientists at the time of landing at Tema and those measured by Korean fishermen at sea. Similar discrepancies had been observed for the Japanese baitboats, and the Working Group on Juvenile Tropical Tunas decided to use Ghanaian scientists' measurement data at landing. The Sub-Committee recommended that the same procedures be adopted for Korean baitboats as for Japanese baitboat size frequencies, and further recommended that Ghanaian scientists' sampling be continued as it provides the most valuable information. The Sub-Committee recommended that a comparative study be made, hopefully by the ICCAT biostatistician, on his African mission, who will study the sampling procedures adopted by Ghanaian scientists and Japanese and Korean fishermen. Also sampling at Puerto Rico by U.S. scientists should be compared carefully with these two sets of data as is partially done in SCRS/81/52.

The Sub-Committee noted that Taiwan University, since 1979, and Korean scientists since 1976, have carried out biological sampling at sea. The Sub-Committee recommended that the Secretariat (probably the biostatistician) statistically compare these data with the results of port sampling.

4.2 Discrepancies within national statistics

The Sub-Committee reiterated its previous decision that the Statistical Bulletin should contain the best scientific estimates available for tuna catches rather than official national statistics. When two conflicting figures are reported, the Secretariat, in consultation with the Convener of the Sub-Committee on Statistics, will try to identify the cause of the discrepancy and verify which is the better estimate. If the discrepancy is significant, the basis for choosing one value over another should be documented.

4.3 Statistics for non-ICCAT countries' recently industrialized fleets

The Sub-Committee recognized the difficulties in collecting statistics from the recently developing non-ICCAT member fleets. They include the new tuna fishing fleets of non-member countries (e.g. Congo and Venezuela) and boats which, for reasons of convenience, recently changed registration to various flags (Netherlands Antilles, Venezuela, Panama, etc.). When these fleets unload their catches at ICCAT member country ports, scientists often are able to collect landing data by species, logbook abstracts and biological data. Also, some ports (e.g. Panama, Puerto Rico) are covered by IATTC to some extent. It was requested that the national scientists send any available data on these fleets to the ICCAT Secretariat. The U.S. scientists offered to help the Secretariat to obtain these data from IATTC, with whom the Assistant Executive Secretary has started communication on this subject.

The Sub-Committee agreed that these data should then be reported in grouped form to protect the privacy of industry, but that wherever possible the data should be footnoted to show what flags were involved.

The U.S. scientists agreed to continue to include catches by Netherlands Antilles flag vessels in the U.S. fleet statistics when available. On the other hand, the Sub-Committee noted that Venezuelan large purse seine catch data which have been collected by IATTC can be reported under Venezuela, but the Sub-Committee also pointed out that Venezuelan national catch statistics may include a part of such catches. The Secretariat was asked to avoid such double reporting, while at the same time taking precautions to report all the Venezuelan surface fleet catches.

At the same time, catch and other statistics of foreign flag vessels based in Venezuela should also be reported. In this respect, the Sub-Committee recommended that the Secretariat be authorized to expand its port sampling program in Cumaná from the longline fleet to include all surface fleets of international flags as well as Venezuelan flag vessels if so authorized by the Venezuelan Government.

4.4 Mutilated fish

The Sub-Committee noted that most of the groups which met previously to discuss stock evaluation were disturbed by the fact that mutilated fish caught by longline but not landed, had been excluded from catch statistics. The Sub-Committee fully endorsed the recommendations made by each species group for the solution of this problem.

5. Progress made at the Billfish Workshop concerning the billfish data base

Progress on the billfish data base made at the Billfish Workshop held in Miami in June, 1981, was discussed, and the Sub-Committee concurred that the new data base agreed upon at the Workshop contains the best current estimates (SCRS/81/16 - Collective Volume, Vol. XVI). Several problems remain -- for example, the unreasonable appearance of 500 MT of billfish shown for Grenada and Barbados. Dr. G. Beardsley of the NMFS Miami Laboratory agreed to look into the problem and report to the Secretariat. The Secretariat was asked to investigate the possibility of estimating more correct figures. Other problems remain concerning the separation of sailfish and spearfish in longline catches.

The Secretariat reported that the "Compendium of Answers to the Questionnaires on Methods of Measuring Billfish" (SCRS/81/12) has been completed. The Sub-Committee agreed that the Compendium is useful for interpreting the national statistics on nominal catch.

6. Examination of progress made by the Secretariat

6.1 Biostatistical assignments

a) Biostatistician's assignments

The Sub-Committee noted with pleasure that Mr. J. P. Wise (U.S.A.) was appointed to the position of biostatistician for a one- to two-year period. The Sub-Committee reiterated its previous recommendation that the biostatistician's first assignment was to review and evaluate the sampling and statistical schemes on tropical tunas in the eastern Atlantic, with emphasis on the problems of recorded and unrecorded catch and landings of undersized yellowfin. Additional assignments can be found under various Agenda items of this report.

The Sub-Committee recognized that the International Skipjack Year Program also required some assistance from the biostatistician regarding port sampling at Tema. The Sub-Committee noted with satisfaction that Mr. Wise was planning a trip to west Africa in early December, 1981.

b) Port sampling

The Assistant Executive Secretary reported on the present status of port sampling carried out by ICCAT (SCRS/81/24). He noted that longline sampling at Cumaná (Venezuela) has been successfully effected since 1980. The program in Montevideo (Uruguay) encountered major bureaucratic difficulties, including the lack of authorization by the Uruguayan Government and Taiwanese authorities. He also reported that both problems have been solved very recently and that the sampling program should have started in October, 1981. The Sub-Committee thanked Dr. R. T. Yang (Taiwan University) and Mr. T. Y. Yao (Director, Taiwan Fisheries Bureau) for their considerable efforts in solving these problems.

The Assistant Executive Secretary asked the Sub-Committee if it is worthwhile to continue the program in view of the fact that Taiwanese and Korean fleets are now sampled and logged by their respective authorities. He reported that maintaining the program requires considerable funds for hiring local part-time samplers and requires periodic visits by the Secretariat staff for supervisory purposes. The Sub-Committee recommended that the program be continued until the results of comparative studies of the two sets of data (see Section 4.1 of this Report) are properly evaluated, despite the increasing cost of the program.

6.2 Data base

The Sub-Committee expressed its satisfaction with the Secretariat's present data base work with INFONET and approved all the updating work done to the base in 1981 and currently in progress.

6.3 Publications and dissemination of data

a) Statistical Bulletin – Historical Series

The Assistant Executive Secretary reported that the Secretariat, after consulting with the Convener of the Sub-Committee on Statistics, postponed publication of the

Statistical Bulletin – Historical Series until the Sub-Committee could review the major changes proposed by Messrs. Kume, Bard and Pianet, the collaborators for bigeye, albacore and skipjack tunas, respectively.

The Sub-Committee approved the Historical Statistical Bulletin in its present draft form and recommended that it be distributed during the current meeting to the species collaborators for their final review. The Secretariat will set a deadline by which time the collaborators must submit any further comments, or give their formal approval for publication, which should be done well in advance of the 1982 SCRS meeting.

b) Statistical Bulletin

The Assistant Executive Secretary reported that the Statistical Bulletin, Vol. 11 (Provisional) has been published, and that Part V – “Billfish catch estimates by species” is no longer necessary and, therefore, has been dropped. He also announced that Part III – “No. of boats by type and class” will be computerized in the very near future.

The question of the proposed “quality of information” footnotes (SCRS/81/24 and 29) to the Statistical Bulletin was discussed at some length. The Sub-Committee made three recommendations:

- i) That the proposed list of footnotes, which the Sub-Committee believed adds credibility to the ICCAT data base, be approved.
- ii) That footnotes on individual records not be carried into totals.
- iii) That footnoting should be introduced to the Statistical Bulletin as completely as possible beginning with Volume 12. This will provide the Secretariat with enough time to update the present TASKI data base regarding the quality of information. Presently, out of some 6,000 records, only about one-quarter have a proper coding for quality of information.

The Historical Bulletin discussed under Section 6.3.a should also include the same system of footnoting as completely as possible.

c) Statistical Series

The errata for Statistical Series 1-9, circulated with Statistical Series-10, were reviewed. The Sub-Committee considered that issuance of such errata is necessary from time to time and that the Secretariat should make sure that the errata are sent not only to the hard copy users, but also to the magnetic tape users.

d) Gear-country catch table

The Sub-Committee recommended that for the 1982 SCRS meeting, the species rapporteurs be furnished with TASKI data base listings compiled by year, region, gear, and country, together with summary species tables currently used, for easy reference to individual records.

e) Quick estimates

The present criteria for reporting quick estimates, for the first six months of the year by August 31 and for the first nine months by the time of the SCRS meeting, were reviewed. The Sub-Committee recommended that the quick estimates be furnished by countries to the Secretariat no later than October 1 of each year, and contain estimates for at least six months of that year along with projections for the whole year. If possible, updated projections and the latest catch data should be brought to the SCRS meeting.

7. Future plans to improve statistics and recommendations to the SCRS

There were many recommendations made by the Sub-Committee under each specific Agenda item. Many other recommendations made by the SCRS which are summarized in Appendix 5 of the SCRS Report refer to the Sub-Committee.

8. Other matters

8.1 Standard indices of abundance

Following a recommendation made by the SCRS in 1979, a working group on abundance indices was created. Mr. R. Pianet (France) was named coordinator in 1980 since the group was unsuccessful in reaching a consensus on the choice of acceptable standard indices for recruitment control and adult stocks of the different tuna fish stocks.

These standard indices became necessary in order to compare the different estimates made by SCRS scientists, allow for improvements, and achieve consistency.

Therefore, all experts using abundance indices were asked to provide the group with a brief note explaining methods of calculation and the basis of the data for their estimates. The coordinator sent a letter in May, 1981, but received only four responses, thereby covering only part of the inventory of stocks (primarily tropical tunas) at the meeting.

The Sub-Committee decided that the group continue their inventory of indices in order that they may be compared and that one of the them be chosen as a reference. It was also decided that when the SCRS agreed that an index was no longer acceptable (e.g., because the fishery on which it was based no longer existed or was unrepresentative) it should be substituted by a comparable index.

8.2 Albacore standardized effort

Dr. R. T. Yang (Taiwan University) agreed that his team will provide scientists with the longline efforts standardized for albacore by Honma's method. These were calculated previously by Japanese scientists, who abandoned the project since Japanese longline coverage for albacore in recent years became very incomplete.

8.3 Coordinating Working Party (CWP)

The Assistant Executive Secretary reported the present status of the Coordinating Working Party on Atlantic Fisheries Statistics (CWP). The CWP, which up to the present has been an FAO-affiliated organization, decided to become independent. As a member, ICCAT was asked if it would approve such an organizational change. After confirming that such a change will not have any financial implications, the Sub-Committee proposed that the SCRS ratify the CWP's decision to become an independent organization.

The Sub-Committee also recommended that the Secretariat represent ICCAT at the next CWP session, scheduled for July, 1982, in Luxembourg.

9. Adoption of Report

The Report was adopted.

10. Adjournment

The meeting was adjourned.

Albacore Surface Fleet

BB

France	Jul 24	Sep 1	X	X														0/355
Korea	May22		X	X	Aug 26		1x1	mo	63.4	U	X	X						0/113
Portugal (Azores)	Jul 6	Nov 3	X	X	Jul 2	Nov 3	5x5	mo	100	U	X	X						0/72
South Africa	Apr 24	Jul 23	X	X	Apr 24	Jul 23	1x1	mo	100	U	X	X	Apr 24	May22	1x1	mo, qtr	U,R	223/978
Spain (Biscay) (Can.Is.)	Oct 2 Oct 2	Aug 20 Aug 20		X X														0/14000 0/500

TROLL

France	Jul 24	Sep 1	X	X														0/3896
Spain (Biscay)	Oct 2	Aug 20		X														0/10000

Uncl & Others

Brazil	Sep 9**	Jul 31		X														0/19
Italy																		0/?
Portugal (Madeira)	Apr 2	Jun 17	X	X	Apr 2	Oct 1	5x5	mo	100	R		X						0/7
South Africa	Apr 24	Jul 23	X	X	Apr 24	Jul 23	1x1	mo	100	U	X	X						0/212
USA	Sep 9	Jul 28		X														0/19
USSR	May21	Aug 11		X	Aug 12	Jun 23	no	mo	?	R		X						0/99

Bluefin Surface Fleet

BB

France (Biscay)	Sep 14	Sep 1	X	X														0/260
Portugal (Azores)	Jul 2	Nov 3	X	X	Jul 2	Nov 3	5x5	mo	100	U	X	X						0/15
Spain (Biscay)	Oct 2	Aug 20		X														0/1500
(Can.Is.)	Oct 2	Aug 20		X														0/200

Fishery existing, no data available.

Table 1. (continued)

Species, Gear and Country	TASK I				TASK II CATCH & EFFORT								BIOLOGICAL (SIZE)					Remarks		
	Date Rec'd		Effort	By big areas	Date Rec'd		Area	Time	Cov. rate %	Data cov.*	Effort	Weight	No. of fish	Date Rec'd		Area	Time		Data cov.*	No. of fish sampled/ total catch (MT)
	1981	1980			1981	1980								1981	1980					
<i>PS</i>																				
France (Med.)	Sep 14	May 19	X	X	Aug 13	Nov	ICCAT	mo	75.3	U	X	X	Aug 13	May 19	ICCAT	mo	R	(93442)/1701	Age freq. Adriatic not incl. Data from contribu- tion stats. Source: FAO In FL and body weight (kg). Source: FAO.	
Italy	Jun 22	Jul 7	X	X									Nov 2		Tyrrh.	yr		780/5120		
Morocco	Aug 7	Aug 11		X														0/153		
Norway	Sep 14	Mar 18		X														0/292		
USA	Sep 9	Jul 28	X	X	Sep 9	Jul 28	5x5	qtr	100	U		X	Sep 9	Jul 28	5x5	mo, qtr	R	1331/758		
Yugoslavia	Sep 14	Nov		X														0/549		
<i>TRAP</i>																				
Canada	May 12	Aug 25	X	X	Sep 22	Aug 25	1x1	mo	100	U	X	X	Sep 22		1x1	mo	U	124/47	Body wgt. freq. Body wgt. freq., data for 1979.	
Italy	Jun 22	Jul 7	X	X									Sep 28		1x1	mo	U	72/31		
Libya Tunisia						Jun 19								Jun 19				0/152		
<i>Uncl & Others</i>																				
Canada	May 12	Aug 25	X	X	Sep 22	Aug 25	1x1	mo	100	U	X	X	Sep 22		5x5	mo	U	480/277	Body wgt. freq. Body wgt. freq., data for 1979.	
													Sep 28	5x5	mo	U		428/214		
Portugal (Madeira)	Apr 2	Jun 17	X	X	Apr 2	Oct 1	5x5	mo	100	R		X							0/7	
Turkey	Sep 14			X															Source: FAO.	
USA	Sep 9	Jul 28		X	Sep 9	Jul 28	5x10, 10x20	yr	100	U		X	Sep 9	Jul 28	5x10	mo	R	2968/757	By gears: FL and/or body wgt. incl. LL.	

Longline Fleet (includes all species)

Argentina	Sep 14	Sep		X																		Source: FAO.			
Brazil	Sep 9	Jul 31	X	X	Sep 9	Sep 22	5x5	mo	100	U	X	X										0/2164			
Brazil-Japan	Sep 9	Jul 31	X	X	Sep 9	Sep 22	5x5	mo	100	U	X	X	Sep 9	ICCAT	mo	U							2202/1399		
Canada	May 12	Aug 25	X	X	Sep 22	Aug 25	5x5	mo	34	U	X	X											0/1794		
China (Taiwan)	Oct 14	May	X	X	Oct 16	Oct 21	5x5	mo	var.	U,R	X	X	Oct 16	Oct 16	ICCAT	qtr	U,R						48088/28674		
China (ICCAT)					(ICCAT)		5x5	mo	50	U	X	X	(ICCAT)		5x5	mo	U						11556/30729		
Cuba	Apr 21	May 2	X		Oct 16	Sep 29	5x5	mo	100	U	X												0/8600		
Japan	Jul 10**	Dec 30			May 18		5x5	mo	97	R	X	X	Apr 24	May	5x10,	mo	U							0/34250	
Korea	May 22	Apr 18	X		Aug 26	Aug 19	5x5	mo	52.9	U	X	X	Aug 26	Aug 19	5x5	qtr	U,R							2919/18952	
Kor+Pan					(ICCAT)		5x5	mo	95	U	X	X	(ICCAT)		5x5	mo	U							8570/26410	
Morocco	Aug 7			X																				0/136	
Panama	(Secretariat)		X		(See KOR+PAN)								(See KOR+PAN)											0/7458	
South Africa	Apr 24	Jul 23	X	X	Apr 24	Jul 23	5x5	mo	100	U	X	X												0/621	
Spain	Oct 2	Aug 20		X	May 14		ICCAT	mo	100	U	X	X	Apr 28		ICCAT	mo	U								
USA	Sep 9	Jul 28	X		Sep 9		5x10	yr	100			X												0/2378	
USSR	May 21	Aug 11	X		Aug 12	Jun 23	no	mo	?	R	X	X	Sep 22		ICCAT	qtr								275/2940	
Venezuela		Mar 31																							
Various																									
Puerto Rico transship.													Sep 9		gen.	qtr	U							7844/?	

*R - Raised, U - Unraised.

**Preliminary.

Reported by Brazil.

YFT,ALB,BET
ICCAT port samp.
YFT broken down
E-W.
C/E for 1979; Size
for 1978-79.

ICCAT port samp.
Data from contribu-
tion stats.

C/E for 75-80; Size
for 75-76,78-80-
Algeciras.
Data for 76, 78-80-
Mediterranean.
Data for 74-80, Jan-
Mar 81 - La Coruña
Excluding BFT.

Addendum 1 to Appendix 4 to Annex 8

Agenda for the Sub-Committee on Statistics

1. Opening of the meeting
2. Adoption of Agenda and arrangements for the meeting
3. Examination of progress made by national offices
4. Examination of the problems of the quality of statistics and promptness of reporting
5. Progress made at the Billfish Workshop concerning the billfish data base
6. Examination of progress made by the Secretariat
 - 6.1 Biostatistical assignments
 - 6.2 Data base
 - 6.3 Publications and dissemination of data
 - 6.4 Other matters
7. Future plans to improve statistics, and recommendations to the SCRS
8. Other matters
9. Adoption of Report
10. Adjournment

Appendix 5 to Annex 8

TABLE OF ASSIGNMENTS

	<i>STATISTICS</i>	<i>RESEARCH</i>
<i>Yellowfin</i>	<p>YFT/BET to be accurately accounted for in Spanish tropical catch.</p> <p>C/E, biological Spanish tropical fleet to be made available.</p> <p>Non-member PS fleets catch to be collected.</p> <p>Biological data from Cuban LL to be obtained.</p> <p>ICCAT port sampling to be continued.</p>	<p>Recruitment indices to be estimated from surface CPUE cohort analyses.</p> <p>Effects of non-reported small fish catches on Y/R analyses.</p> <p>Growth of juvenile YFT with new techniques.</p> <p>Alternative management scheme studies to be continued.</p>
<i>Bigeye</i>	<p>YFT/BET Spanish tropical catch to be accurately accounted for.</p> <p>C/E and biological data from Spanish tropical fleet to be made available.</p> <p>Biological data from Portuguese baitboat fleet to be collected.</p> <p>Sampling of size and species composition from transshipment to be continued.</p> <p>Data on dumping and unreported catch of undersized fish to be collected.</p> <p>Cause of recent declines in Madeira catch to be studied.</p>	<p>ISYP data to be examined thoroughly.</p> <p>Abundance index incorporating surface fish to be developed.</p> <p>Alternative management scheme to reduce juvenile mortality to be continued.</p>
<i>Skipjack</i>	<p>Catch statistics from non-member fleets to be collected.</p> <p>Improvements on Task II data from Spanish PS.</p> <p>Standard effort data to be collected from Tema-based BB.</p>	<p>Refer to ISYP.</p>

	<i>STATISTICS</i>	<i>RESEARCH</i>
<i>Albacore</i>	<p>South Atlantic surface fisheries to be monitored.</p> <p>Total LL fishing effort to be standardized for south and north for 1979 to current year.</p>	<p>Revised production models for north and south.</p> <p>Age determination as a function of sex (for several fisheries for adult albacore).</p> <p>Spawner-recruit and Y/R to be monitored in North Atlantic.</p> <p>Adult indices for northern areas to be compared.</p> <p>Research Mediterranean stock in relation to North Atlantic.</p> <p>Recruit indices for south surface fish to be obtained.</p>
<i>Bluefin</i>	<p>Informal exchange of data to be continued.</p> <p>Nominal LL catch statistics to include mutilated fish not landed.</p> <p>Total landing and age structure information to be collected from all countries (particularly non-members).</p>	<p>Adequate sampling for trace element chemistry study.</p> <p>Tagging of small fish in east and west to be continued for studying growth and monitoring exchange rate.</p> <p>Reproduction of 130-200 cm fish (place, time, success) to be studied.</p> <p>A group to be formed to develop dependable accurate methods of predicting younger fish abundance.</p>
<i>Billfishes</i>	<p>Catch and effort statistics (in weight and number) to be reported by 5x5 (or at least by ICCAT areas) and month.</p> <p>Sailfish/spearfish to be separated future and past.</p> <p>Length data by sex to be collected on regular basis.</p> <p>Species and stock identification (particularly for white marlin).</p>	<p>Age and growth for parameters of Y/R and cohort.</p> <p>Abundance index to be determined for commercial and sport fishing. New index to replace Japanese LL index.</p> <p>Tagging data available to be thoroughly analyzed for evaluation of validity of using data for population analyses.</p>

<i>STATISTICS</i>	<i>RESEARCH</i>
<p><i>Billfishes</i> (<i>Cont.</i>)</p>	<p>Monitoring the development of sailfish fishery in Senegal and Ghana to be continued.</p> <p>Data unrelated to effort (e.g. \bar{w}) to be studied (LL and SPORT).</p>
<p><i>Swordfish</i> Catch and effort to be reported by 5x5 (or ICCAT area by month).</p> <p>Length by sex to be routinely collected.</p> <p>Historical effort statistics to be improved.</p> <p>Catch and effort for Straits of Florida should be made available.</p> <p>Magnitude of unreported catches by U.S. and Canada as the result of mercury content restriction to be studied.</p>	<p>Age and growth to be studied.</p> <p>Stock structure to be studied.</p> <p>New effort indicator to replace Japanese LL effort to be developed.</p>
<p><i>Southern bluefin</i></p>	<p>Recruitment to be monitored closely.</p>
<p><i>Small tunas</i> Catch statistics to be improved, including correct species identification.</p> <p>Discards to be reported.</p> <p>Effort data should be made available.</p> <p>Development of new fisheries monitored.</p>	<p>Spawning survey by larvae and gonad to be continued.</p> <p>Tagging studies to be documented and continued.</p> <p>Biological parameters studies to be encouraged.</p>
<p><i>Multi-species</i> (<i>tropical</i>)</p>	<p>Simulation studies to evaluate Y/R of BET and YFT to be continued.</p> <p>Evaluation of species mixing in schools to be undertaken.</p>

<i>STATISTICS</i>	<i>RESEARCH</i>
<i>Multi-species (tropical) (Cont.)</i>	<p>Variation in availability and vulnerability in relation to changes in environmental parameters be studied.</p> <p>Working Group on Juv. Tropical Tunas statistics examination of ISYP data.</p>
<i>Multi-species (temperate)</i>	<p>Separation of effort for each species to be made.</p> <p>Definition of habitat by species and spatial-temporal overlap to be studied.</p> <p>Species distribution in terms of specific environment.</p>

*Appendix 6 to Annex 8***RECOMMENDATIONS FOR THE WORKING GROUP ON
JUVENILE BLUEFIN TUNA**

The working group is to be concerned only with the specific problem of estimating recruitment levels in current years. This problem is not solved by state of the art technology, hence technique derivation is imperative. This problem has been the subject of many investigations, yet the problem is still unsolved; hence, it should not be considered trivial. The working group, therefore, is formed according to the following guidelines:

1) Although the specific problem concerns bluefin, the group should be concerned as to the general problem of accurately predicting the recruitment abundance of schooling pelagic fishes in current years.

2) Investigations of quantifiable causative effects are imperative; these include parent stock abundance, environmental effects on survival, and exploitation on adults and juveniles. Since all the needed expertise may not reside completely within the working group, individuals of other disciplines may be consulted.

3) The problem is not trivial, thus the group is formed for an indefinite period of time until the problem is solved. The group should meet for the first time in the summer of 1982 to derive a direction of investigation.

4) The group is to be composed of the following persons because of their extensive knowledge of Atlantic bluefin tuna fisheries, data and population dynamics.

M. Parrack (Chairman)
J. L. Cort
H. Farrugio
A. Fonteneau
Z. Suzuki

CHAPTER III

National Reports

NATIONAL REPORT OF BRAZIL

by

L. A. ZAVALA CAMIN

1. State of the fisheries

1.1 Development of the fleet

The artisanal fleet which operates in the northeast of Brazil has had no significant changes in the number of vessels in recent years.

The national longline fleet based in Santos (Sao Paulo) and the leased Japanese longline fleet based in Rio Grande (Rio Grande do Sul), are comprised of five vessels each and there have been no modifications in the last three years (1978-1980).

The only fleet which has been increasing significantly is the live-bait boat fleet, comprised of 23 vessels in 1979, 33 in 1980 and which should reach 70 vessels in 1981.

1.2 CPUE of the longline fleet

The Brazilian and Japanese-leased longline fleet reached a CPUE of 89.3 kg/100 hooks/day in 1977; 82.8 in 1978; 103.8 in 1979 and 134.1 in 1980. The high CPUE rate in 1980 was reached as a result of an increase in the catch of swordfish.

1.3 Catches of the live-bait boat fleet

In 1979, the catch was 2,300 MT; in 1980 it was 6,846 MT and it is expected to reach 15,000 MT in 1981.

Original report in Spanish.

1.4 Artisanal catches off northeast Brazil

The most important species are the mackerels: *Scomberomorus cavalla* and *Scomberomorus brasiliensis* (formerly called *S. maculatus*) and blackfin tuna (*Thunnus atlanticus*). The total catch in 1980 was 1,216 MT.

2. Research

Statistics were collected on all species. Biological research was carried out on tuna, billfishes, swordfish, bonitos and mackerels. Oceanographic vessels conducted research using remote sensing. Tagging of skipjack and other tunas was conducted in the northeast of Brazil and skipjack tagging was conducted in the area of operation of the live-bait boats. Larval surveys were carried out on scombrids in general. Ecological research on the pelagic species caught by longline in the southeast and south of Brazil was based on stomach contents analysis.

The organizations which carried out the aforementioned research are as follows:

- Fisheries Institute of the State of Sao Paulo (IP-SP)
- Oceanographic Institute of the University of Sao Paulo (IO-USP)
- Agriculture and Cattle Research Institute of the State of Rio de Janeiro (PESAGRO-RJ)
- Sciences of the Sea Laboratory of the Federal University of Ceará (LABOMAR-UFC)
- National Institute of Space Research (INPE)
- Superintendency for the Development of Fisheries (SUDEPE)

3. References

3.1 Document presented at the 1981 Symposium

ZAVALA CAMIN, L. A.

Distribución vertical y estacional de túnidos y otras especies pelágicas en el sudeste y sur del Brasil, obtenida por medio de análisis de contenido estomacal.

3.2 Documents presented to the 1981 SCRS Meeting

MATSUURA, Y.

Distribution and abundance of skipjack (*Katsuwonus pelamis*) larvae in eastern Brazilian waters.

ICCAT REPORT 1980-81 (11)

ZAVALA CAMIN, L. A.

Informe sobre la presencia del bonito listado (*Katsuwonus pelamis*) en el contenido estomacal de predadores capturados con palangre en el sudeste y sur del Brasil.

CANADIAN NATIONAL REPORT, 1980-1981

by

P. C. F. HURLEY and T. D. ILES

1. Status of the fisheries

1.1 *Swordfish*

The nominal catch of swordfish in Canada in 1980 amounted to 1,885 MT. The swordfish longline fishery took 1,794 MT, while 91 MT were taken by harpoon. Most of this was transshipped at sea to American vessels and landed in American ports. The quota was increased to 3,500 MT in 1980 and licensing of vessels was closed in mid-season.

Although the number of vessels involved in the longline fishery increased substantially in 1980, total effort decreased from approximately 2.5 million hooks in 1979 to 1.7 million. Catch-per-unit effort decreased slightly, dropping from 0.89 MT per 1,000 hooks in 1979 to 0.82. Mean dressed weight also decreased slightly, dropping from 60.6 kg. in 1979 to 58.6 kg.

1.2 *Tunas*

Canadian bluefin tuna landings in 1980 amounted to 324 MT, an increase of 32 percent from the previous year, but still substantially lower than earlier years. The mackerel trap fishery in St. Margaret's Bay took only 47 MT, while 259 MT of giant bluefin were taken by rod and reel and 18 MT were taken incidentally by other gear types. Licensing of vessels remained open in the rod and reel fishery and only minor changes were made in the regulations. There was no Canadian purse seine fishery for tuna in the Atlantic in 1980.

Catch-per-unit effort in the Gulf of St. Lawrence rod and reel fishery, which decreased from 1975 to 1979, increased in 1980. At the same time, annual mean weight in this fishery, which increased from 1972 to 1979, decreased in 1980.

ques. No swordfish were tagged in 1981 nor have any recaptures been reported. Two mako sharks, tagged and released during the 1980 research survey, were recaptured.

Canadian bluefin tuna regulations were modified in 1981 to allow the use of "tended line" or "keg" gear. The response by fishermen has been varied but in some areas the majority of fishermen have converted from rod and reel gear. Preliminary figures indicate landings in the Gulf of St. Lawrence in 1981 to total approximately 250 MT. Landings from the trap net fishery in St. Margaret's Bay have not improved.

One Canadian vessel was involved in the purse seine fishery in the Atlantic in 1981. Two trips were made and approximately 130 MT of bluefin and 185 MT of skipjack were taken. It was noted that some confusion may arise when interpreting effort data from this fishery since searching is now carried out almost entirely by airplane, and vessels often remain in port until the pilot reports sighting a school of tuna. This could have serious implications to catch-per-unit-effort studies.

A tagging program in co-operation with the NMFS-Miami Laboratory was attempted during the purse seine fishery to compare a new tag, designed by Miami Laboratory personnel, with the standard H-type tags. However, due to logistic problems, only 17 bluefin were tagged and released. Three bluefin tuna recaptures have been reported in 1981. A bluefin tagged and released in Chaleur Bay in 1980 was recaptured this year off Prince Edward Island. Another bluefin, tagged and released from a trap net in St. Margaret's Bay in 1975, was also recaptured off Prince Edward Island. A more unusual recapture was made by rod and reel off Cat Cay, Bahama Islands, in May, 1981. This bluefin had been tagged and released from a purse seiner in the west Atlantic in 1965 and had been at large for almost 16 years. A weight measurement, an estimated length, and a caudal vertebra were obtained for growth studies.

4. Documents presented to the 1981 SCRS Meeting

HURLEY, P. C. F.

1981 A summary of the 1980 Canadian swordfish fishery.

HURLEY, P. C. F. and T. D. ILES

1981 a) Changes in the bluefin tuna stock in the Gulf of St. Lawrence in 1980 and their implications.

b) An unusual bluefin tuna tag return.

2. Research studies

2.1 *Swordfish*

A 50-day swordfish research survey was conducted in 1980, from Cape Hatteras to the Grand Banks. Longline sets were made in four areas in the northern part of the range in the western Atlantic to obtain data for the purpose of stock discrimination, age determination and description of reproductive biology and general biology. Of 359 swordfish taken, 48 were tagged and released. The remainder were sampled intensively. In addition, one bluefin tuna, one bigeye tuna, 183 pelagic skarks and five other pelagic fishes were tagged and released. Another 17 swordfish were harpoon-tagged during another study. One harpoon-tagged swordfish was recaptured two days later ten miles from the point of release.

Fishing logs covering approximately 32 percent of the total catch were collected in 1980 to monitor changes in the longline fishery. This represented only a small increase in coverage, but there was a substantial improvement in the quality of data reported.

2.2 *Tunas*

Individual weights were obtained from approximately 62 percent of the giant bluefin catch in Canadian waters and fishing logs covering approximately 70 percent of the rod and reel effort were collected to monitor changes in the fishery. This represents a small decrease in the coverage of this fishery, but the quality of information reported decreased substantially as a result of the increase in new participants in the last two years.

Sampling of bluefin tuna was continued at various locations in 1980. Detailed morphometric data were collected from 177 giant bluefin and otoliths were obtained from 136 of these as part of an age and growth study.

Thirteen bluefin tuna were tagged and released by rod and reel in Chaleur Bay in 1980, prior to the opening of the fishing season. On the opening day of the season, five days after their release, two were recaptured in the same area. Two additional recaptures were reported in 1980. One bluefin tagged and released from rod and reel in Chaleur Bay in 1974 was recaptured by a Japanese longliner in the Gulf of Mexico in late February, 1980. The other, also tagged and released from rod and reel in Chaleur Bay in 1975, was recaptured in the same area in 1980.

3. Preliminary information for 1981

Canadian swordfish regulations changed very little between 1980 and 1981; however, licensing of new vessels in the longline fishery remained closed. Participation in the fishery was poor this year due to market problems and gear conflicts with foreign longliners. As a result, the total catch has dropped substantially to approximately 500 MT.

Research efforts have concentrated on analyzing material from the 1980 research survey, particularly on gut and gill parasites, electrophoretic analysis and ageing techni-

SUMMARY OF THE STATE OF THE TUNA FISHERIES – REPUBLIC OF CAPE VERDE

by

M. H. SANTA RITA VIEIRA

1. Tuna fleet

The industrial and semi-industrial tuna fleet is comprised of three freezer purse seiners converted to baitboats and 19 baitboats without refrigeration. The small artisanal vessels, some motorized and some not, use troll and harpoon.

2. Catch

The principal species caught are, in order of tonnage, skipjack, yellowfin, and bigeye. Frigate tuna and Atlantic little tuna are caught in very small quantities.

The catches of the industrial and semi-industrial fisheries for 1979, 1980 and 1981 up to September are shown in Table 1. For 1981, some information from the artisanal catches is added.

There are not yet enough catch data from the artisanal fishery to make a reliable estimate.

Concerning the industrial fishery, 70 percent of the catch was exported frozen and 30 percent was canned. The tuna caught by the artisanal fishery is sold in the local market. The surplus, when there is any, is sold to the canning or freezing companies.

3. Fishing areas

The three freezer baitboats fished in Angola during the month of February and March and in Cape Verde after September. They generally fish the schools that are found around the islands. The other baitboats, which do not have refrigeration, only make 10- to 12-hour trips, fish the schools nearest the island where they are based, and return each day. The principal schools are shown in the attached map.

4. Research

Research is still in an embryonic stage. We have many difficulties due to the lack of equipment, preparation, experienced personnel and reduced budget. The landing ports are far apart and access is difficult.

Original report in French.

This year we started to organize statistics. We considered the three 5°x5° areas. We have catch and effort data for the industrial and semi-industrial fisheries. Thirty-eight bigeye and 262 yellowfin were measured.

For the International Skipjack Year Program, sampling was done at the ports of Praia and Sal Rei, located in two contiguous areas. The first part of a skipjack tagging cruise was carried out in Cape Verde for sixteen days in October. This was a joint cruise made by Senegal and Cape Verde, financed by the EEC.

Mr. A. Fonteneau was responsible for the Senegalese part of the project and for the overall organization. I was responsible for the Cape Verde part of the project. Two scientists, Mr. Fina, financed by ICCAT, and Mr. Potier, financed by the project, provided scientific coverage of the program. Two technicians from Cape Verde fisheries also participated in the cruise.

As the person responsible for the Cape Verde part of the program, I personally participated in the first days of tagging on-board the tuna vessel "Pedra Badejo", chartered from the fishing company, "INTERBASE."

Results of the program

Skipjack tagged with yellow tags	2,430
Skipjack injected with tetracycline and tagged with red tags.	242
Yellowfin tagged with yellow tags.	13
Gonads sampled	50
Dorsal fin rays	50
Recaptured skipjack with yellow tags up to October 26	15
Recaptured skipjack with red tags.	1
Recaptured yellowfin.	1

Table 1. Catch of tunas (MT) for 1979-1981 (up to the end of September, 1981)

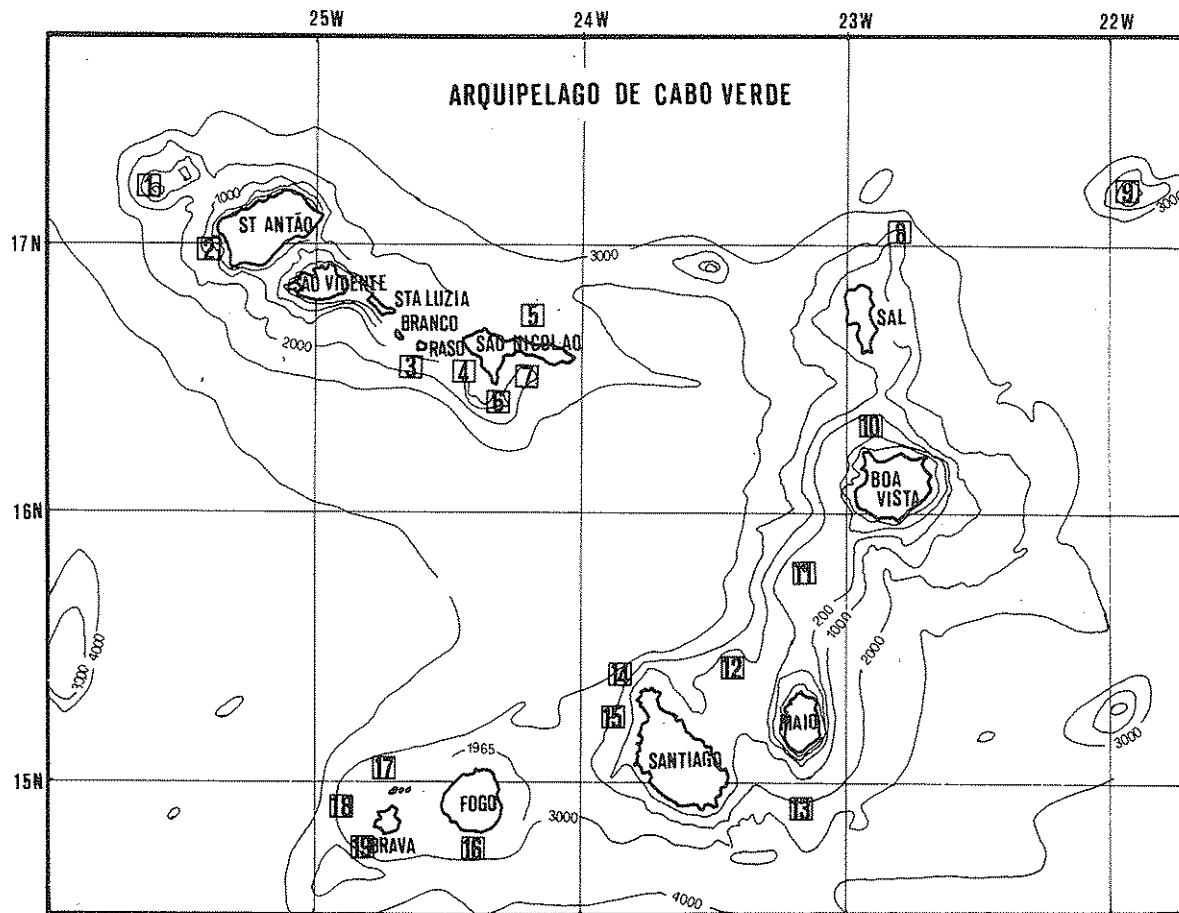
<i>Year</i>	<i>Total</i>	<i>Yellowfin</i>	<i>Bigeye</i>	<i>Skipjack</i>	<i>Atlantic little tuna</i>
1979	1,623	581	45	997	--
1980	2,693	818	26	1,742	107
1981	1,729.8	860.3	17.8	616.3	235.4

Table 2. 1981 catch and effort data (up to September 30, 1982)

<i>Area</i>	<i>Gear</i>	<i>Total</i>	<i>Yellowfin</i>	<i>Bigeye</i>	<i>Skipjack</i>	<i>Atlantic little tuna</i>	<i>Effort</i>
6415025	Baitboat	304.183	236.138	0.873	66.152	1.020	314
6415020	"	474.444	140.979	0.197	333.26	-	290
6410020	"	81.713	37.453	3.058	41.202	-	81
6410020	Purse seine	2.967	--	-	2.967	-	3
6415025	Troll						
	harpoon	54.879	54.879	--	--	-	1,058
6415020	"	212.057	212.057	--	--	-	820
6410020	"	141.572	127.796	13.654	0.122	-	5,911
Angola	Baitboat	458.075	51.040	--	172.652	234.383	222
Total		1,729.890	860.342	17.782	616.363	235.403	8,699

Effort = Days at sea. We consider that boats which made 12-hour trips per day = 1 day at sea.

NOTE: Size frequency tables (Tables 3-9), showing measurements taken at the ports of Praia and Sal Rei, are included in the Data Record.



1. NW DE SANTO ANTÃO
2. TARRAFAL DE MONTE TRIGO
3. ILHEU RASO
4. TARRAFAL DE S. NICOLAU
5. LARGO DE S. NICOLAU
6. PONTA DA VERMELHARIA
7. SUL DE S. NICOLAU
8. NE DO SAL
9. FIURA
10. BOA VISTA
11. BAIXO DE JOAO VALENTE
12. NW DO MAIO - BANCONA
13. SUL DO MAIO
14. NW DE SANTIAGO
15. TARRAFAL DE SANTIAGO
16. SUL DO FOGO
17. ILHEUS DO ROMBO
18. OESTE DA BRAVA
19. SUL DE BRAVA

REPORT OF FRENCH RESEARCH

1. Status of fishing

	1974	1975	1976	1977	1978	1979	1980
Albacore	9.0	6.1	6.7	6.8	8.4	8.0	4.2
Yellowfin.	31.5	38.0	48.0	37.9	41.6	38.7	43.6
Skipjack	24.5	11.4	18.4	24.8	19.9	15.2	22.5
Bigeye.	0.5	0	1.0	3.0	2.2	3.1	0.8
Bluefin	2.3	2.3	3.8	3.7	2.3	1.8	1.7
Total (thousands of tons)	67.8	57.8	77.9	76.2	74.4	66.8	72.8

The increase of catches in 1980 is mostly due to an increase in the catch of tropical tunas, yellowfin and skipjack, which more than compensates for the decrease of the albacore catches and, secondarily, bigeye catches. The catch of bluefin tuna remained at the same level as in 1979 with 1,500 MT from the Mediterranean and 260 MT from the Bay of Biscay fishery.

The decrease in albacore catches was essentially due to the perceptible decrease in fishing effort despite maintenance of the CPUE. The improvement of yellowfin and skipjack catches shows, on the other hand, an increase in yellowfin effort and an improvement of skipjack CPUE.

2. Research

As in preceding years, research was carried out by the "Centre Océanologique de Bretagne" (CNEXO-COB), "Office de la Recherche Scientifique et Technique Outre-Mer" (ORSTOM), and the "Institute Scientifique et Technique des Pêches Maritimes" (ISTPM).

2.1 *Albacore*

Two research cruises were carried out aboard "La Pélagia," northeast of the Azores in May-June, 1980, and in the western area of the Bay of Biscay in August. The age structure of the stock was studied, as well as their "Azorean" and "classical" components, each characterized by differences in the modal sizes and in the color of the posterior-ventral part of the body. The data thus collected from 1,711 albacore showed

Original report in French.

that the shift towards the east of the area occupied by the "Azorean" population was continuing. This shift was already observed last year. Fifteen bigeye and 620 albacore were tagged.

A comparable program was carried out in 1981. The program for the collection of catch data (catch-effort and age composition) was continued in 1980 and 1981; the data processing was done according to the methods set up during previous years. Documents SCRS/81/40, 47 and 67 were presented.

2.2 *Bluefin*

Observations were made essentially on the Mediterranean stock, with sampling being carried out on 75 percent of the French catches of fish ages 0 to 10 years and over.

Besides the landings and sampling data available for the thirteen principal countries catching bluefin tuna in the eastern Atlantic and the Mediterranean, the age composition of the catches made in these areas was established for the period 1966-78. Use of these data in an analysis of cohorts led to the first evaluation of the magnitude and the development of the size of the eastern stock and figures of the exploitation corresponding to the last 13 years.

2.3 *Tropical tunas*

The overall processing of the data from the FISM fleet is done by ORSTOM at the COB (Brest). Two documents were presented (SCRS/81/48 and 66) which summarize yellowfin and bigeye research and analyze the problems of stock dynamics and their effect on the resource management of these two species.

Documents SCRS/81/42 and 49 were also presented.

3. Skipjack Program

France participates to a great extent in the scientific activities of the program, directly or in association with Ivory Coast and Senegal. France was particularly active in four of the nine activities designed in Las Palmas, and many researchers from five organizations participated: Centre de Météorologie Spatiale (CMS), CNEXO-COB, ISTPM, ORSTOM and the University.

a) Tagging

From Abidjan and in collaboration with Ivory Coast and the Congo, the "A. Nizery" (ORSTOM research vessel) carried out several tagging cruises in 1980-81: 4,700 tunas were tagged, of which 800 were skipjack. The recovery rate is currently somewhat higher than 10 percent.

Two sonic tagging cruises were carried out, one in the Gulf of Guinea and the other off Senegal. The results of following four skipjack for four to forty-four hours were presented to the Commission.

b) Fishing statistics

France participated in intensive sampling in the Gulf of Guinea by taking three of the nine observers on board FIS tuna vessels.

c) Fishery oceanography

Many activities were carried out by France: analysis of historical data, supplying three XBT's to tuna boats during periods of intensive study with observers on board; three cruises to study physical oceanography (two to cover the fishing area and another in relation to sonic tagging); airborne radiometry in collaboration with professional organizations; weekly analysis of surface temperatures in the Gulf of Guinea from METEOSAT satellite data.

d) Age determination

A meeting of a group to coordinate methods was organized in Brest (December, 1980) and the first results were presented to the SCRS.

All these activities are described in detail in the Report of the Sub-Committee on Skipjack.

GHANA NATIONAL REPORT -- TUNA FISHERY, 1980

1. Tuna fleet

The number of operational tuna boats decreased from forty-seven in 1979 to forty-two in 1980. These consisted of thirty foreign and twelve Ghanaian flag vessels. A significant improvement in the fleet situation was the addition of two purse seiners to the Ghanaian flag fleet and one purse seiner to the foreign flag fleet.

The Ghanaian fleet that operated was comprised of the following:

<i>Vessel</i>	<i>Gear</i>	<i>GT</i>
Mary Radine	Baitboat	283.88
No Catch No Pay	"	284.73
Fernanda Marisa	"	282.94
Nick "T"	"	282.99
Joy	"	253.88
Afko 301	"	254.46
Afko 302	"	253.94
Afko 303	"	284.28
Azuma Maru 2	"	284.76
Dong Won 808	"	245.00
Gold Coast	Purse seine	958.00
Donna "H"	"	898.00

The foreign fleet was comprised of the following:

<i>Flag</i>	<i>Gear</i>	<i>Number</i>	<i>Range in GT</i>
Japan	Baitboat	12	284.59 - 379.59
Korea	"	7	188.84 - 416.95
Panama	"	6	439.89 - 454.71
Netherlands	"	3	253.00 - 254.73
Honduras	"	1	456.77
Congo	Purse seine	1	1592.78

The Ghanaian artisanal fleet, using specially designed drift set nets, also continued to catch tunas and related species in 1980. The number of drift set net canoes that fished for the tunas and related species in 1980 was 294.

2. Landings

The following landings, in metric tons, were made by foreign and Ghanaian flag vessels during 1980.

<i>Species</i>	<i>Foreign flag</i>	<i>Ghanaian Industrial</i>	<i>Ghanaian Artisanal</i>	<i>Total</i>
Yellowfin	2280.904	713.279	80.100	3074.283
Bigeye	1659.230	49.638	26.800	1735.668
Skipjack	22126.784	4804.693	774.600	27706.077
Black skipjack	57.787	17.029	4141.200	4216.016
Frigate tuna	--	--	7565.800	7565.800
Others	2122.593	2024.007	1450.200	5596.800
Total	28247.298	7608.646	14038.700	49894.644

Black skipjack includes *Euthynnus alletteratus*, *Sarda sarda* and *Auxis thazard*.

The total quarterly landings of the industrial baitboat fleet, in metric tons, are as follows:

<i>Species</i>	<i>1st Quarter</i>	<i>2nd Quarter</i>	<i>3rd Quarter</i>	<i>4th Quarter</i>	<i>Total</i>
Yellowfin	426.163	637.463	310.754	1021.800	2396.180
Bigeye	541.049	383.653	322.227	456.939	1703.868
Skipjack	5175.880	6392.182	6352.854	7501.162	25422.078
Black skipjack	10.029	5.000	2.000	57.787	74.816
Others	853.974	469.352	1238.675	1239.929	3801.930
Total	7007.095	7887.650	8226.510	10277.617	33398.872

The total quarterly landings of the industrial fleet (purse seine) are as follows:

<i>Species</i>	<i>1st Quarter</i>	<i>2nd Quarter</i>	<i>3rd Quarter</i>	<i>4th Quarter</i>	<i>Total</i>
Yellowfin	140.000			457.997	597.997
Bigeye	5.000			--	5.000
Skipjack	1250.000			259.339	1509.339
Black skipjack	--			--	--
Others	--			344.670	344.670
Total	1395.000			1062.006	2457.006

3. Research

During the year, collection of catch statistics (Task I and II) was improved, and research on the biology and population dynamics of tunas continued.

3.1 Biological sampling

- i) Studies were continued on length frequency distributions, maturity and feeding of the three tropical tunas, namely, yellowfin, bigeye and skipjack. A total of 4,900 yellowfin, 1,800 bigeye and 6,600 skipjack were measured during the year. The length frequency distributions continued to show the predominance of young yellowfin and bigeye off Ghana.
- ii) Another study that was continued was that of the biology of young tunas involving gonado-somatic indices and stomach contents of juvenile tunas landed by the Ghanaian fleet which are used for feeding the local cannery.
- iii) Port sampling was continued and improved, but at-sea sampling fell below expectation because of a decline in cooperation from the baitboat operators, who were unwilling to take the Ghanaian scientists on board their vessels for intensive sampling. They complained that there was no accommodation on board their vessels to take the Ghanaian scientists. Only one such at-sea sampling operation was undertaken during the whole year.
- iv) The Fishery Research Unit has been actively participating in the tag recovery and return exercises for the International Skipjack Year Program.

4. Research Programs for 1981-82

4.1 *The Fishery Research Unit is participating in the International Skipjack Year Program, especially in:*

- a) Port and intensive sampling
- b) Collection of otoliths and dorsal spines
- c) Collection of stomachs
- d) Sampling for maturity and fecundity
- e) Tag recovery and returns to ICCAT

4.2 *Other research work involves the following:*

- a) Gonado-somatic indices and the feeding of juvenile tunas
- b) Improvement in Task II statistics and size sampling
- c) Improvement in logbook coverage

NATIONAL REPORT OF IVORY COAST

by

L. KOFFI, J. B. AMON KOTHIAS AND F. X. BARD

1. National production

1.1 Catches

In 1980, the Ivory Coast fleet comprised of 8 purse seiners caught 15,929 MT of tunas, an increase of 22 percent over that reported the previous year. The breakdown, by species, is as follows:

<i>Species</i>	<i>MT</i>
Yellowfin (YFT)	9,847
Skipjack (SKJ)	5,774
Bigeye (BET)	231
Albacore (ALB)	77

1.2 Canning

Canned fish represented 7,882 MT or 49.48 percent of the tonnage caught.

2. Statistics

Landings at the port of Abidjan amounted to about 71,226 MT of tunas, compared to 54,029 MT in 1979, and were similar to the record catches of 1975 (72,880 MT) and 1976 (73,118 MT). Transshipments are estimated at 30,000 MT. Landings and transshipments at the port of Abidjan by the fleets of Ivory Coast, France, Senegal, Morocco and Spain totaled 101,226 MT. The statistics concerning each of these fleets are reported separately. The Task I and Task II coverage rate was 90 percent. The sampling (Task III) coverage rate was 25.30 percent.

Original report in French.

3. Research

Research activities centered mainly on the Skipjack Year Program:

— Tagging: 4,700 tunas (of which 800 were skipjack) were tagged. A campaign to stress the importance of recovering tags was begun in Abidjan. This led to the recovery of more than 800 tags in 1980 and 1981 and these returns continue. One of the tags recovered won \$500 in the Skipjack lottery. Presentation of the reward was made at an official ceremony presided over by Dr. L. Koffi, ICCAT Chairman. Three directors of fisheries organizations were also present, as well as researchers and CRO staff. The ceremony was given extensive coverage by the local press. Ivory Coast also contributed to sonic tagging activities.

— Biological sampling of skipjack gonads was conducted and 150 samples comprised of 50-60 skipjack each were observed.

— The stomach contents of 300 adult yellowfin were examined; only 8 skipjacks were found.

4. Scientific documents

BARD, F. X. and D. PINCOCK

Rapport sur une expérience de marquage par microémetteur, de listaos (*Katsuwonus pelamis*) dans le golfe de Guinée, en juillet 1981.

BARD, F. X.

Le Germon de l'Océan Atlantique.

KOFFI, L., J. B. AMON KOTHIAS and F. X. BARD

Rapport national de la Côte d'Ivoire.

LARDEUX, F.

Etude de la structure des populations d'albacores (*Thunnus albacares*) dans l'Atlantique tropical par l'analyse des chiffres d'infestation parasitaire.

JAPANESE TUNA FISHERY AND RESEARCH IN THE ATLANTIC, 1980-81

by

S. KUME

FAR SEAS FISHERIES RESEARCH LAB (FSFRL)

The Japanese tuna fisheries in the Atlantic were initiated by the longline fishery in 1957. In the early 1960's, purse seine and pole-and-line fleets participated in the Atlantic tuna fisheries, resulting in a peak tuna catch of about 150,000 MT in 1965 (Fig. 1). The purse seine fleet withdrew from the Atlantic in 1975. Currently, the Japanese tuna fleet is composed of two types of gear: longline and pole-and-line. The catch level has stabilized within a range of 39,000 to 48,000 MT in recent years.

Since the establishment of the International Commission for the Conservation of Atlantic Tunas (ICCAT) in 1969, the results of Japanese scientific research on Atlantic tuna resources and fisheries have been submitted at the annual meetings of the Standing Committee on Research and Statistics (SCRS), as well as at inter-sessional and *ad hoc* meetings.

1. Fishing activities

The catches of tuna and tuna-like fishes caught by Japanese Atlantic fleets in 1980 are estimated to be 48,000 MT, about 10 percent higher than those of the preceding year. The 1980 longline catch, contributing 70 percent to the total, increased more than 20 percent over the 1979 catch, whereas the pole-and-line catch decreased by about 15 percent (Table 1). The number of Japanese Atlantic tuna boats which operated in 1980 increased in the longline fishery, but decreased in the pole-and-line fishery (Table 2).

1.1 Longline fishery

The longline catch in 1980 was 34,137 MT, which is slightly higher than the average of the last five years (Table 3). A marked increase in catches was recorded for bigeye tuna and swordfish, while there was a sharp decline in southern bluefin tuna catches. The catches of other species remained at about the same level as those of the previous year.

Original report in English.

The species composition of the longline catch is varied reflecting the multi-species nature of the gear, which takes several species concurrently during a single operation, and also the high mobility of the fleet, whereby fishermen are capable of changing their operational strategy of selecting fishing seasons and grounds of the main targeted species. In recent years, the main targeted species of the Japanese longline fleet have changed from yellowfin tuna and albacore (which used to account for the majority of the longline catch until about 1970) to bigeye tuna and, to some extent, bluefin and southern bluefin tunas. The bluefin catch has leveled off due to the ICCAT regulations in effect since 1975.

The Japanese longline vessels which operate in the Atlantic have been increasing and numbered 300 in 1980, all Japan-based. The recent increase in the number of boats has been ascribed to the concentrated fishing activities in the southern bluefin fishing grounds off the tip of Africa during the first half of the year.

In the first half of 1981, the monthly number of longliners operating in the Atlantic reportedly ranged from 100 to 200, slightly more than the same period in 1980.

To observe the ICCAT bluefin regulations initiated in 1975, the Japanese fishermen have been subject to governmental regulatory measures. A patrol boat was again dispatched to monitor the Atlantic longline fleet for bluefin tuna fishing in May and June of 1981.

1.2 Pole-and-line fishery

Japanese pole-and-line boats based at Tema, Ghana, decreased from 15 in 1979 to 12 in 1980. The 1980 catch was 14,068 MT, of which skipjack accounted for 88 percent (Table 4). The amount of reported discards due to the size regulation for yellowfin and bigeye tunas was estimated to be about 700 MT in 1980.

In the first half of 1981, Japanese Tema-based pole-and-line boats further decreased to 10 in number and unloaded about 8,000 MT, 95 percent of which was skipjack.

2. Research activities

Scientific research on Atlantic tunas and billfishes was conducted by the Far Seas Fisheries Research Laboratory (FSFRL) during the period 1980-1981. In June, 1981, Japanese scientists participated in meetings on the International Skipjack Year Program (ISYP), the ICCAT Inter-session Workshop on Billfish, and the SCRS Officers Meeting, which were held together in Miami, U.S.A. A scientist of the FSFRL was assigned to take charge of a skipjack tagging cruise for the ISYP in the Gulf of Guinea in July-August, 1981.

2.1 Fishery statistics

Annual catch statistics (Task I) were reported to the ICCAT up to final 1980 figures for the pole-and-line fishery and preliminary 1979 figures for the longline fishery. Estimated catch of the pole-and-line fishery was made available for the first half of 1981.

Catch and effort statistics (Task II) were also routinely submitted to the ICCAT. Final 1980 pole-and-line and 1979 longline data are now available.

Size frequency statistics (biological sampling) have been collected and compiled through a continuous effort for size measurement on board tuna boats in the Atlantic. Length data for 1979 were compiled for tunas and billfishes and have been reported to the ICCAT.

2.2 Skipjack tagging cruise

As Japan's principal contribution to the International Skipjack Year, two skipjack tagging cruises were again conducted by Japanese baitboat during July-August, 1981, in the Gulf of Guinea. The cruises successfully released 7,000 skipjack and 591 bigeye tunas. At the same time, detailed information on a school-basis was collected, together with intensified biological sampling data.

2.3 Tuna biology and stock assessment

Two scientists attended the Miami meeting for the International Skipjack Year Program and the Inter-sessional Workshop on Billfish. A scientist of the FSFRL spent about a month at ICCAT prior to the Billfish Workshop to improve the billfish data base. A study on the estimation of longline fishing effort for marlins was presented to the Billfish Workshop. Other working papers presented at the Miami meeting are listed in the "Reference" section of this report.

Regarding the standardization of longline effort by species, the FSFRL has continued to estimate effective effort and overall fishing intensity for the years up to 1979.

The results of studies on the biology and population dynamics of the Atlantic tuna and billfish resources were presented at the 1981 SCRS Meeting. The documents presented at the 1981 SCRS Meeting are listed below.

3. References

3.1 Documents presented at the Inter-sessional Workshop on Billfish

FAR SEAS FISHERIES RESEARCH LABORATORY

A preliminary note on the results of the Japanese tagging cruise for the International Skipjack Year Program (ISYP)

KIKAWA, S. and M. HONMA

Comparison of recent and earlier average year's pattern of white marlin distribution in the Atlantic Ocean

SUZUKI, Z. and S. KIKAWA

On estimating fishing intensity of the longline fishery by the Honma method, taking an example of white marlin in the North Atlantic Ocean.

3.2 Documents presented to the 1981 SCRS Meeting

HISADA, K. and Z. SUZUKI

Catch, fishing effort and length composition of the Atlantic bluefin tuna by the Japanese longline fishery.

HONMA, M.

Overall fishing intensity, catch and catch by size of yellowfin tuna in the Atlantic longline fishery, 1956-1979.

KIKAWA, S. and M. HONMA

A review of the stock status of the Atlantic marlins.

KUME, S.

Overall fishing intensity on Atlantic bigeye tuna caught by the longline fishery and an evaluation of the stock status by production model analysis.

SUZUKI, Z. and S. KUME

Fishing efficiency of deep longline for bigeye tuna in the Atlantic as inferred from the operations in the Pacific and Indian Oceans (presented at the Symposium).

YAMAGUCHI, M. and S. KIKAWA

Progress report on Japanese research activity on Atlantic skipjack in the International Skipjack Year, 1981.

Table 1. Japanese catch (MT) of tuna and tuna-like fishes by type of fisheries, Atlantic Ocean and Mediterranean Sea, 1976-80

Type of fishery	1976	1977	1978	1979	1980
Total.	42,288	42,842	38,882	44,480	48,205
Longline	20,678	21,855	21,690	27,613	34,137
(Home-based)					
Pole-and-line	21,610	20,987	17,192	16,867	14,068

Table 2. Annual number of Japanese tuna boats which operated in the Atlantic Ocean and Mediterranean Sea, 1976-80

<i>Type of fishery</i>	<i>1976</i>	<i>1977</i>	<i>1978</i>	<i>1979</i>	<i>1980</i>
Longline (Home-based)	146	179	216	249	300
Pole-and-line	15	18	19	15	12

Table 3. Catch (MT) of tunas and tuna-like fishes taken by the Japanese Atlantic longline fishery, 1976-80

<i>Year</i>	<i>1976</i>	<i>1977</i>	<i>1978</i>	<i>1979</i>	<i>1980*</i>
TOTAL	20,678	21,855	21,690	27,613	34,137
ATLANTIC					
Sub-total	19,707	21,335	21,627	27,511	34,017
Albacore	1,418	930	666	1,324	1,369
Bigeye	7,297	9,137	9,301	11,957	20,477
S. Bluefin	692	3,168	4,651	6,192	2,116
Yellowfin	3,366	1,467	1,923	1,986	2,839
Swordfish	808	792	853	968	2,107
Blue marlin	264	135	69	134	308**
White marlin	543	106	41	57	106
Sailfish	137	47	20	39	55
Others	307	301	382	603	-
MEDITERRANEAN					
Sub-total	971	520	63	102	120
Albacore	1	0	0	0	-
Bluefin	968	520	61	99	119
Bigeye	1	0	0	0	-
Swordfish	1	0	2	3	1

*Preliminary.

**Includes 2 MT of black marlin.

Table 4. Catch (MT) of tunas and tuna-like fishes landed by the Japanese pole-and-line fishery, 1976-80

Year	1976	1977	1978	1979	1980
Total	21,610	20,987	17,192	16,867	14,068
Albacore	0	2	0	0	0
Bigeye	3,588	1,144	1,201	582	243
Yellowfin	2,225	2,451	807	573	697
Skipjack	15,042	16,845	14,614	14,686	12,304
Others	755	545	570	1,026	824

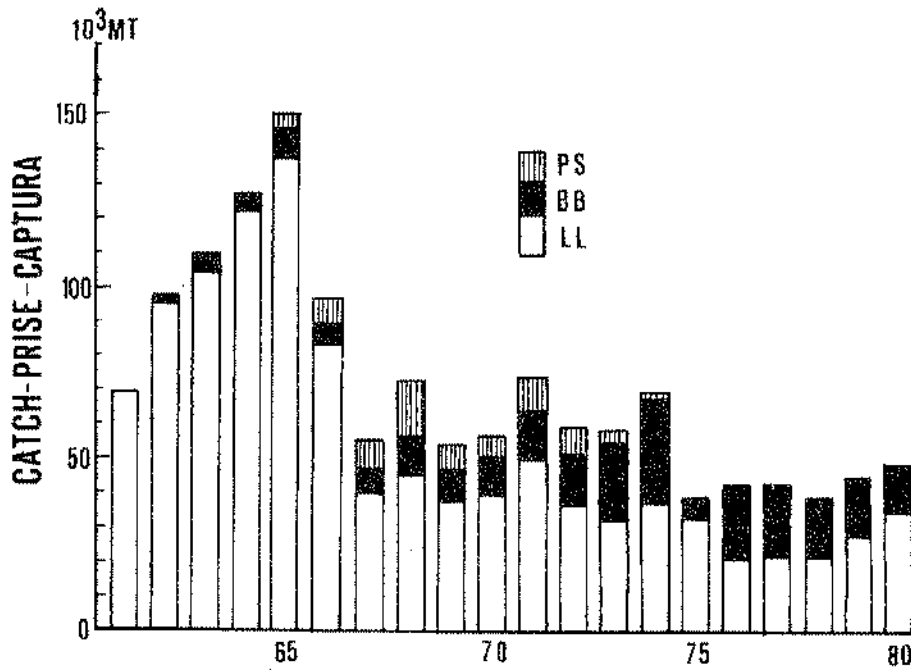


Fig. 1. Annual yield of the Japanese tuna fisheries in the Atlantic Ocean, by type of fishery, 1957-80.

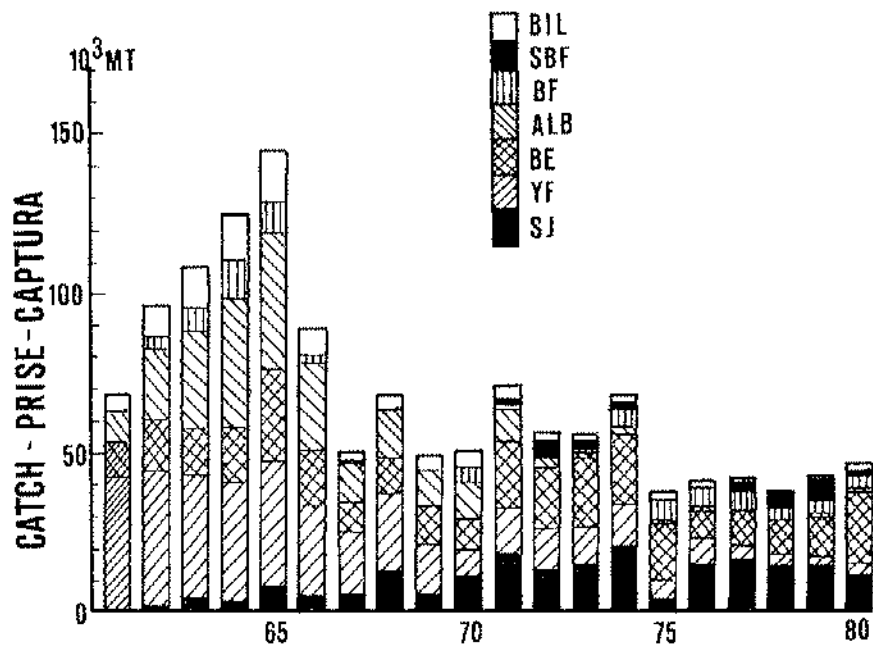


Fig 2. Annual yield of the Japanese tuna fisheries in the Atlantic Ocean, by species, 1957-80.

KOREAN TUNA FISHERIES AND RESEARCH ACTIVITIES IN THE ATLANTIC OCEAN, 1980-1981

1. Fishing activities

In 1980, the Korean commercial catches of tunas and tuna-like fishes in the Atlantic Ocean registered 28,853 MT by 70 fishing vessels showing a decrease of 22.6 percent compared to the previous year (Table 1). Of the total catch, 65.7 percent was taken by 54 longliners and 34.3 percent was taken by 16 baitboats.

The catch during the first half of 1981 was 14,104 MT using the two aforementioned types of fishing methods, and showed an increase of 4.2 percent over that of 1980.

1.1 Longline fishery

A total of 54 longliners operated for tunas and tuna-like species and caught 18,952 MT in 1980 (Table 2); a breakdown of the catch by species is as follows:

- 8,963 MT bigeye (47.3 percent of the total catch)
- 5,869 MT yellowfin (31.0 percent)
- 1,487 MT albacore (7.8 percent)
- 683 MT swordfish (3.6 percent)
- 4 MT skipjack

The catch, by type of fishing, has shown a downward trend since 1977 (Fig. 1). This is due to the decrease in the number of fishing vessels, from 120 in 1977 to 54 in 1980, and also to the decrease in the catch of the main target species such as bigeye, yellowfin and albacore.

1.2 Pole-and-line fishery

In 1980, a total of 16 Korean baitboats based in Tema, Ghana, operated for tropical tunas in the east Atlantic and caught 9,901 MT indicating a decrease of 42.4 percent compared to the 1979 total catch (Table 3 and Fig. 1). In particular, the catch of skipjack as the main target species of this fishery decreased 44.1 percent over that of 1979. A breakdown of the catch by species is as follows:

- 6,718 MT skipjack (67.9 percent of the total catch)
- 2,122 MT yellowfin (21.4 percent)
- 563 MT bigeye (5.7 percent)

Original report in English.

This is due to the decrease of catch-per-unit-effort and to the ineffective coverage of the fishing ground.

2. Research activities

The collection and analysis of catch/effort and biological data from Korean commercial fishing vessels have been continued as in past years. Particular attention was given to improving the compilation of ICCAT Task II statistics, where a coverage rate of approximately 53 percent from the longline fishery and 63 percent from the baitboat fishery was attained. The 1980 Task I, Task II and size frequency statistics were submitted to ICCAT.

For the ICCAT Skipjack Year Program Korean baitboats conducted dart tagging and released 351 skipjack by the end of 1981, and also collected biological information in the eastern tropical Atlantic.

Table 1. Korean catch in MT and number of boats for tuna and tuna-like fishes in the Atlantic Ocean, 1964-1980

Year	Number of boats			Catch (MT)		
	Longline	Baitboat	Total	Longline	Baitboat	Total
1964	1	-	1	167	-	167
1965	9	-	9	520	-	520
1966	54	-	54	7,114	-	7,114
1967	56	-	56	12,836	-	12,836
1968	49	-	49	12,624	-	12,624
1969	57	-	57	12,594	-	12,594
1970	105	-	105	34,865	-	34,865
1971	117	-	117	36,737	-	36,737
1972	105	2	107	35,736	-	35,736
1973	106	3	109	32,051	1,822	33,873
1974	124	8	132	33,568	4,412	37,980
1975	118	8	126	38,819	7,653	46,472
1976	121	6	127	31,575	3,339	34,914
1977	120	15	135	38,849	6,202	45,051
1978	97	20	117	29,094	10,364	39,458
1979	66	18	84	20,069	17,188	37,257
1980	54	16	70	18,952	9,901	28,853

Table 2. Catch in MT by species of tunas and tuna-like fishes taken by the Korean longliners in the Atlantic Ocean, 1971-1980

Year	Yellow-		Albacore	Bigeye	Skipjack	Sword-	Unclassified	Total
	Bluefin	fin						
1971	3,039	9,901	11,539	7,353	47	—	4,858	36,737
1972	30	11,078	13,577	5,730	45	—	5,276	35,736
1973	66	12,844	8,525	5,829	—	—	4,787	32,051
1974	56	15,518	5,216	7,376	116	—	5,286	33,568
1975	23	15,344	6,073	10,162	196	451	6,570	38,819
1976	10	11,211	8,755	6,747	26	1,147	3,679	31,575
1977	3	16,347	9,345	7,610	9	1,240	4,295	38,849
1978	—	11,512	4,418	9,182	42	1,333	2,607	29,094
1979	2	6,997	3,875	7,305	2	606	1,282	20,069
1980	—	5,869	1,487	8,963	4	683	1,946	18,952

Table 3. Catch in MT by species of tunas and tuna-like fishes taken by Korean baitboats in the Atlantic Ocean, 1973-80

Year	Yellowfin	Bigeye	Skipjack	Albacore	Unclassified	Total
					& others	
1973	900	—	922	—	—	1,822
1974	2,169	—	2,123	—	120	4,412
1975	1,259	1,750	4,469	—	175	7,653
1976	365	810	1,948	—	216	3,339
1977	1,075	640	3,600	—	887	6,202
1978	941	965	8,132	43	283	10,364
1979	2,871	1,712	12,017	—	588	17,188
1980	2,122	563	6,718	113	385	9,901

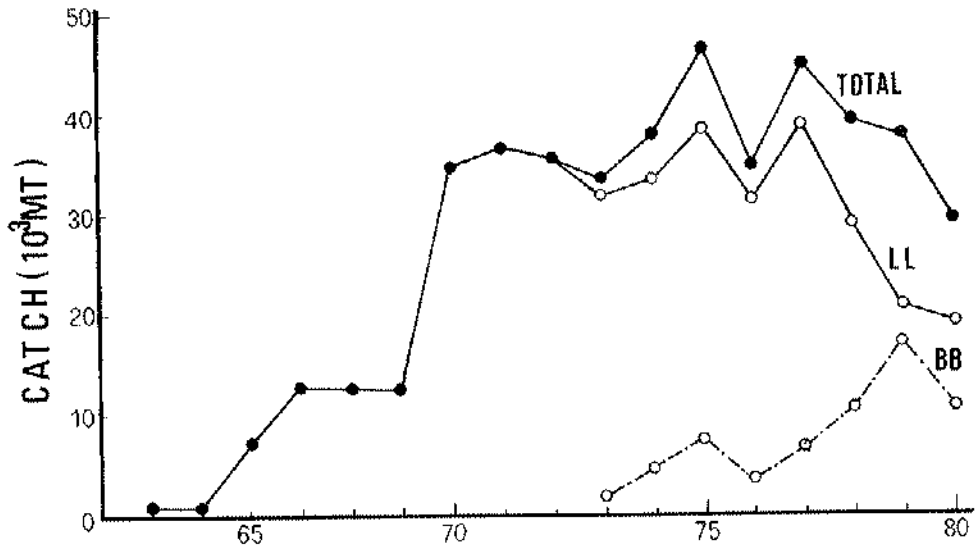


Fig. 1. Annual yield of the Korean tuna fishery in the Atlantic Ocean, 1964-1980.

REPORT ON TUNA FISHING AND RESEARCH IN SENEGAL IN 1980 - 1981

by

P. CAYRE

1. Tuna fishing

1.1 *Yellowfin, skipjack and bigeye*

Tuna landings and transshipments at Dakar in 1980 and 1981 are shown in Table 1.

In 1980, the tuna fleet based in Dakar was comprised of 28 baitboats, but there were no purse seiners in use. The number of baitboats is similar to that of 1979 (30) but their overall effort is lower due to a prolonged halt in their activities at the height of the season due to administrative reasons. In spite of a decrease in effort, the overall catch (7,860 MT) was higher than that of 1979 (7,380 MT), due to good yellowfin (2,350 MT) and bigeye (2,244 MT) catches. Skipjack catches (3,260 MT) were similar to the 1979 figure (3,330 MT).

Transshipments of the FISM fleet in Dakar were below (-24 percent) those reported in 1979.

Preliminary 1981 estimates (up to August 31) indicate very low skipjack catches (1,800 MT). However, this decrease may be offset by the strong increase in yellowfin (3,025 MT) and bigeye (2,886 MT) catches. The months of September and October should confirm this tendency.

1.2 *Other species*

The landings of small tunas (three species) for 1980 are shown in Table 2 for two fisheries: artisanal (2,170 MT) and industrial (1,100 MT). An increase in the catches by the industrial fleet is noted. This increase does not necessarily correspond to a change in the fishing pattern, but to an improvement in statistical coverage.

2. Research

Sampling and data collection activities were continued as usual in Dakar. Sampling of Spanish tuna vessels which transship or land their catches at Dakar was carried out according to the terms of an agreement made with the "Instituto Español de Oceanografía". Catch statistics of small tunas, as well as sailfish were collected and improved.

Original report in French.

Research activities associated with the Skipjack Program developed in various areas:

- 3 CRODT observers were on-board French baitboats.
- Collection of biological samples: gonads (800) and spines (300), processing of sampling data of Ivory Coast and Morocco.

A sampling cruise was attempted at the beginning of the fishing season, but failed. A joint Senegal-Cape Verde tagging cruise, financed by the EEC, tagged a number of fish from two commercial baitboats, operating in Cape Verde and Senegalese waters during October, 1981.

The tuna statistics of the entire FISM fleet were, as last year, compiled and processed in Dakar.

3. Documents presented by CRODT to the 1981 SCRS Meeting

FONTENEAU, A.

Éléments pour l'aménagement des pêcheries d'albacore (*Thunnus albacares*) de l'Atlantique.

FONTENEAU, A. and P. CAYRE

Statistiques de la pêcherie thonière FISM durant la période 1969 à 1980.

POTIER, M. and A. FONTENEAU

Aménagement de la population de patudo (*Parathunnus obesus*) de l'Atlantique.

Table 1. The tuna fishery in Dakar, 1980-81

<i>Fishery</i>	<i>No. of boats</i>	<i>1980</i>					<i>1981¹</i>					
		<i>Effort</i>	<i>YF</i>	<i>SJ</i>	<i>BE</i>	<i>Total</i>	<i>No. of boats</i>	<i>Effort</i>	<i>YF</i>	<i>SJ</i>	<i>BE</i>	<i>Total</i>
Dakar-based												
– Baitboats	28	2988	2352	3264	2244	7860	25		3025	1802	2886	7713
– Purse seiners	0	--	--	--	--	--	2		297	958	282	1537
Total	28	2988	2352	3264	2244	7860	27		3322	2760	3168	9250
Foreign vessels (Transshipments)												
	32	1038	5165	2839	55	8059			Not available			
Grand Total²	60	4026	7517	6103	2299	15919	27		3322	2760	3168	9250

1. Provisional data, up to August 31, 1981.

2. Spanish transshipments (about 15,000 MT) are not included.

Table 2. Landings (MT) of small tunas in Senegal, 1979-80

<i>Species</i>	<i>1979</i>			<i>1980</i>		
	<i>Artisanal fishery</i>	<i>Commercial fishery</i>	<i>Total</i>	<i>Artisanal fishery</i>	<i>Commercial fishery</i>	<i>Total</i>
Atlantic little tuna (<i>E. alletteratus</i>)	1097	600	1697	1622	1095	2717
W. African Spanish mackerel (<i>Scomberomorus tritor</i>)	1112	0	1112	404	0	404
Atlantic bonito (<i>Sarda sarda</i>)	159	0	159	140	0	140
TOTAL	2368	600	2968	2166	1095	3261

SOUTH AFRICAN NATIONAL REPORT, 1980

1. The fishery

The large shoals of yellowfin, which were present south of Cape Agulhas during 1979, disappeared with the result that the 1980 catch was approximately 70 percent smaller compared to the 1979 catch. The total catch of 2,535 MT consisted of 58 percent albacore, 21 percent yellowfin, 17 percent bigeye, 2 percent skipjack, less than 1 percent southern bluefin and bonito and 1 percent swordfish. Most of the tuna were caught by pole fishing and longlining.

2. Research

2.1 *Biological sampling*

Because of higher priority given to other areas of research, work on tuna has been limited. Measurements of 223 albacore and 50 bigeye landed by South African boats were taken. Samples of albacore were measured from 105 foreign boats transshipping tuna in Table Bay harbour.

2.2 *Environment*

An aircraft was commissioned to carry out a survey which encompassed airborne radiation thermometry and visual spotting of tuna in the area between Cape Point (18°E) to Port Elizabeth (26°E). Yellowfin tuna were not seen in the main fishing area of the previous year but a few small shoals were spotted east of 23°E on the edge of the Agulhas Bank.

Cruises were undertaken during the summer months to collect pelagic eggs and larvae as well as hydrological data in the area east of 18°E and extending eastwards well past the Agulhas Bank.

Original report in English.

REPORT OF SPANISH TUNA FISHING AND RESEARCH, 1980-1981

by

A. GONZALEZ-GARCES
SPANISH OCEANOGRAPHIC INSTITUTE

1. Catches

Spanish tuna catches in 1980 reached 115,772 MT, an increase of 16,000 MT over 1979. This increase is due basically to the skipjack catches which went from 19,800 MT in 1979 to 31,000 MT in 1980 and to the catches of "Others" (*A. thazard*, *E. alletteratus* and *S. sarda*) which rose to 9,500 MT.

The total catches, in metric tons, of the various tuna species caught by Spain in the last four years are as follows:

<i>Year</i>	<i>YFT</i>	<i>SKJ</i>	<i>BET</i>	<i>BFT</i>	<i>ALB</i>	<i>SWO</i>	<i>OTH</i>	<i>TOTAL</i>
1977	33,993	27,728	3,561	2,982	25,155	3,976	2,664	100,059
1978	35,395	25,458	3,850	3,661	25,404	4,331	1,625	99,724
1979	40,334	19,836	2,975	2,643	29,810	3,382	993	99,973
1980	36,600	30,989	6,034	2,397	25,202	4,990	9,560	115,772

Spain catches tunas in three distinct areas: Gulf of Guinea, Canary Islands and around the Iberian Peninsula.

1.1 Gulf of Guinea

The fleet which operated in this area in 1980 was comprised of 43 purse seiners, distributed as follows according to gross tonnage (GRT):

<i>No. of vessels</i>	<i>GRT</i>
1	300 - 450
9	451 - 750
26	751 - 1250
7	over 1250

Original report in Spanish.

The catches in 1980 were as follows: 36,523 MT of yellowfin (*T. albacares*), 28,827 MT of skipjack (*K. pelamis*) and 4,560 MT "Others", comprised mainly of frigate tuna (*A. thazard*) and Atlantic little tunas (*E. alletteratus*). Yellowfin catches decreased by 5,000 MT with respect to 1979, whereas skipjack catches increased 36 percent. There was also an increase in frigate tuna and Atlantic little tuna catches, which totaled 4,560 MT.

For 1981, slight increases in the catches of all species are expected; 57,000 MT of yellowfin, 30,000 MT of skipjack and 5,000 MT of frigate tuna and Atlantic little tuna combined, are forecast.

1.2 Canary Islands

Tuna fishing in this area is carried out by small vessels which use live bait. The fleet is comprised as follows:

<i>No. of vessels</i>	<i>GRT</i>
260	less than 20
36	20 - 50
24	51 - 150

Catches by this fleet in 1980 were greater than those of 1979 due to an increase in bigeye and skipjack catches.

Five species of tunas are caught in Canarian waters and their catches (MT) in 1979 and 1980 were as follows:

<i>Year</i>	<i>YFT</i>	<i>SKJ</i>	<i>BET</i>	<i>BFT</i>	<i>ALB</i>	<i>TOTAL</i>
1979	145	1,330	2,975	758	604	5,812
1980	77	2,162	4,034	397	518	7,188

Forecasts for 1981 indicate catches similar to those of 1980.

1.3 Iberian Peninsula

In this area four types of fishing gear are used: baitboat, troll, surface longline and traps. In 1980, 250 baitboats, 270 trollers, 140 longliners and 4 traps operated. The live-bait fleet catches albacore and bluefin, but the fishing for one species or another is carried out by different vessels. The troll fleet catches only albacore; the longline fleet takes only swordfish and the traps catch bluefin and "others", mainly frigate tuna, Atlantic little tuna and Atlantic bonito.

The catches (MT) in 1979 and 1980 were as follows:

<i>Year</i>	<i>BFT</i>	<i>ALB</i>	<i>SWO</i>	<i>OTH</i>	<i>TOTAL</i>
1979	1,085	29,206	3,382	—	33,673
1980	2,000	24,684	4,990	4,000	35,674

These figures show a decrease of about 5,000 MT in the catches of albacore, due basically to the decrease in the troll catches. They also show an increase in the catches or the availability of information on *A. thazard*, *E. alletteratus* and *S. sarda*, which are listed as "UNCL", "SURF" and "OTHERS".

It is expected that the 1981 catch will be maintained at a level similar to that of 1980, but with a slight decrease in the catches of albacore by troll.

2. Research

During the period 1980-1981, research on the Spanish fishery in the Gulf of Guinea was centered in two areas: (1) improving the coverage rate of detailed catch and effort data (attaining a 70 percent coverage rate of the total catches); and (2) biological sampling (15,000 individuals comprised of yellowfin, skipjack and bigeye were taken in 1980, and as of October 1, 1981, some 12,000 fish were sampled).

In 1981, intensive work was carried out for the "International Skipjack Year Program" and various visits were made to Abidjan (Ivory Coast) and Dakar (Senegal), ports where the major part of the Spanish Gulf of Guinea fleet is based.

Four "Intensive Sampling" cruises were conducted and a fifth is scheduled to begin in November. A scientist participated in each 45-day cruise. The research activities which were carried out by each cruise were mainly: collection of data on the vessel's activity such as size sampling, fishing areas, duration of the set, species and age composition of schools, environmental parameters, etc. Studies were also made to determine what percentage of tags which enter the well of a vessel finally reach the scientist who placed the tag.

In the Canary Islands fishery, research priority was also given to the Skipjack Program. In this aspect, size samplings of about 2,000 fish were made throughout the archipelago waters as of October 1, 1981 (approximately 10 percent of the fish landed up to that time). For growth studies, first dorsal fin ray spines were taken from 508 fish. For the "Maturity-Fecundity" activity, samples of 253 gonads were taken. A tagging cruise was conducted in which 701 fish were tagged.

Routine research continued on the main species taken by the Peninsular fishery (albacore, bluefin and swordfish). In addition, a bluefin tuna tagging cruise was carried out in 1980 and another in 1981 in the Bay of Biscay. A swordfish tagging cruise was conducted in October in the Atlantic, south of the Canary Islands. Biological sampling was continued as in other years and 7,000 albacore, 3,000 bluefin and 5,000 swordfish were sampled in 1981.

3. Documents presented to the 1981 SCRS Meeting

ANTOINE, L. and A. GONZALEZ-GARCES

Comentaires sur l'état du stock de germon (*Thunnus alalunga*) nord-Atlantique.

CORT, J. L.

Situación de las pesquerías de jóvenes atunes rojos (*Thunnus thynnus*) en Marruecos y Golfo de Vizcaya y evolución en la parte atlántica del stock este.

GONZALEZ-GARCES, A.

Informe sobre la pesca e investigación española de túnidos en 1980 y 1981.

PARKS, W., F. X. BARD, P. CAYRE, S. KUME and AL. SANTOS

Length-weight relations for bigeye tuna captured in the eastern Atlantic Ocean.

REY, J. C. and J. L. CORT

Mercado de atunes (*Thunnus thynnus*) en el Golfo de Vizcaya durante el verano de 1981.

REY, J. C. and A. GONZALEZ-GARCES

Some data of the Spanish swordfish (*Xiphias gladius*) fishery.

SANTOS, AL. and S. TORRES

Campañas de marcado SKJ 8107 y 8110 en Canarias - resultados preliminares.

**REVIEW OF UNITED STATES FISHERIES AND RESEARCH
ACTIVITIES ON TUNAS AND TUNA-LIKE FISHES
OF THE ATLANTIC OCEAN FOR 1980-1981**

by

NATIONAL MARINE FISHERIES SERVICE*

1. The fisheries

In 1980, U. S. commercial catches of Atlantic tunas and tuna-like species were approximately 20,000 MT, an increase of approximately 14 percent over 1979 (Table 1). Catches of skipjack tuna increased by 16 percent; catches of bluefin tuna, yellowfin tuna, and bigeye tuna decreased by 34 percent, 33 percent and 5 percent, respectively. Catches of swordfish increased 4 percent.

The U. S. fishery for tropical tunas operated under a minimum size regulation of 3.2 kg. for yellowfin tuna, with a 3 percent incidental catch allowance by weight per boat landing, during all of 1980, and under the same minimum size regulation for bigeye tuna after it was implemented in the fall of 1980. The U. S. fishery for bluefin tuna operated under size, catch and season limitations.

1.1 Tropical tunas

Most of the tropical tuna fishing activity by U. S. vessels occurred in the eastern Atlantic during 1980. Eight purse seiners fished in eastern Atlantic waters, one more than in 1979. These vessels spent approximately 571 days fishing and caught 1,614 MT of yellowfin tuna, 2,608 MT of skipjack tuna, and 143 MT of bigeye tuna.

Catch rates during 1980 in the eastern Atlantic were 2.2 MT of yellowfin tuna and 3.9 MT of skipjack tuna per day's fishing, a 43 percent decrease and a 77 percent increase, respectively, compared with 1979.

In 1980, the catch of undersized yellowfin tuna by the U. S. fleet was approximately 81 percent (by number) of the fleet's total yellowfin catch. The catch of bigeye tuna below 3.2 kg. during all of 1980 was approximately 5 percent (by number) of the fleet's total bigeye catch.

*Prepared by staff members of the Southwest Fisheries Center, La Jolla, California, and the Southeast Fisheries Center, Miami, Florida.

Original report in English.

In 1981, U. S. participation in the Atlantic tropical tuna fishery is estimated to be 6 seiners. The total 1981 catch of Atlantic tropical tunas by U. S. vessels is projected to be approximately 6,500 MT; 2,500 MT yellowfin tuna, 3,800 MT skipjack tuna and 200 MT bigeye tuna. This is an estimated 10 percent increase over the 1980 total catch; an 18 percent increase, 6 percent increase and no change in the catches of yellowfin, skipjack and bigeye tunas, respectively.

1.2 Temperate tunas

U. S. fisheries in the northwestern Atlantic caught 1,505 MT of bluefin tuna in 1980. The purse seine fishery took one half of the catch, while handline, harpoon, rod and reel and longline took 358 MT, 102 MT, 276 MT and 10 MT, respectively. There was 1 MT of catch by unclassified gear. These catches were significantly lower than those in 1979 due to unusually warm oceanographic conditions in the area of the fishery and the unavailability of fish.

The fisheries in 1981 are operating under similar regulations as those in effect in prior years. The preliminary estimate of the 1981 total catch is 1,200 MT.

1.3 Miscellaneous tuna-like species

The U. S. commercial fishery for Spanish mackerel and king mackerel is centered off Florida. Landings in 1980 increased over those of 1979. The trend in landings has been essentially stable for the past 12 years. Spanish and king mackerel landings in 1980 were 5,429 MT and 3,192 MT, respectively.

1.4 Billfish

The U. S. catch of billfishes, other than swordfish, is by recreational fishermen and has remained stable for several years. The swordfish catch, however, is primarily by commercial longlining and has increased in recent years due to an increase in participants-shrimp vessel conversions to longline.

2. Research activities

United States research on Atlantic tunas and tuna-like species is conducted at the Southeast Fisheries Center's Miami Laboratory and at the La Jolla Laboratory of the Southwest Fisheries Center. Research in 1980-81 focused on stock assessment and fishery evaluation in support of fishery management needs and recommendations expressed by ICCAT's SCRS. Research on Atlantic bluefin and billfishes was carried out at Miami and research on tropical tunas and albacore was conducted in La Jolla.

2.1 Tropical tunas

During 1980-81, research continued on stock assessment and fishery evaluation of Atlantic tropical tunas. U. S. fisheries were monitored and biological and fishery data collected. Atlantic tuna imports were sampled (7,844 fish sampled in 1980) for biological information in Puerto Rico. Results of size composition sampling from Puerto Rico in 1980 indicate that 72 percent by number of the yellowfin tuna imports sampled were less than 55.0 cm. fork length, and 75 percent by number of the bigeye tuna imports sampled were less than 55.0 cm. fork length. Sampling for species composition in Puerto Rico during 1980 indicated that approximately 16 percent by weight of the mixed yellowfin/bigeye tuna import tonnage sampled consisted of bigeye tuna. An analysis comparing size compositions from imports sampled in Puerto Rico with size compositions obtained from landings sampled in Tema, Ghana, was conducted.

Atlantic tuna catch, effort and biological data bases were updated and submitted to ICCAT. An analysis of biological data to derive a length-weight relationship for Atlantic bigeye tuna was undertaken with scientists from Spain, Japan and France. A histological gonad analysis of late summer-early winter collections of bigeye and yellowfin tuna from the northwest Atlantic and Gulf of Mexico was conducted.

Research directed toward reducing the bias inherent in age-frequency estimates obtained using the deterministic von Bertalanffy growth relationship resulted in the introduction of a stochastic element into the relationship. This modification is expected to improve age-frequency estimates for Atlantic tuna stocks over those yielded by the traditional deterministic method.

A study was also conducted that examined the possible biases in the parameter estimates resulting from fitting the generalized stock production model, commonly used for evaluating the status of stocks, by least squares and equilibrium approximation.

In support of ICCAT's International Skipjack Year Program (ISYP) United States Puerto Rico port sampling activities have been expanded to collect gonad and stomach samples from skipjack tuna caught in western Atlantic waters for maturity/fecundity analyses and feeding behavior studies. In addition, length-frequency sampling coverage of U. S. Atlantic skipjack tuna catches has been doubled for the remainder of the ISYP.

During 1980, 80 ISYP tags were recovered at the U. S. tag recovery station in Puerto Rico.

2.2 Temperate tunas

Research on bluefin tuna continued at a high level in 1980-81. Stock assessment analyses were updated, age and growth studies continued, X-ray crystallography studies continued, an ichthyoplankton survey was carried out during the bluefin spawning season in the Gulf of Mexico in 1981, and tagging experiments were conducted in 1980 and 1981. The fishery was also monitored and preparations for an international workshop on ageing of tunas, billfish and sharks in Miami in early 1982 are underway.

2.3 *Billfishes*

U.S. research on billfish consisted of updating stock assessment using a new data base generated at the ICCAT Billfish Workshop, age and growth studies, ichthyoplankton surveys, and tagging studies. The Cooperative Gamefish Tagging Project had its most successful year in 1980.

3. Documents submitted to the 1981 SCRS Meeting

BARTOO, N. and K. PARKER

Stochastic age-frequency estimation using the von Bertalanffy growth equation.

FARBER, M.

An assessment of the status of stocks of blue marlin (*Makaira nigricans*) and white marlin (*Tetrapturus albidus*) in the Atlantic Ocean through 1979.

GOLDBERG, S. and H. HERRING-DYAL

Histological gonad analyses of late summer/early winter collections of bigeye tuna (*Thunnus obesus*) and yellowfin (*Thunnus albacares*) from the north-west Atlantic and Gulf of Mexico.

HERRICK, S.

Size and species compositions of Atlantic tunas from imports landed in Puerto Rico during 1980.

PARKS, W., F. X. BARD, P. CAYRE, S. KUME and AL. SANTOS

Length-weight relations for bigeye tuna captured in the eastern Atlantic Ocean.

PARRACK, M.

Atlantic bluefin tuna resource update.

Table 1. Catch and landing (MT) of Atlantic tunas and tuna-like fishes by American fishermen, 1967-80¹

<i>Year</i>	<i>Blue-fin</i>	<i>Yellow-fin^{2,3}</i>	<i>Albacore</i>	<i>Big-eye²</i>	<i>Little tunny</i>	<i>Skip-jack²</i>	<i>Bonito</i>	<i>Sword-fish</i>	<i>Spanish mackerel</i>	<i>King mackerel</i>	<i>Unclassified</i>	<i>Total</i>
1967	2,320	1,136	0	0	7	493	22	474	3,577	2,767	10	10,806
1968	807	5,941	0	18	6	3,314	43	274	5,342	2,813	2	18,560
1969	1,226	18,791	0	148	7	4,849	98	171	4,952	2,814	1	33,057
1970	3,327	9,029	0	195	158	11,752	83	287	5,506	3,050	--	33,387
1971	3,169	3,764	0	544	5	16,224	90	35	4,713	2,571	50	31,165
1972	2,138	12,342	10	212	212	12,290	24	246	4,863	2,213	--	34,550
1973	1,294	3,590	0	113	20	21,246	261	406	4,437	2,710	--	34,077
1974	1,857	5,621	13	865	51	19,973	92	1,125	4,990	4,747	1	39,335
1975	2,823	14,335	1	67	67	7,567	117	1,700	5,288	3,095	19	35,079
1976	1,931	2,252	0	28	5	2,285	23	1,429	6,385	4,053	30	18,421
1977	1,956	7,208	2	331	53	6,179	268	912	5,453	3,837	71	26,270
1978 ⁴	1,852	9,747	9	248	113	8,492	224	3,039	3,310	2,507	31	29,572
1979 ⁴	2,297	3,182	11	212	12	3,102	502	3,405	2,926	2,204	11	17,864
1980 ⁴	1,505	2,118	21	202	88	3,589	195	3,535	5,429	3,192	513	20,387

1 Estimated catch is for bluefin tuna, yellowfin tuna, albacore, bigeye tuna, skipjack tuna and little tunny. Landing is for all other species.

Sport catches are not included, except for bluefin tuna.

2 Includes catches of purse seiners flying the flags of Bermuda, Netherlands Antilles, Nicaragua and Panama.

3 Includes small quantities of bigeye tuna prior to 1975.

4 Preliminary.

Table 2. Summary of logbook estimates of catch and catch rate of yellowfin and skipjack tunas caught by American seiners¹ in the eastern tropical Atlantic

Year	Number of seiners	Yellowfin		Skipjack	
		Catch (MT)	Catch rate (metric tons/ days fishing)	Catch (MT)	Catch rate (metric tons/ days fishing)
1967	3	1,000	7.8	500	3.8
1968	8	6,200	23.3	3,200	12.0
1969	25	19,800	10.9	4,400	2.4
1970	24	9,100	4.0	11,400	5.1
1971	22	4,400	2.7	16,100	10.0
1972	35	10,900	3.3	12,200	3.7
1973	21	2,600	2.2	20,400	17.0
1974	26	5,600	2.8	20,000	8.7
1975	32	14,000	5.6	7,400	2.7
1976	7	1,706	5.2	1,766	5.1
1977	12	6,400	4.4	5,859	3.8
1978	22	8,131	3.2	6,797	2.4
1979	7	2,884	3.9	2,073	2.2
1980	8	1,614	2.2	2,608	3.9

1 Information is primarily from U.S. seiners, but information from purse seiners flying the flags of Bermuda, Netherlands Antilles, Nicaragua and Panama are also included.