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

**R E P O R T
for biennial period, 1982-83
PART I (1982)
English version**

MADRID, SPAIN

1983

INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

Member Countries (as of April 1, 1983)

Angola, Benin, Brazil, Canada, Cape Verde, Cuba, France, Gabon, Ghana, Ivory Coast, Japan, Korea, Morocco, Portugal, Senegal, South Africa, Spain, U.S.A., Uruguay, 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, 1983)

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 Advisers representing said Governments, and has the honor to transmit the "**Report for the Biennial Period, 1982-83, Part I (1982)**", describing the activities of the Commission during the first half of said biennial period.

The volume contains reports of the Third Special Meeting of the Commission, held in November, 1982, 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 1982	5
Financial Report 1982	11
Secretariat Report on Statistics and Coordination of Research	27

CHAPTER II – Records of Meetings

Proceedings of the Third Special Meeting of the Commission	34
List of Participants	45
Opening Address of Secretary of Agriculture and Fisheries of Madeira	55
Opening Address of Commission Chairman	58
Statement by Head Delegate of Portugal	61
Report of the ICCAT Meeting of Legal Experts	63
Summary Table of Regulatory Measures	71
Reports of the Meetings of Panels 1-4	73
– Japanese Statement on Bluefin Tuna	87
– Canadian Statement on Bluefin Tuna	88
– Proposed New Bluefin Tuna Regulations	89
Report of the Standing Committee on Finance and Administration (STACFAD)	91
Report of the Standing Committee on Research and Statistics (SCRS)	100
YFT - Yellowfin	110
BET - Bigeye	113
SKJ - Skipjack	116
ALB - Albacore	118
BFT - Bluefin	121
BIL - Billfishes	126
SWO - Swordfish	130
SBF - Southern Bluefin Tuna	132
SMT - Small Tunas	134
MTR - Multi-species Interactions - Tropical	135
MTE - Multi-species Interactions - Temperate	136
SCRS – Tables	143
SCRS - Figures	165

List of Documents	178
Report of the Ad Hoc Group to Review the Acceptance of Documents	184
Report of the Sub-Committee on Statistics	185
Table 1 – Progress in the Collection of 1981 Task I and Task II Data	195
Table 2 – Comparison of Important Characteristics of Reported Data	204
Report of the Sub-Committee on Skipjack	206
Report of the Working Group on Juvenile Tropical Tunas	207
Table of Assignments	210
Report of the Ad Hoc Working Group on Tagging Accounting	214
Report of the Symposium on “Criteria to Define Stock Units”	220

CHAPTER III – National Reports

Brazil	224
Canada	228
Cape Verde	231
Cuba	233
France	237
Ghana	240
Ivory Coast	243
Japan	245
Korea	252
Portugal	257
Senegal	258
Spain	262
South Africa	267
U.S.A.	268
U.S.S.R.	276
Morocco	277

PRINTED IN SPAIN

Depósito legal: B. 19604-83

Imprenta Juvenil, S. A. - Maracaibo, 11 - Barcelona-30

CHAPTER I

Secretariat Reports

ADMINISTRATIVE REPORT 1982

COM/82/9 (Amended)*

1. Member countries of the Commission

Since the time of the last meeting (November 1981) there have been no changes in Commission membership. Consequently, ICCAT is currently comprised of nineteen (19) member countries.

2. ICCAT and ICCAT-related meetings

2.1 Seventh Regular Meeting of the Commission

In accordance with a decision made by the Commission in 1980, the Seventh Regular Meeting of the Commission was held in Tenerife, November 11-17, 1981. 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 II, 1981)".

2.2 ICCAT-related meetings

Two ICCAT-related meetings were held during the 1981-82 intersessional period. The SCRS Officers meeting scheduled was not held since the Chairman of the Committee felt that a separate Officers Meeting was not warranted this year.

a) Western Atlantic Bluefin Tuna Meeting

A meeting on western Atlantic bluefin tuna management measures was held on February 8-12, 1982, at the NMFS-Southeast Center, Miami, Florida. The meeting, hosted by the U.S. Government, was held according to the Commission's recommenda-

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

tion at the Seventh Regular Meeting (Tenerife, 1981), and all the Contracting Parties whose nationals have been actively fishing for bluefin tuna in the western Atlantic were invited. Brazil, Canada, Japan and the United States participated in the meeting. The Secretariat was represented by the Executive and Assistant Executive Secretaries. The Record of the Meeting was prepared by the Secretariat and later distributed to all the head delegates of the member countries. It is being presented at the Third Special Meeting of the Commission as COM-SCRS/82/18.

b) Meeting of Legal Experts

In accordance with a decision made by the Commission, a meeting of legal experts was held in Paris on May 24-26, 1982, at the invitation of the Government of France with financial support of the European Economic Community. Twelve member countries of ICCAT, the EEC, FAO (as advisor) and an observer from ICSEAF were represented at the meeting to discuss the linguistic discrepancies in the three-language versions of the ICCAT Convention and the procedure and text of an amendment facilitating the EEC's accession. Mr. M. Hunter (Canada) served as chairman of the meeting. The ICCAT Secretariat was represented by the Executive Secretary and three secretaries. The report of the meeting is presented as document COM/82/16.

3. Meetings at which ICCAT was represented

3.1 *International Commission for the Southeast Atlantic Fisheries (ICSEAF)*

ICSEAF held its Tenth Session on December 2-15, 1981, in Jerez, Spain. The Assistant Executive Secretary attended the scientific sessions and the Executive Secretary attended the Commission session.

3.2 *Tuna Conference*

The Assistant Executive Secretary participated in the 33rd Tuna Conference held at Lake Arrowhead, California, May 16-19, 1982. At the same time, he held several informal meetings on pending SCRS matters with other scientists attending the Conference. Since the SCRS Officers Meeting was cancelled for this year, the opportunity to meet with other scientists proved to be very valuable.

3.3 *CRO Skipjack Meeting*

The Skipjack Coordinator and the ICCAT Systems Analyst participated in the working meeting held at the "Centre de Recherche Océanographique de Dakar-Thiaroye, Senegal" from June 14-25, 1982. Considerable progress was made with analysis of data.

3.4 "Week of Fisheries" in Azores

Dr. P. M. Miyake and Mr. J. P. Wise were invited by the Regional Government of Azores to give lectures at the Second Week of Fisheries held at Horta, Faial (Azores), March 20 to April 1, 1982. This year's sessions were specifically devoted to tuna fisheries and over 200 people, including lecturers and audience from the entire world, attended.

3.5 Coordinating Working Party on Atlantic Fisheries Statistics (CWP)

The Tenth CWP meeting was held at the EEC buildings in Luxembourg and sponsored by EUROSTAT, from July 21 to 28, 1982. ICCAT, as a member of the CWP, was represented by the Assistant Executive Secretary. The Report of the meeting is presented as SCRS/82/13.

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 General Fisheries Council for the Mediterranean (GFCM), the Indo-Pacific Fisheries Council (IPFC) and the Indian Ocean Fisheries Commission. FAO recently dispatched a tuna statistical field program in the western Pacific-Indian Ocean region, and ICCAT has been contributing with advice on tuna statistical systems based on its past experience.

4.2 Other organizations

The Commission also collaborated with the following international organizations:

- International Commission for the Southeast Atlantic Fisheries (ICSEAF)
- Inter-American Tropical Tuna Commission (IATTC)
- Northwest Atlantic Fisheries Organization (NAFO)
- 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" (COM-SCRS/82/24).

Also, the Secretariat presented the following documents where activities in coordination of research are reported in detail:

- A summary of the surveys the Secretariat carried out on procedures of estimating and compiling statistical data by the national offices and institutes is reported in SCRS/82/14.
- Analyses for accumulated catches of small yellowfin and bigeye by all the Atlantic fleets for 1979 and 1980 are reported in SCRS/82/15.
- Difficulties encountered in the tagging accounting policy and suggested improvements to the program are presented in SCRS/82/16.
- The historical statistics for 1950-1969 were compiled and published in the Historical Statistical Bulletin, Vols. 1 and 2 (COM-SCRS/82/22 and 23).
- Progress made in the International Skipjack Year Program is reported in COM-SCRS/82/25.
- A biostatistical comparison of various sampling schemes is reported in SCRS/82/27.
- Biostatistical analyses of undersized yellowfin and bigeye catches are reported in SCRS/82/28.
- Sampling of vertebrae of bluefin tuna taken from the western Atlantic for stock studies is reported in SCRS/82/29.

6. Statistical training course

Following a decision made by the Commission at its last meeting, the Secretariat circulated questionnaires to identify the need for holding statistical training courses. Ten countries responded positively with more than 20 potential trainees.

ICCAT contacted international organizations and national governments and studied funding possibilities for such courses. France and the EEC offered the possibility of funding some trainees but upon application from the individual countries. The U.S. and Ivory Coast offered to accept trainees at their laboratories.

A course was carried out at the ICCAT headquarters for four Portuguese scientists in September-October, 1982, for a seven-day period. The course was held at the special request of the Portuguese Government and the trip costs of the scientists were borne by that Government.

The Secretariat proposes that two or three more courses be held on a local basis in early 1983. More details on statistical training courses are presented in COM-SCRS/82/26.

7. Publications

The following publications were issued in 1982.

- a) Biennial Report, 1980-81, Part II (English, French and Spanish)
- b) Statistical Bulletin, Vol. 11 (1980) (Final Edition)
- c) Statistical Bulletin, Vol. 12 (1981) (Preliminary Edition)
- d) Historical Statistical Bulletin, Vol. 1 (1950-1959)
- e) Historical Statistical Bulletin, Vol. 2 (1960-1969)
- f) Collective Volume, Vol. XVII (1), (2), and (3) (Report "A" and 1981 SCRS Documents)
- g) Data Record, Vol. 19 (Data received from November 1981 to February 1982)
- h) Data Record, Vol. 20 (Data received from March to September, 1982)
- i) Proceedings of the Third Special Meeting of the Commission (Provisional)
- j) Newsletter (2 issues)

8. Secretariat and administration

8.1 Trips

Besides those trips made by the Secretariat staff to attend meetings mentioned in Sections 2 and 3 of this Report, the following trips were also made:

a) Executive Secretary

After the Portuguese Government ratified its invitation to hold the Third Special Meeting of the Commission in Funchal (Madeira), the Executive Secretary visited Lisbon and Funchal. The purpose of his visit was to meet with the national and regional authorities and to study jointly the financial arrangements for the meeting.

The Executive Secretary visited several hotels in Madeira and based his final choice on the hotel he considered most appropriate as regards meeting facilities, services and conditions.

With the efficient collaboration of the regional authorities, he was able to make numerous contacts regarding office equipment and materials necessary for the meeting.

b) Biostatistician

In December, 1981, the ICCAT Biostatistician visited Abidjan and Tema to contact the local scientists and statisticians to discuss the undersized yellowfin and bigeye problem, survey dumping, and observe the statistical procedures adopted in these laboratories.

In March, 1982, he visited Madeira, at the request of the local government, to review the statistical system. This was combined with his trip to Azores to participate in the "Week of Fisheries" (see Section 3).

c) Systems Analyst

The ICCAT Systems Analyst also traveled to Dakar, Senegal, in March to assist the CRO laboratory in adapting the computer programs for tagging data analyses.

8.2 Personnel

There were no changes in the permanent Secretariat staff during 1982.

O. Rodríguez-Martín
Executive Secretary

FINANCIAL REPORT 1982

COM/82/10 (Amended)*

I. FISCAL YEAR 1981

1. Auditor's Report for Fiscal Year 1981

Mr. Alejandro Oliver, the auditor named by the "Instituto de Censores Jurados de Cuentas de España," passed away in 1982. Mr. Oliver served as auditor for the Commission since its creation and each year he presented a detailed report on our financial status and verification of expenditures.

The Executive Secretary contacted the Spanish Institute of Auditors to request that they appoint a replacement. Mr. Bernardo Tahoces Acebo, a member of the Institute of Auditors and the European Auditing Statement Board, was appointed. His appointment was confirmed by the Commission.

The new auditor has examined the books and accounts of both the Regular and the Special Skipjack Budgets of the Commission up to December 31, 1981. In accordance with Articles 9-3 and 12-7 of the Financial Regulations, and following 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 August, 1982. An extract of this Report was included in the "Report for Biennial Period, 1980-81, Part II" as Statement 11 to the 1981 Financial Report, and was presented to the Commission as document COM/82/17.

2. Financial situation at end of Fiscal Year 1981

Statement 1 presents the Balance Sheet up to the end of Fiscal Year 1981. There was a balance of \$320,172.48 in Cash and Bank, broken down as follows: \$264,578.35 corresponding to the Regular Commission Budget and \$55,594.13 corresponding to the Special Skipjack Budget.

There are contributions pending payment for a total of \$259,280.35. Of this amount, \$168,054.53 correspond to the Regular Commission Budget and \$91,225.82 correspond to the Special Skipjack Budget.

*Updated to the end of Fiscal Year 1982. Modifications agreed upon by the Commission have been included.

II. REGULAR COMMISSION BUDGET

1. 1982 Regular Commission Budget

The Regular Commission Budget was approved by the Commission at its Seventh Regular Meeting (Tenerife, November 1981) and amounted to US\$ 750,000 (see Appendix 3 to Annex 7 of the 1981 STACFAD Report contained in the Report for Biennial Period 1980-81, Part II).

Due to the favorable U.S. dollar/peseta exchange rate, we were able to maintain the same total budget as that for 1981. During 1982, the revaluation of the dollar continued which resulted in repercussions in all of the budget chapters.

2. Review of Commission accounts

Statement 2 shows the current status of the member country contributions. Payments are pending from Benin, Brazil, Gabon, Ghana, Ivory Coast, Morocco and Senegal. These pending contributions total \$121,224.68.

Statement 3 shows the Budget, Expenditures and Balance to the end of Fiscal Year 1982 which ends with a positive balance of \$176,202.71. The Commission decided that this balance should be deposited to the Working Capital Fund.

3. General comments by Regular Commission Budget chapter

Chapter 1 - SALARIES

The effect of the U.S. dollar/peseta currency fluctuation has resulted in a positive balance of \$52,519.44 in this budget chapter.

Chapter 2 - TRAVEL

Trips made by the Secretariat staff are described in the Administrative Report (COM/82/9). It should be noted that expenses incurred by the Executive and Assistant Executive Secretaries to attend the consulting meeting in Miami to limit the catch of bluefin tuna in the western Atlantic (February 1982) were included in the 1981 Budget.

Trip and per diem expenses for the Executive Secretary to attend the ICCAT Meeting of Legal Experts (Paris, May 1982) were charged to this chapter. We would like to point out that the travel and per diem expenses for three ICCAT secretaries as well as the meeting expenses were borne by the European Economic Community (EEC).

Chapter 3 - MEETINGS

Expenses for this chapter are as follows:

a) ICCAT Secretariat staff (travel, per diem, overtime, transport of equipment and materials)	\$ 31,861.05
b) Simultaneous interpreters (travel, salary, per diem)	17,279.44
c) Extra staff (2 multi-lingual translators, 1 receptionist and 1 copy machine operator	9,533.45
d) Hotel conference rooms, working rooms, coffee break and miscellaneous	9,691.80
e) Electronic equipment for simultaneous translation*	
f) 3 copy machines*	
g) Office materials and typewriter rental*	
h) Extra local staff*	
TOTAL	<u>\$ 68,365.74</u>

Chapter 4 - PUBLICATIONS

The Commission publications outlined in the Administrative Report (COM/82/9) have been charged to this chapter. Due to the efficient use of two IBM Composers, we have reduced publication costs and consequently there is a positive balance of \$9,104.49.

Chapter 5 - OFFICE EQUIPMENT

The Secretariat, in its continual attempt to lower Commission publication costs, purchased the following duplication equipment. Due to these purchases, this chapter shows a negative balance (\$7,216.31).

a) Gestetner offset, model 329	\$ 7,884.30
b) Canon photocopier, model 125	<u>3,457.76</u>
TOTAL	\$ 11,342.06

We hope to amortize this amount in a little over a year.

Chapter 6 - OPERATING EXPENSES

The expenses incurred in this Budget chapter are broken down as follows:

*These expenses were met by the Office of the Secretary of Agriculture and Fisheries of the Regional Government of Madeira (Portugal). This financial collaboration made it possible to hold the annual Commission Meeting outside the Seat without surpassing the budget estimated for Madrid. In fact, there was a positive balance of \$1,634.26 in this budget chapter.

ICCAT REPORT, 1982-83 (1)

Office material	\$ 5,786.79
Duplication of documents (Rank Xerox)	9,945.03
Mailing expenses	8,871.56
Telephone	2,686.21
Telegrams and telex	6,310.41
Equipment maintenance	4,392.87
Auditor's fees	1,200.00
Security bond	1,230.34
Electricity	1,937.32
Office cleaning	2,867.14
Miscellaneous expenses	<u>1,654.34</u>
TOTAL	\$ 46,882.01

Chapter 7 - MISCELLANEOUS

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

Chapter 8 - COORDINATION OF RESEARCH

a) Staff

This sub-chapter includes the salaries of J. P. Wise (biostatistician), V. Nordstrom (systems analyst), D. DaRodda and O. R. Muñoz (statistical assistants). It also includes the expenses of the port samplers in Tenerife, Las Palmas, St. Maarten, Cape Town and Cumaná.

b) Travel

Two trips by the systems analyst to Dakar, Senegal, a trip by the Assistant Executive Secretary to Luxembourg (CWP meeting) and per diem expenses of the biostatistician in Madeira have been charged to this sub-chapter.

c) Office equipment

These expenses correspond to office material and equipment acquired for the statistical department. It should be noted that the purchase of a terminal consisting of an APPLE II microcomputer and accessories costing \$5,878.00 was charged to this sub-chapter.

d) Data processing

The data processing expenses have remained well within the amount budgeted, in spite of the considerable increase in processing due, in part, to the Skipjack Program.

e) Inter-sessional meetings

No inter-sessional meetings were held in 1982.

f) Miscellaneous

Included in this sub-chapter are two tagging lottery prizes and tag rewards.

III. SPECIAL SKIPJACK BUDGET**1. 1982 Special Skipjack Budget**

The Special Skipjack Budget for 1982 was approved by the Commission at its 1978 meeting and was included in the Biennial Report, 1978-79, Part II (1979) as Appendix 5 to Annex 6. The Skipjack Budget for 1982 amounted to \$147,011.

2. Review of Special Skipjack Budget accounts

The member country contributions to the Skipjack Budget for 1982 as well as the current status of each member country are shown in *Statement 4*. There are still contributions pending payment from various countries which total \$32,549.53.

3. Budget, Expenditures and Balance of the Skipjack Budget, 1982

The Budget, Expenditures and Balance of the Skipjack Budget to the end of Fiscal Year 1982 are shown in *Statement 5*. There is a positive balance of \$63,975.87, to be deposited to the Working Capital Fund.

ACTIVITIES*a) Tagging*

This sub-chapter includes such expenses as skipjack lottery prizes, tag rewards and financial assistance for experts on tagging cruises.

ICCAT COORDINATION SERVICES*a) Salaries*

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

b) Office equipment and materials

The monthly payments on an IBM typewriter purchased in 1981, as well as office material, have been charged to this sub-chapter.

c) Trip expenses

The Skipjack Program Coordinator's trip expenses and per diem to attend the CRO working meeting in Dakar, Senegal, were included in this sub-chapter, as well as the "home leave" expenses to Canada for the Coordinator and his family.

d) Operational expenses and contracts

Included here are expenses such as reproduction of skipjack documents and mailing of tagging materials, T-shirts, etc.

IV. OTHER BUDGETARY STATEMENTS

1. Income and Disbursements for both budgets

Statement 6 presents the Income and Disbursements for Fiscal Year 1982 pertaining to both the Regular Commission Budget and the Special Skipjack Budget.

2. Breakdown of the Working Capital Funds

a) Regular Budget

The Working Capital Fund had \$431,683.42 at the end of Fiscal Year 1981. During 1982 a substantial amount of interest (\$61,235.19) was deposited to the Fund. The positive balance of \$176,202.71 for Fiscal Year 1982 was also deposited. Two small amounts, \$10 from the sale of Commission publications and \$492.37 from the difference in currency exchange, were deposited to the Fund. At the end of Fiscal Year 1982, the Working Capital Fund of the Regular Commission Budget shows a balance of \$669,623.69.

It should be noted, however, that this amount is based on the total Commission Budget, without taking into account the outstanding country contributions. Of this balance, \$121,224.68 are pending payment. Consequently, the real balance of the Working Capital Fund is \$548,399.01 at the end of Fiscal Year 1982.

b) Special Skipjack Budget

The Working Capital Fund has a balance of \$144,794.95 at the end of Fiscal Year 1981. After depositing the positive balance of \$63,975.87 from Fiscal Year 1982, the Fund shows a balance of \$208,770.82.

For the same reasons explained previously, pending payments of \$32,549.53 should be deducted from this amount to show a real balance of \$176,221.29 in the Working Capital Fund of the Special Skipjack Budget at the end of Fiscal Year 1982.

At its Third Special Meeting (Funchal, November 1982), the Commission approved an additional Skipjack Budget of \$200,000 to complete the Skipjack Program. It was decided that the positive balance of the Skipjack Working Capital Fund would be used to meet this budget, to avoid additional contributions from member countries in 1983.

3. Balance Sheet for the Regular and Special Skipjack Budgets

Statements 8 and 9 show the assets and liabilities corresponding to both Commission Budgets.

STATEMENT 1

Balance Sheet for the Regular and Special Skipjack Budgets for Fiscal Year 1981 (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> 320,172.48	b) Special Skipjack Budget	<u>144,794.95</u> 576,478.37
Pending Contributions:		Bluefin Tagging Fund	
a) Regular Budget	168,054.53		1,998.46
b) Special Skipjack Budget	<u>91,225.82</u> 259,280.35		
		In favor of:	
		Brazil:	
		a) Regular Budget	813.00
		b) Special Skipjack Budget . .	<u>163.00</u> 976.00
TOTAL	579,452.83	TOTAL	579,452.83

STATEMENT 2

Status of Member Country Contributions in 1982 - Regular Commission Budget (US\$)

<i>Country</i>	<i>1981 Balance</i>	<i>Contributions for 1982, approved by the Commission</i>	<i>Contributions paid towards the 1982 Budget</i>	<i>Other Contributions</i>	<i>Balance</i>
Angola	---	22,688	22,688.00	---	---
Benin	- 9,518.00	5,132	---	---	- 14,650.00
Brazil	+ 813.00	23,641	---	---	- 22,828.00
Canada	---	19,017	19,017.00	---	---
Cape Verde	---	12,025	12,025.00	---	---
Cuba	---	25,794	25,794.00	33.74	+ 33.74
France	---	112,127	112,127.00	---	---
Gabon	- 5,131.00	10,262	4,652.59	5,131.00	- 5,609.41
Ghana	- 43,921.57	31,788	15,272.73	43,921.57	- 16,515.27
Ivory Coast	---	29,408	24,087.60	---	- 5,320.40
Japan	---	69,717	69,717.00	---	---
Korea	---	58,109	58,109.00	---	---
Morocco	---	18,212	---	---	- 18,212.00
Portugal	---	33,236	33,236.00	---	---
Senegal	- 23,961.60	14,128	---	---	- 38,089.60
South Africa	---	20,014	20,014.00	---	---
Spain	- 85,522.36	153,699	153,699.00	85,522.36	---
United States	---	63,436	63,436.00	---	---
U.S.S.R.	---	27,567	27,567.00	---	---
TOTAL	- 168,054.53 + 813.00	750,000	661,441.92	134,608.72	- 121,224.68 + 33.74

STATEMENT 3

Budget, Expenditures and Balance of the Regular Commission Budget for Fiscal Year 1982 (US\$)

<i>Chapter</i>	<i>I Amount Budgeted</i>	<i>II Actual Expense</i>	<i>III Difference</i>
1. Salaries	312,000.00	259,480.56	+ 52,519.44
2. Travel	16,000.00	8,146.38	+ 7,853.62
3. Meetings	70,000.00	68,365.74	+ 1,634.26
4. Publications	35,000.00	25,895.51	+ 9,104.49
5. Office Equipment	7,000.00	14,216.31	- 7,216.31
6. Operating Expenses	56,000.00	46,882.01	+ 9,117.99
7. Miscellaneous	6,000.00	5,107.42	+ 892.58
			+ 81,122.38
			- 7,216.31
<i>Sub-total (a)</i>	502,000.00	428,093.93	+ 73,906.07
8. Coordination of Research			
a) Staff	156,000.00	111,081.09	+ 44,918.91
b) Travel	16,000.00	5,638.48	+ 10,361.52
c) Office Equipment	7,000.00	7,183.60	- 183.60
d) Data Processing	34,000.00	20,798.11	+ 13,201.89
e) Inter-sessional Meetings (Sub-committees, Working Groups, etc.)	24,000.00	0.00	+ 24,000.00
f) Miscellaneous	5,000.00	1,002.08	+ 3,997.92
			+ 96,480.24
			- 183.60
<i>Sub-total (b)</i>	242,000.00	145,703.36	+ 96,296.64
9. Contingencies	6,000.00	0.00	+ 6,000.00
TOTAL	750,000.00	573,797.29	+ 176,202.71

STATEMENT 4

Status of Member Country Contributions in 1982 - Special Skipjack Budget (US\$)

<i>Country</i>	<i>1981 Balance</i>	<i>Contributions for 1982, approved by the Commission</i>	<i>Contributions paid towards the 1982 Budget</i>	<i>Other Contributions</i>	<i>Balance</i>
Angola	---	2,976	2,976.00	---	---
Benin	- 2,184.70	860	---	---	- 3,044.70
Brazil	+ 163.00	2,871	---	---	- 2,708.00
Canada	---	3,627	3,627.00	---	---
Cuba	- 131.60	5,049	5,049.00	131.60	---
France	---	23,901	23,901.00	---	---
Gabon	- 1,038.00	860	---	1,038.00	- 860.00
Ghana	- 8,145.69	4,800	---	8,145.69	- 4,800.00
Ivory Coast	- 4,013.83	4,860	---	---	- 8,873.83
Japan	---	13,945	13,945.00	---	---
Korea	---	14,966	14,966.00	---	---
Morocco	---	3,906	---	---	- 3,906.00
Portugal	---	6,749	6,749.00	---	---
Senegal	- 4,666.00	3,691	---	---	- 8,357.00
South Africa	---	1,786	1,786.00	---	---
Spain	- 71,046.00	28,746	28,746.00	71,046.00	---
United States	---	16,789	16,789.00	---	---
U.S.S.R.	---	6,629	6,629.00	---	---
TOTAL	- 91,225.82	147,011	125,163.00	80,361.29	- 32,549.53
	+ 163.00				

STATEMENT 5

Budget, Expenditures and Balance of the Special Skipjack Budget for Fiscal Year 1982 (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	10,000.00	8,175.52	+ 1,824.48
Improved Statistics (Port and Intensive Sampling)	10,000.00	0.00	+ 10,000.00
Biochemical Stock Identification (Genetics)	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
<i>Sub-total</i>	20,000.00	8,175.52	+ 11,824.48
B) ICCAT COORDINATION SERVICES			
Salaries	99,011.00	66,717.18	+ 32,293.82
Office Equipment and Materials	5,000.00	232.37	+ 4,767.63
Trip Expenses	8,000.00	6,216.96	+ 1,783.04
Operational Expenses and Contracts	<u>15,000.00</u>	<u>1,693.10</u>	<u>+ 13,306.90</u>
<i>Sub-total</i>	<u>127,011.00</u>	<u>74,859.61</u>	<u>+ 52,151.39</u>
TOTAL	147,011.00	83,035.13	+ 63,975.87

STATEMENT 6

Statement of Income and Disbursements —
 Regular Commission Budget and Special Skipjack Budget for 1982 (US\$)

<i>INCOME</i>			<i>DISBURSEMENTS</i>	
Cash and Bank at end of Fiscal Year 1981:			From 1982 Regular Budget	573,797.29
a) Regular Budget	264,578.35		From 1982 Special Skipjack Budget	83,035.13
b) Special Skipjack Budget.	<u>55,594.13</u>	320,172.48	Total Disbursements	656,832.42
Income for 1982:			Balance in Cash and Bank at end of Fiscal Year 1982:	
a) Regular Budget	661,441.92		a) Regular Budget.	550,953.45
b) Special Skipjack Budget.	<u>125,163.00</u>	786,604.92	b) Special Skipjack Budget. . .	<u>176,221.29</u>
Other contributions:*				727,174.74
a) Regular Budget	134,608.67			
b) Special Skipjack Budget.	<u>80,361.29</u>	214,969.96		
Bank Interest - 1982**		61,235.19		
Sale of ICCAT publications**		10.00		
Advance for bluefin sampling.		522.24		
Difference in currency exchange** . . .		<u>492.37</u>		
TOTAL		1,384,007.16	TOTAL	<u>1,384,007.16</u>

*Corresponding to previous years.

**To the Working Capital Fund of the Regular Budget.

STATEMENT 7

Breakdown of the Working Capital Funds (US\$)

1. REGULAR BUDGET

At the end of Fiscal Year 1981	431,683.42	
Bank Interest for 1982	61,235.19	
Sale of ICCAT publications	10.00	
Difference in currency exchange	492.37	
Positive Balance – Fiscal Year 1982	<u>176,202.71</u>	669,623.69
Contributions pending payment		<u>121,224.68</u>
ACTUAL TOTAL IN FUND AT END OF FISCAL YEAR 1982		548,399.01

2. SPECIAL SKIPJACK BUDGET

At the end of Fiscal Year 1981	144,794.95	
Positive Balance – Fiscal Year 1982	<u>63,975.87</u>	208,770.82
Contributions pending payment		<u>32,549.53</u>
ACTUAL TOTAL IN FUND AT END OF FISCAL YEAR 1982		176,221.29

STATEMENT 8

Balance Sheet — Regular and Special Skipjack Budgets — 1982 (US\$)

<i>ASSETS</i>			<i>LIABILITIES</i>		
Cash and Bank:			Working Capital Funds:		
a) Regular Budget	550,953.45		a) Regular Budget	669,623.69	
b) Special Skipjack Budget	<u>176,221.29</u>	727,174.74	b) Special Skipjack Budget	<u>208,770.82</u>	878,394.51
Pending Contributions:			Bluefin Tagging Fund		
a) Regular Budget	121,224.68				1,998.46
b) Special Skipjack Budget	<u>32,549.53</u>	153,774.21	Advance for bluefin sampling		
					522.24
			In favor of Cuba:		
			— Regular Budget		
					<u>33.74</u>
TOTAL		<u>880,948.95</u>	TOTAL		<u>880,948.95</u>

International Commission for the Conservation of Atlantic Tunas - Balance Sheet at Close of Fiscal Year 1982

<i>ASSETS</i>		<i>LIABILITIES</i>	
<i>Available:</i>		<i>Acquired holdings</i>	\$136,916.16
BANCO EXTERIOR DE ESPAÑA			
Time deposit account	\$600,181.48		
C/A 82-31279Q (US\$)	101,896.96	<i>Working Capital Fund:</i>	
C/A 30-17632A (ptas.)	3,142,944.03	Regular Budget	\$669,623.69
C/A 30-17329F (convert. ptas.)	3,205.69	Special Skipjack Budget	\$208,770.82
Cash on hand (ptas.)	<u>116,374.62</u>		
(at 130 ptas. per \$1)	3,262,524.34	<i>Bluefin Tagging Fund</i>	\$1,998.46
	<u>\$25,096.30</u>		
	\$727,174.74	<i>Advance for bluefin sampling</i>	\$522.24
<i>Receivables:</i>		<i>Income received in advance:</i>	
From Regular Budget:		CUBA	
BENIN	\$14,650.00	Regular Budget	\$33.74
BRAZIL	22,828.00		
GABON	5,609.41		
GHANA	16,515.27		
IVORY COAST	5,320.40		
MOROCCO	18,212.00		
SENEGAL	<u>38,089.50</u>		
	\$121,224.68		
From Special Skipjack Budget:			
BENIN	\$3,044.70		
BRAZIL	2,708.00		
GABON	860.00		
GHANA	4,800.00		
IVORY COAST	8,873.83		
MOROCCO	3,906.00		
SENEGAL	<u>8,357.00</u>		
	\$32,549.53		
<i>Equipment:</i>			
Acquired before 1982	\$116,002.74		
Acquired during 1982	<u>20,644.22</u>		
	\$136,646.96		
<i>Bonds</i>			
	<u>\$269.20</u>		
TOTAL ASSETS	\$1,017,865.11	TOTAL LIABILITIES	\$1,017,865.11
Furniture ceded by Undersecretariat of Merchant		Furniture ceded by Undersecretariat of Merchant	
Marine of Spain	\$3,365.38	Marine of Spain	\$3,365.38

SECRETARIAT REPORT ON STATISTICS AND COORDINATION OF RESEARCH

COM-SCRS/82/24 (Amended)

Statistical and research assignments to the Secretariat have been increasing constantly. Also, the amount of data to be processed has become larger partly due to the improvement of national statistics and partly due to the work resulting from the International Skipjack Year Program (ISYP), for which assistance from the skipjack staff could only partly compensate. There has been no other increase in staff. In addition, due to the request of the CRO in Dakar for assistance in ISYP computer work, the Secretariat was required to lend programming and analysis services for a period of six weeks, which in turn caused a delay in its own computer work. Therefore, some low-priority assignments were delayed.

I. Data collection and sampling

1. Collection of 1981 statistics through 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 did not 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 10.

The reporting of Task I nominal annual catch statistics, Task II catch and effort statistics and Task II biological data in 1982 was again considerably behind schedule. The delay in reporting for some major fisheries caused a problem even in issuing the Statistical Bulletin for 1981 Atlantic catches in September.

Port sampling and data processing efforts carried out during the Skipjack Program produced some positive results. Areas where improvements were significant are the following:

- a. FIS size data became available for 1978-1981.
- b. Spanish tropical fleet catch and effort data became available for 1979-1981 and size data for 1979 and 1980.
- c. Ghanaian (including foreign-flag fleets based at Tema) size data became available for 1979-1981.
- d. Sampling (size) started in Cape Verde, Brazil (BB) and the U.S.S.R.

Those fisheries with considerable catch but which are not yet well sampled are as follows (as of September, 1982):

- e. Portugal (size).
- f. Morocco (catch, catch and effort, size).
- g. Venezuela (catch, catch and effort, size).
- h. Cuba (catch and effort for BB, size for LL).
- i. U.S.S.R. (catch and effort).
- j. Brazil (size and catch and effort, not enough).

2. Port sampling by the Secretariat – Longline

The Secretariat's efforts to collect logbook records and size frequencies from longliners at Atlantic transshipping ports were continued during 1982. At the ports of Las Palmas, Tenerife, St. Maarten, Cumaná (Venezuela), Montevideo (Uruguay) and Cape Town, part-time coordinators were contracted by the Secretariat.

However, the quality and quantity of port sampling data have been declining since late 1981 and throughout 1982, particularly at St. Maarten and Montevideo where there were problems with the locally contracted samplers. A visit by the Secretariat staff to these ports is needed to alleviate this situation. The ICCAT biostatistician has been carrying out a comparative study between ICCAT port sampling and national statistics (see Section III-3). As other work has been more pressing, the visit has to be postponed until the aforementioned biostatistical evaluation has been completed.

3. Unconventional fleet statistics

Problems concerning the statistics from unconventional fleets can be classified into two major categories:

- i) Statistics of the non-ICCAT member countries which have started new tuna fisheries (e.g., Congo, Venezuela).
- ii) Statistics for fleets which fly flags of convenience (e.g., Panama, Netherlands Antilles, Cayman Islands, etc.).

The Secretariat has solved almost all the problems as far as the 1980 statistics are concerned. The sources of information for these fleets are as follows:

- a) Landing statistics (or estimates) of catches by those fleets at (foreign) tuna landing ports collected by national scientists at these ports.
- b) Landing statistics collected by ICCAT port samplers.
- c) Catch and landing estimates which were sent to the Secretariat by non-member governments.
- d) Information which the Secretariat obtained directly from industries (or fishermen) operating these boats.

We hope that the problems can be solved for 1981 statistics as well, and that the cooperation of the national scientists will continue.

II. Data processing (ICCAT data center)

1. Facilities

The INFONET system was contracted again in 1982 for ICCAT data management. The unit cost in pesetas rose again but the recent favorable dollar exchange rate absorbed some of this increase. As the work load has increased tremendously this year, it became apparent that one terminal is no longer sufficient for data entry and for transmitting data and programs, etc. The ICCAT Texas Instruments terminal is now seven years old and requires frequent repair. Thus, the Secretariat compared several alternative terminals and purchased the "Apple II" unit. It consists of:

- Apple II micro computer with 48k RAM
- B/W screen (Cathode ray tube)
- Printer
- Two diskette drives
- Numerical keyboard
- Software (Basic, Pascal, Fortran)

Use of this new terminal will accelerate data entry. Also, some savings of INFONET costs are expected as some simple programs can be run at the terminal. Some output of tables can be made at the headquarters, rather than entirely at INFONET.

2. Data processing progress

- a) Updating all data bases. There was substantially more work involved in updating the Task I data base in 1982, due to the numerous revisions to the historical data, etc.
- b) Data entry and processing of port sampling statistics.
- c) Updating of the historical data base and compilation of Historical Statistical Bulletin.
- d) Separation of Task I catch data into major areas, using Task II and biological data (including billfish).
- e) Processing of 1979 and 1980 data for the Working Group on Juvenile Tropical Tunas.
- f) Output of the Statistical Bulletin.
- g) Output of Task II data received recently (Data Record, Vols. 19 and 20).
- h) Preparation of species catch tables for the SCRS Meetings and consequently for the SCRS Report (both 1981 and 1982 Reports).
- i) Analytical processing for biostatistical work.

- j) Updating tagging file and output of yearly recovery summary.
- k) Processing of 1979 and 1980 Tema-based fleet size and catch and effort data.
- l) Processing bluefin tuna data for Miami meeting (February, 1982) with new east-west breakdown.
- m) Updating footnotes for sources or all TASKI records including Historical base.
- n) Creation and distribution of tapes, upon request by the member countries.
- o) Skipjack Program processing and output of bookkeeping information on sample collection and disposition.
- p) Tag reward accounting and billing for Skipjack Program.

3. Dissemination of information and publications

a) *Quick estimates:*

- April, 1982 — estimates of all of 1981
- October, 1982 — estimates of first half of 1982

b) *Statistical Bulletin*

- February, 1982 — final 1980 version - published (Vol. 11)
- September, 1982 — provisional version of 1981 - published (Vol. 12)

c) *Data Record*

Volume	When published	Data received in:
19	March, 1982	October, 1981 - February, 1982
20	October, 1982	March-September, 1982

d) *Collective Volume of Scientific Papers*

Volume	When published	Contents
XVII (1&2)	March, 1982	1981 SCRS Papers
XVII (3)	March, 1982	1981 SCRS Report A

e) *Historical Statistical Bulletin*

- Vol. 1 (1950-1959), published July, 1982.
- Vol. 2 (1960-1969), published July, 1982.

f) *Statistical Series*

- Vol. 11* — Port sampling summary.

(*The preliminary output was distributed among the scientists concerned in September, 1982. The final issue was delayed until receipt of a substantial amount of 1981 data from the Government of Bermuda on the fleet based in St. Maarten.)

III. Special assignments given to the Secretariat

1. Updating juvenile tropical tuna statistics

In early 1982 the Secretariat circulated a working plan and distribution of work among the national scientists. In principle, FISM, Spanish and Japanese longline data were processed by the respective national scientists, while all the data from the remainder of the fleets were processed by the Secretariat. The Secretariat combined and summarized these data. The results of this work are presented in SCRS/82/15.

2. Procedures adopted for collecting, reporting and estimating tuna statistics

The Secretariat circulated questionnaires to statistical offices and scientists of member and non-member countries. The questionnaires solicited detailed information as to how the data are collected, assembled, processed, substituted, estimated and reported. The summary of this survey is reported in SCRS/82/14. The only major fisheries for which no answers were received as of September 15 are the FIS fisheries.

3. Biostatistical work

The ICCAT Biostatistician visited Ghana and Ivory Coast in December, 1981. Major emphasis was put on his becoming familiar with the ORSTOM data collection and sampling system as applied at Abidjan, and the Ghanaian data collection and sampling system as applied at Tema. First-hand observations were made on landings of undersized yellowfin and bigeye tunas at both ports. A detailed report was circulated to key scientists and administrators in February, 1982.

Two specialized studies were carried out: a review of the problems concerning undersized yellowfin and bigeye (SCRS/82/28), and a review of the ICCAT port sampling program (SCRS/82/27).

4. Bluefin sampling

The Secretariat has been actively involved in obtaining samples of bluefin tuna from the eastern Atlantic for biochemical studies (see SCRS/82/29).

5. Training courses

According to the instructions given by the Commission, the Secretariat tried to identify the need and most efficient way of organizing localized training courses on statistics. Also the Secretariat looked into the possibility of obtaining financial support for the participants from various sources.

Portuguese scientists spent two weeks in September-October at the ICCAT headquarters to receive statistical training and to become familiar with the ICCAT data collection and management system. Future plans are presented in COM-SCRS/82/26.

In addition, whenever the Secretariat staff (Assistant Executive Secretary and Biostatistician) visited various places, they have always discussed statistical problems and made suggestions for improvements of national statistical systems.

6. Historical Statistical Bulletin

The data base was updated as of June, 1982. FAO statistics were reviewed once more. The Secretariat made many estimates by extrapolation and interpolation for major fisheries which are lacking data for some years. Minor fisheries where catches were believed to exist but were not reported were appropriately noted. Footnotes denoting the nature of the data sources were entered.

Two volumes covering 1950-1959 and 1960-1969 were issued and distributed in July.

7. Footnoting Regular Statistical Bulletin

According to the decision made at the last SCRS Meeting, the Secretariat updated all the footnotes regarding the nature of data sources for Statistical Bulletin, Vol. 12. This was very time-consuming; we hope that it proves useful.

8. Processing biological data from Tema-based fleet

The size data which were collected by Ghanaian scientists in 1979 and 1980 from the Tema-based international fleets were not processed, except for summaries by 10 cm intervals, by the Ghanaian national scientists. In order to update the juvenile tropical tuna data base, the Secretariat required detailed size data from this fleet. The Ghanaian scientists kindly agreed to let the Secretariat borrow the field records (measured by cm) for this purpose. The field data were then entered and processed by month, flag and 5 x 5 areas.

Similar data for 1981 were sent to Madrid under the ISYP program and processed.

IV. Tagging program

An international Atlantic tuna tagging program has been active again this year. The tagging lottery was held on May 7, 1982, 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.

As the ISYP is coming to an end, we expect that many tagging activities will decline. During the past few years, we have encountered some difficulties with our present tagging policy. A document discussing tagging policy was prepared (SCRS/82/16).

V. International Skipjack Year Program

1. Improvement of statistics

Port sampling — As a result of the Skipjack Program, efforts were made to improve catch/effort and size-frequency statistics for skipjack and associated species (particularly young bigeye and yellowfin).

Intensive sampling – Data from the “Intensive Sampling” activity of the Skipjack Program are currently being analyzed. Results from this analysis should help to improve the quality of effort data, and resolve some of the questions arising in the multi-species fishery for skipjack and juvenile bigeye and yellowfin. Results should soon be available to the Working Group on Small Tunas.

2. Coordination of research

Dakar working meeting – Although there was no intersessional meeting of the Sub-Committee on Skipjack this year, scientists from the “Centre de Recherches Océanographiques de Dakar-Thiaroye” (CRODT) convened a meeting in Dakar in June, 1982, to which they invited scientists from neighboring collaborating countries, the Skipjack Coordinator and Systems Analyst of the ICCAT Secretariat. This working meeting promoted a significant advance in the analysis of many of the results from the Skipjack Program. A number of computer programs developed during the meeting are available to other member countries through ICCAT.

Convener-Coordinator collaboration in Madrid – In July, the Convener of the Sub-Committee on Skipjack came to Madrid to discuss progress and development of the Program with the Skipjack Coordinator. An outline of the Skipjack Conference scheduled for June, 1983, was developed during the discussions, and has been circulated with a call for papers.

Information memoranda – Several information memoranda were circulated throughout the year to ISYP participants by the Coordinator. These included: a) a complete list of cruises conducted for the Program, with a summary of activities performed; b) a Tag Return Directory, which allowed laboratories in member countries to send recovered tags directly to the laboratory responsible for their release; and c) a catalog of samples and data acquired for the Program, their location, and state of analysis. This catalog formed the Progress Report for July, 1982, and should simplify coordination of analysis between scientists working with similar data.

CHAPTER II

Records of Meetings

PROCEEDINGS OF THE THIRD SPECIAL MEETING OF THE COMMISSION

Funchal, Madeira, Portugal
November 10-16, 1982

Table of Contents

Plenary Sessions of the Commission

- Annex 1 – Agenda
- Annex 2 – List of Participants
- Annex 3 – Opening Address by Secretary of Agriculture and Fisheries of Madeira
- Annex 4 – Opening Address by the Commission Chairman
- Annex 5 – Statement by the Head Delegate of Portugal
- Annex 6 – Report of the ICCAT Meeting of Legal Experts (Paris)
- Annex 7 – Summary Table on Regulatory Measures
- Annex 8 – Panel Reports
- Annex 9 – Report of the Standing Committee on Finance and Administration
(STACFAD)
- Annex 10 – Report of the Standing Committee on Research and Statistics (SCRS)

Opening Plenary Session – November 10, 1982

Item 1. OPENING OF THE MEETING

1.1 The Commission held its Third Special Meeting at the Hotel Madeira Palacio, Funchal, Madeira (Portugal), under the chairmanship of Dr. L. Koffi (Ivory Coast). The Chairman introduced Dr. Rui Fontes, Secretary of Agriculture and Fisheries of the Regional Government of Madeira.

1.2 Dr. Fontes welcomed all the participants at the meeting. He expressed the concern of the people of Madeira for marine resources and their efforts to conserve these resources. He noted the very solid developments and progress made by ICCAT,

particularly in the technical and biological fields, and commended the Commission's work. Due to its geographical location, Madeira has very close association with tunas, and the local government has a strong interest in tuna research and the development of fisheries. Important efforts have been made to improve research activities. Dr. Fontes thanked ICCAT for its efforts in training Portuguese scientists. Dr. Fontes noted ICCAT's efficient work and wished the organization every success. (Dr. Fontes' opening address is attached as Annex 3.)

1.3 The Chairman, Dr. Koffi, expressed his hearty appreciation to the Government of Portugal, the Regional Secretary, and to all the authorities as well as to the people of Madeira.

1.4 After a short recess, the Chairman formally opened the meeting. He welcomed all the delegates and observers to the Commission Meeting. He noted that the success of the Commission depends mainly upon proper scientific advice given by its scientists and the SCRS. Conservation of resources is a complicated issue, hence the SCRS has very complex problems. He noted that fewer recommendations were made in the SCRS Report regarding statistics this year, which shows the considerable progress made in this field. ICCAT's International Skipjack Year Program was begun four years ago and is now coming to a successful conclusion. The Chairman commended the efforts of all scientists, referring especially to the achievements made by Cape Verde.

1.5 The Chairman expressed concern for the increasing fishing effort in the tropical tuna fisheries which has not produced a significant catch increase. He noted a conflict of opinions on bluefin regulations and stock status.

1.6 He believes that the Commission will continue to work effectively in the future. He especially commended the efforts and excellent chairmanship demonstrated by the SCRS Chairman, Mr. J. S. Beckett (Canada). (Dr. Koffi's opening address is attached as Annex 4.)

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

2.1 The Executive Secretary reported on the procedures followed to organize this Commission meeting in Funchal, after the formal invitation was received by ICCAT. He noted that the expenses of the meeting in Funchal would not exceed the amount allocated in the Commission's Budget.

2.2 The Commission reviewed the Tentative Agenda previously circulated. The Commission adopted the Agenda (attached as Annex 1) without changes.

2.3 It was decided that Agenda Items 4-15, 27 and 29 should be referred to the Standing Committee on Finance and Administration (STACFAD).

Item 3. ADMISSION OF OBSERVERS

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

3.2 The observer from the European Economic Community asked to be seated next to the French delegation, as France is the only EEC member in ICCAT, and the Commission agreed.

Second Plenary Session -- November 11, 1982

Item 16. REPORT OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

16.1 Mr. J. S. Beckett (Canada), Chairman of the SCRS, presented the Report of the Standing Committee on Research and Statistics (SCRS) and summarized the scientific findings.

16.2 Following general explanations on the methods used by the scientists in population analyses, Mr. Beckett presented results of scientific research on stock structure, status of stocks and effects of current regulations, where applicable, for each major species.

16.3 The SCRS Chairman then asked the Commission to pay special attention to the recommendations made by the SCRS regarding statistics, research and management, which appear throughout the text and in the appendices of the Report. These recommendations are summarized in Appendix 7 to the SCRS Report.

16.4 He also commented on the successful termination of the International Skipjack Year Program, and the plan to hold the Skipjack Conference in Tenerife, Canary Islands (Spain) in June, 1983 and noted that the SCRS Officers may meet at the time of the Skipjack Conference. He commented that the Working Group on Juvenile Tropical Tunas had asked to postpone the deadline for reporting its final results from 1983 to 1984. If this is acceptable, the Group will meet only briefly in 1983 and proposed to hold a workshop in 1984.

16.5 Mr. Beckett reported that SCRS meeting organization was discussed by the Committee. He said that the matter would be studied further and a report would be presented at the 1983 meeting. He reported that the Symposium held on the "Criteria to define stock units" was very successful and that next year a half or full day of the SCRS session would be devoted to discussions of topics arising from the Skipjack Conference, in lieu of a symposium.

16.6 The Commission congratulated the SCRS Chairman and scientists for successfully carrying out scientific studies and for the remarkable progress made. The Commission adopted the SCRS Report (Annex 10), while reserving the right to examine further the SCRS findings, probably during the Panel meetings.

Third Plenary Session -- November 12 and 13, 1982

The delegation from the U.S.S.R. arrived for the Third Plenary Session and was welcomed. At that time, there was a minute of silence in memory of Mr. L. Brezhnev, President of the Soviet Union, who had just died. The Chairman expressed condolences on behalf of the Commission.

Item 20. REPORT OF THE ICCAT MEETING OF LEGAL EXPERTS (PARIS)

20.1 Mr. M. Hunter (Canada), who served as Chairman of the ICCAT Meeting of Legal Experts, reported the results of that meeting (COM/82/16), which was held in Paris, May 24-26, 1982. The Report, with some slight modifications, is attached as Annex 6. The Group studied the linguistic discrepancies in the three-language versions of the ICCAT Convention. The Group proposed some linguistic amendments to the Convention text (attached as Appendix 3 to the Legal Experts' Report) and recommended that the Commission request the Director General of FAO, as depositary of the Convention: (i) to circulate to the signatory and Contracting Parties the proposed amendments to the original version of the Convention found in the FAO Archives, designed to incorporate in that text the corrections that had already been made in the certified copies found in the FAO Published Versions, and the further proposed amendments designed to harmonize the text of the Convention in the three languages in which an authoritative version of the Convention was adopted in Rio de Janeiro and (ii) if, in accordance with prevailing practice, no signatory or Contracting Party communicates to him any objection to the proposed amendments, to draw up and circulate a *procès-verbal* of the corrections to the original version of the Convention and rectification of the certified true copies.

20.2 The Commission expressed its gratitude to the group of Legal Experts and to its Chairman. The Commission adopted the Group's recommendations regarding the linguistic discrepancies in the text of the Convention. It was agreed to request formally the Director General of the Food and Agriculture Organization of the United Nations to revise the articles of the Convention, as suggested by the Group of Legal Experts, in the three languages, aligning their contents.

20.3 Mr. Hunter, the Chairman of the Legal Experts Meeting, further reported that at the meeting in Paris, a text of an amendment to the Convention to facilitate the accession of the EEC was developed (Article XIV-bis), and the Group recommended that the Commission initiate the procedure of amendment to the Convention which is necessary to permit the entry of the EEC to the Convention and that such procedure be in accordance with the provisions of Article XIII. Mr. Hunter reported that the FAO legal officer later (June, 1982) suggested further editorial changes. The new texts are found in Appendix 4.

20.4 The proposed amendment of Article XIV-bis was thoroughly discussed. The discussions centered in particular on two aspects, i.e. whether it excluded any future possibility of the adherence of other economic bodies similar to the EEC, and whether or not paragraph 4 is appropriate. There was some discussion on the competence the EEC has on its Member States.

20.5 After lengthy discussion, it was noted that the recommendations concerning the proposed amendments to the Convention made at the Paris meeting did not meet with unanimous agreement among the participants. Many delegations felt it was necessary to consult further with their governments after the discussions at this meeting. The Commission found that it was not in a position to decide at this time on the recommendations made by the group of Experts in Paris. Therefore, the Commission agreed

to postpone the decision until its next meeting. In the meantime, all the delegates were asked to review the recommendations with their respective governments as well as to clarify any points on which doubt remains, through their diplomatic channels, so that a decision can be made at the next meeting of the Commission.

Fourth Plenary Session — November 15, 1982

Item 19. RECORD OF THE MEETING ON THE WESTERN ATLANTIC BLUEFIN MANAGEMENT MEASURES

19.1 On behalf of Dr. F. E. Carlton, who chaired the meeting, Mr. C. J. Blondin (U.S.A.) presented the Record of the Meeting on the Western Atlantic Bluefin Management Measures, held in Miami, Florida, February 8-12, 1982 (COM-SCRS/82/ 18). The scientific monitoring level was the first matter discussed. The level provisionally set at the 1981 meeting was reviewed in light of the newest information available. A revised amount of 1,160 MT was agreed upon as the necessary catch level for scientific monitoring. Countries which have been engaged in substantial bluefin fishing in the western Atlantic have confined their catches to the levels agreed upon: Canada -250 MT, Japan - 305 MT and the U.S.A. - 605 MT. Various factors were taken into account in determining these proportions such as effective monitoring needs, historical catches and economic factors. Special consideration was given to the Cuban and Brazilian fisheries, even though Cuba did not participate in the Miami meeting.

19.2 Cuba, recognizing the effort made in reaching an agreement on bluefin management in the western Atlantic, nevertheless considered that the results of the Miami meeting went beyond the recommendation of the 1981 Commission Meeting. The mandate given to the countries which met in Miami did not include a division of the "quota" (although quota is probably not the right word to use). If any distribution of quotas should prove necessary, it should be done at a formal meeting of the Commission, as provided in the Convention.

19.3 The U.S. delegate stated that from a practical point of view, a country cannot limit its domestic catch unless an international agreement is made on the level of fishing permissible for each country involved. For example, earlier regulatory measures recommended by ICCAT were to limit fishing mortality to recent levels. Although the interpretation of the recommendation varied between countries, this regulation did have some results in restricting catches.

19.4 The Report of the Meeting on the Western Atlantic Bluefin Management Measures was adopted by the Commission.

Item 22. STATUS OF THE REGULATIONS ADOPTED BY THE COMMISSION REGARDING YELLOWFIN, BIGEYE AND BLUEFIN

22.1 The Executive Secretary presented the document dealing with the regulations which the Commission has adopted (COM/82/14). The Commission reviewed

the table attached to this document concerning the status of the measures shown for each country. The table was updated and is attached herewith as Annex 7.

22.2 Portugal reaffirmed its objection to the regulation limiting fishing mortality of bluefin tuna.

Item 24. STATUS OF THE PORT INSPECTION SCHEME

24.1 The Executive Secretary presented document COM/82/15. He reported that Senegal had formally notified the Secretariat of its acceptance.

24.2 The delegate from Ivory Coast stated that his government has recently sent the Secretariat notice of its formal acceptance of the Scheme. With the addition of these two countries, the Commission noted that ten countries (Brazil, Cuba, France, Gabon, Ivory Coast, Portugal, Senegal, South Africa, Spain and the U.S.A.) had accepted the Scheme.

24.3 There was considerable discussion as to what constitutes a simple majority of the nineteen ICCAT Contracting Parties. The Commission decided on the interpretation that ten countries constitute a simple majority of 19. At the same time, the Commission recognized that three-quarters would be 15 countries, and two-thirds would be 13 countries.

24.4 The Commission recognized that the Scheme will enter into force formally between the parties who have accepted it, since a simple majority (10 countries) had accepted it.

24.5 The delegates of France and Spain recalled that the implementation of the "ICCAT Scheme of Joint International Inspection" for high seas, as contained in Appendix VII to the Basic Texts, had been left in abeyance and is therefore not yet in force.

Item 25. CREATION OF AN INFRACTIONS COMMITTEE

25.1 Document COM/82/15 was reviewed concerning the status of a proposal made at the First Special Meeting of the Commission (Madrid, November, 1978) to create an Infractions Committee. The proposal has been entertained at every Commission Meeting since, but a decision has been postponed.

25.2 The U.S. delegate noted a very high degree of cooperation among the member countries, while he also noted that there have been some problems concerning the implementation of minimum size regulations recommended for yellowfin and bigeye tunas. Since the Port Inspection Scheme is going into effect, he suggested that now would be the right time to establish an Infractions Committee.

25.3 This proposal was supported by Spain, Portugal, France and Cuba. There was a consensus that the Infractions Committee should be established now.

25.4 The U.S. delegate proposed an open committee in which any member country could take part.

25.5 The Commission instructed the Executive Secretary to inform the Contracting Parties of the formation of this Committee and solicit their interest in participating. The Committee will have an agenda and some material to consider at the time of the next Commission meeting.

Item 26. INTERNATIONAL SKIPJACK YEAR PROGRAM

26.1 The Convener of the Sub-Committee on Skipjack, Dr. G. T. Sakagawa (U.S.A.) noted that the Sub-Committee had met on November 6; its report is Appendix 5 of the SCRS Report. Excellent progress has been made by all participants; progress reports were submitted by Cape Verde, Cuba, France, Ghana, Ivory Coast, Japan, Korea, Portugal, Senegal, Spain, U.S.A. and the U.S.S.R.

26.2 Plans for the scientific conference which is to take place in Tenerife, Spain, in June, 1983, are proceeding well. The Convener drew attention to the revisions to the Special Skipjack Budget which have been proposed in support of this conference (COM/82/27).

Final Plenary Session -- November 16, 1982

Item 17. REPORT OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION (STACFAD)

17.1 Mr. C. J. Blondin (U.S.A.), Chairman of the Standing Committee on Finance and Administration, presented the Report of his Committee. The Commission reviewed the Report and thanked Mr. Blondin for carrying out so efficiently the work referred to his Committee.

17.2 The Commission adopted the Report and all the recommendations made by the Committee concerning the following Agenda items:

- Item 4. Panel membership*
- Item 5. Administrative Report*
- Item 6. Relations with other organizations*
- Item 7. Commission publications*
- Item 8. Matters concerning the Secretariat staff (Pension plan, Staff classifications, and Staff Rules)*
- Item 9. Auditor's Report -- 1981*
- Item 10. Financial status of the Regular Budget -- 1982*
- Item 11. Working Capital Fund -- Regular Budget*
- Item 12. Review of the second half of the biennial budget - 1983*
- Item 13. Financial status of the Skipjack Program -- 1982*

Item 14. Working Capital Fund – Skipjack Budget

Item 15. Review of the Skipjack Budget and Contributions – 1983

Item 27. Training program for developing countries

Item 29. Date and place of the next Regular Meeting of the Commission

17.3 While adopting the Report, in particular Agenda Item 29, the delegate of Brazil declared that if the Commission holds a Special Meeting in 1984 his country will host that meeting, probably in Rio de Janeiro. The Commission welcomed this invitation. The STACFAD Report is attached to the Proceedings as Annex 9.

Item 18. REPORTS OF PANELS 1-4

18.1 The Reports of Panels 1 through 4 were presented by their respective Chairmen. All the reports were reviewed and adopted by the Commission together with all the recommendations contained therein. The recommendations for management measures were further referred to Agenda Item 23. The Panel Reports are attached as Annex 8.

Item 21. REPORTS OF SUBSIDIARY BODIES APPOINTED BY THE COMMISSION FOR THE MEETING

21.1 No subsidiary bodies were appointed.

Item 23. OTHER POSSIBLE REGULATORY MEASURES TO BE CONSIDERED

23.1 The Commission noted that new regulatory measures on the bluefin tuna catch were recommended by Panel 2 (Appendix 4 to Annex 8). The Commission adopted these recommendations.

23.2 The United States expressed continued concern over the status of the stocks of bluefin tuna in the western Atlantic. It noted that, in its view, the actions taken by the Commission at this year's meeting may not be sufficient in the long run to ensure stock recovery. The U.S. emphasized that the Commission should be prepared to take additional measures at next year's meeting, should they be necessary, following a comprehensive review of the scientific data.

23.3 The Commission also noted that Panel 4 recommended that the present big-eye minimum size limit, which expires at the end of 1983, be extended for one more year, i.e., until the end of 1984, to allow more time for the results of bigeye research developed within the framework of the Skipjack Program to become available. The Commission adopted this recommendation.

Item 28. OTHER ACTIVITIES IN RESEARCH AND STATISTICS

28.1 Mr. J. S. Beckett, SCRS Chairman, informed the Commission that various recommendations on research and statistical activities appear in the SCRS Report (Annex 10), some of which have been reviewed and presented by the Panels. He noted that several intersessional meetings are proposed for 1983.

28.2 The Commission approved all the SCRS recommendations.

Item 30. OTHER ITEMS

30.1 The delegate of Portugal referred to the conclusions of the Third U.N. Conference on the Law of the Sea and noted that the present Convention, on which ICCAT was established, had been drafted well before the recent changes in the Law of the Sea took place. He stated that the Government of Portugal would be willing to host a meeting, should redrafting of the ICCAT Convention be necessary. The statement of the delegate of Portugal is attached as Annex 5.

Item 31. ADOPTION OF REPORT

31.1 The Commission adopted the Proceedings of the Opening, Second, Third and Fourth Plenary Sessions, together with all annexes and appendices. It decided that the Proceedings of the Final Plenary Session would be approved by mail as soon as possible after the meeting.

Item 32. ADJOURNMENT

32.1 The Chairman thanked the Portuguese Government, the Regional Government of Madeira and the Regional Secretary of Agriculture and Fisheries for inviting the Commission to hold its 1982 meeting in Funchal and for the excellent support throughout the meeting. A special note of thanks was extended to the management of the Hotel Madeira Palacio for its cooperation and assistance to the Commission.

32.2 Dr. Koffi congratulated the Chairmen of STACFAD, SCRS and the Panels for their excellent work. He also expressed his appreciation to the Executive Secretary and his staff and the interpreters for their efficient work during this meeting. Dr. Koffi was also grateful to all the delegates for their spirit of cooperation.

32.2 The delegate of France congratulated Dr. Koffi for his excellent chairmanship of the 1982 ICCAT meeting.

32.4 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
8. Matters concerning the Secretariat staff
 - 8.1 Pension plan
 - 8.2 Staff classifications
 - 8.3 Staff Rules

Finance

a) Regular Commission Budget

9. Auditor's Report -- 1981
10. Financial status of Regular Budget -- 1982
11. Working Capital Fund -- Regular Budget
12. Review of the second half of the biennial budget -- 1983

b) Special Skipjack Budget

13. Financial status of the Skipjack Program -- 1982
14. Working Capital Fund -- Skipjack Budget
15. Review of the Skipjack Budget and Contributions -- 1983

Reports to the Commission

16. Report of the Standing Committee on Research and Statistics (SCRS)
17. Report of the Standing Committee on Finance and Administration (STACFAD)
18. Reports of Panels 1-4
19. Record of the Meeting on the Western Atlantic Bluefin Management Measures (Miami)
20. Report of the ICCAT Meeting of Legal Experts (Paris)
21. Reports of subsidiary bodies appointed by the Commission for the meeting

Measures for the conservation of stocks

22. Status of the regulations adopted by the Commission regarding:
 - 22.1 Yellowfin
 - 22.2 Bigeye
 - 22.3 Bluefin
23. Other possible regulatory measures to be considered
24. Status of the Port Inspection Scheme
25. Creation of an Infractions Committee

Research

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

Other matters

29. Date and place of the next Regular Meeting of the Commission
30. Other items
31. Adoption of Report

Adjournment

32. Adjournment

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**OPENING ADDRESS BY DR. R. FONTES,
SECRETARY OF AGRICULTURE AND FISHERIES
OF THE REGIONAL GOVERNMENT OF MADEIRA**

Esteemed Chairman of the International Commission for the Conservation of Atlantic Tunas, President of the Regional Assembly, Representative of the Secretary of State for Fisheries, Regional Secretary of Agriculture and Fisheries of the Regional Autonomous Government of Azores, invited guests, delegates and observers:

The joy with which we greet all of you shows the interest and pleasure the Regional Government and the Madeirans have in hosting this important international meeting in the autonomous region of Madeira. Holding this Third Special Meeting of ICCAT represents an outstanding achievement on the road to autonomy which we began a few years ago. It also affirms the national solidarity that prevails between the Portuguese from the continent and those of the islands.

Portugal, a country of sailors and fishermen who have always been enchanted by the sea, is proud to welcome you to this island territory, now autonomous, that was a point of departure for the discovery of many lands on different continents.

We believe that because of this our people have a better understanding and respect for other civilizations due to the sincerity of the human and political relations they practiced in the past and continue to practice.

But it was the sea, with its challenge and grandeur, that shaped the soul of the Portuguese. It made him an individual and bestowed him with definite characteristics which would later be transferred to the way of life for the island people.

Meanwhile, many years were to pass before these characteristics were recognized as part of the islanders' own temperament. Today, with the arrival of democracy, a new basis for relations which strictly respects these characteristics has been established and provides for an improved, more adequate economic and social development of the island population.

On the basis of these new relations, the region was granted the exercise of its own executive power over all of its territory, including the pertinent 200-mile Exclusive Economic Zone. In addition, the region was given the right to participate in all international negotiations and agreements that affect it. The competences of the region include the administration and management of living resources of its EEZ without prejudice to the competences that are constitutionally reserved for the Portuguese State.

Portugal is one of the countries that founded ICCAT at the Conference of Plenipotenciaries which took place in May, 1966, in Rio de Janeiro, Brazil. Since that time, the Portuguese Government has attentively followed and actively collaborated in the development of this international organization. It is important to recall that this Commission, which began its activities in 1969 with the adhesion of seven countries, now has 19 member countries, indicative of the prestige attained among those countries interested in tuna fishing.

The rapid development of the Commission is due, without a doubt, to the credibility that it has gained throughout the years; the efforts of the scientists of the Standing Committee on Research and Statistics should be emphasized. The SCRS is an important working team to which I here publicly pay homage. If we consider that some countries have difficulties and a great lack of personnel trained in statistics, the establishment of regulations for the different tuna species is an important achievement, resulting from the compilation of statistical data which is fundamental for resource evaluation. Nevertheless, we believe that ICCAT can be of great service to certain countries and this will in turn immediately benefit the organization and, logically, tuna species. I refer to the need to continue activities to train specialists and technicians in statistics. I would like to take a moment to thank ICCAT for the statistical and resource evaluation course that was held for four Portuguese scientists--three of whom are from Madeira. These scientists greatly benefitted from this course.

Because of its geographic location, Madeira lies within the important migratory routes of tunas and, due to the favorable conditions found here, tunas make our waters part of their normal route. The Regional Government is conscious of this circumstance and thus supports the development of fisheries. It is necessary to advance beyond the current artisanal phase of our fisheries in order to obtain better yields from the available resources and to obtain positive results from the possibilities that are open to us.

Thus, the Regional Government resolved to consider the fishing of tunas and tuna-like species a priority within the chapter on foreign investment. A regional decree entitled the "Modernization of the fishing fleet," was proposed and its statute is presently being prepared. Included in the spirit of this legislation are various means of technical and financial support for scientists. Regarding investments of the public sector and because many of the problems are land based, we are promoting the creation of infrastructures that provide fishermen with greater assurance at sea and allow the Government to carry out more adequate policies based on statistical data from better trained scientists. During 1980-84, total investments will reach nearly 750,000,000 escudos and include the construction of cold storage facilities, new centers for receiving fish, improvements to small ports, radio support for the fishing fleet, and the creation of a research laboratory.

I would like to emphasize the Regional Government's interest in research. We have the earnest desire, in spite of numerous technical difficulties, to provide this department with adequate personnel and material, to seek profitable exploration strategies, correct stock evaluations and other means which lead to a harmonious and rational development of the sector. There is an ever-growing need for adequate resource management as fishing technology increases and facilitates catch studies.

It is necessary to take from the EEZ the riches contained there, within acceptable limits and for the benefit of the development of the stocks. The sea must provide these riches and should be an important production source. We do not want to harm the insular population, either by neglecting the fisheries or by fishing without any control.

The islands intend to "work" the sea instead of polluting or abandoning it. Therefore, we must take concrete steps to preserve the ocean, which according to recent studies, contains a third of the Earth's oxygen and is the most important source of protein.

Today, its defense is as important a crusade as was, in its time, the sovereignty of nations or the fight against slavery. The vast and generous sea must be included within

OPENING ADDRESS

the defense of human rights.

Before ending, I would like to emphasize the Secretariat's efficiency and spirit of organization which, so efficiently directed by the Executive Secretary, Dr. Olegario Rodríguez-Martín, assures the smooth functioning of the work of ICCAT.

I would like, once again, to thank all of you for accepting our invitation to hold this meeting in Madeira. I sincerely hope you have a pleasant stay, that you enjoy our excellent climate and the warm hospitality of our people. We hope that you achieve fruitful results from this meeting to enrich and continue ICCAT's success.

OPENING ADDRESS BY DR. L. KOFFI, COMMISSION CHAIRMAN

Distinguished delegates, ladies and gentlemen:

Let me first of all thank each of you again for having reelected me Chairman of the International Commission for the Conservation of Atlantic Tunas for the 1982-83 biennial period. This demonstration of your confidence is not only a source of pride for me but also an honor for my country, Ivory Coast, in which tuna fishing is one of the most important bases of our national fishery policy.

After a twelve-month separation, we meet once more. For me, it is always a renewed joy and pleasure to wish you a cordial welcome as well as a pleasant stay on the island of Madeira. I would also like to express our appreciation to the Government of Portugal for hosting the Third Special Meeting of our Commission. I am convinced that this lovely city of Funchal is the ideal setting for reflexion, and for thorough, frank and sincere discussions in a cordial atmosphere. This setting will help to reinforce our cooperation and serve as an example to other international organizations.

Before going on, I am particularly pleased to greet the observers from other countries and international organizations represented here, in particular FAO. The presence of these observers at our meeting shows the relationship maintained between our organizations. Therefore, on behalf of all of you, I would like to thank them sincerely and assure them that our Commission will see to the further development of loyal and fruitful collaboration with the organizations they represent.

This is the time to pay homage to the work of the Executive Secretary, Dr. Olegario Rodríguez-Martín, and his staff. It is comforting to note that in the daily execution of his duties, the Executive Secretary acts with an objectivity, devotion and efficiency worthy of respect.

No one can deny the past successes of ICCAT. Its reputation and its future are essentially based on the work carried out by the Standing Committee on Research and Statistics. The complete separation of the scientific responsibilities of the SCRS and the economic-political responsibilities of the Commission is a formula which has proven its efficiency. This separation is indispensable; the purely scientific objectivity of the SCRS's advice is the best guarantee of the quality of its recommendations. I urge, therefore, all SCRS scientists to conserve a completely scientific objectivity in order to provide us always with the best scientific advice possible.

The SCRS is responsible for drawing the Commission's attention to the possible dangers that could threaten the Atlantic tuna stocks. We must know these dangers to the stocks beforehand without waiting until these fears are confirmed. Likewise, our Commission fervently wishes to take only well-advised management measures, without imposing unnecessary restraining measures on the fisheries of our member countries.

The formulation of good scientific advice by the SCRS and putting into effect new regulations necessary for the conservation of tuna resources is a complex and delicate process. In closely reviewing the SCRS documents I noted a number of outstanding

points that would be interesting to analyze further. First of all, I was surprised at the notable decrease in recommendations concerning statistical matters. In fact, I noted that for tropical tunas important past recommendations regarding the major fisheries have been successfully carried out. We can be very pleased with the marked progress which has permitted the SCRS to carry out ever more detailed and precise analyses.

I further noted, and we will return to this subject during our discussions, the considerable research achievements of the International Skipjack Year Program. The Skipjack Year (1981) was appropriately named since a record of 140,000 MT of skipjack were caught during this year. This Program, begun five years ago, will not be definitely concluded until the publication of the research conclusions reached at the Skipjack Conference scheduled by the SCRS for June, 1983, in Tenerife, Canary Islands. However, the documents presented to the SCRS up to now have already shown that this Program has been very successful, both as regards the research stage as well as ICCAT Coordination and analysis of the results. I am sure that in the near future scientists will have the answers to questions that gave rise to the origin of this Program. Among the results of the Program, I am pleased by the remarkable scientific achievements of the young researchers from Cape Verde, a country which still has only modest means for investigation. These scientists have just tagged 4,500 skipjack in a two-week tagging cruise. This success symbolizes for me the work accomplished by the ICCAT member countries, especially by developing countries, during the Skipjack Program.

Furthermore, the outstanding results obtained during this Program will allow for the development, from now until November, 1984, of management measures to protect juvenile tropical tunas, especially bigeye and yellowfin. In this way, the Skipjack Program will have attained its double objective.

Despite the marked success for which the Commission should be very pleased, I must say objectively that there are still many problems contained in the conclusions reached by the SCRS that worry me. I will discuss two, as they seem to me to be good examples.

First of all, we have the case of the yellowfin stocks. Even though catches in the last few years have remained relatively stable, I was surprised by the disturbing decrease in yield resulting from the constant increase in fishing effort. This continuing decrease in yield does not seem to disturb the SCRS scientists very much. If I have understood correctly, the production model with a parameter of $m = 0$, adjusted to the data, forecasts that the maximum equilibrium catch will only be reached with an infinite number of vessels, all of which would have an almost nonexistent yield. It is superfluous to say to what extent, regardless of whether or not the stock is in danger, tunaboat owners, especially those from developing countries, are gravely concerned about the economic disaster they would face due to the excessive decrease in yield, an effect brought about by pursuing such maximum equilibrium catch.

Finally, our Commission should pay very close attention to the complex status of the bluefin tuna stock in the western Atlantic. Severe measures were taken last year on this stock. The analyses presented this year question the decisions we made. I was very surprised by the complexity of the analyses carried out on this species, and at the same time amazed at the divergent conclusions reached using similar methods. This problem is of greatest importance, not because of the volume of the catches in question, but because

our decisions on this species involve both the scientific credibility of the SCRS as well as the seriousness of our Commission.

We are conscious of our common interest in the conservation of tuna resources and we must spare no efforts in imposing the necessary sacrifices. It is convenient, therefore, to work together, in accordance with the expressed desire of our respective countries, to consolidate our cooperation and reaffirm our determination to make every effort to attain the objectives we have set for ourselves, and to respect and scrupulously apply the agreements made.

With a goodwill that serves to encourage us, a spirit of dialogue, and a cordial atmosphere that always characterizes our meetings, I am sure our work will be a success. I am convinced in advance that the positive results will institute fair, frank, loyal and mutually beneficial cooperation between our countries.

The relations between the members of the Commission are excellent and we should be very pleased. These relations reflect the esteem that the scientists have for one another which in turn leads to efficient and mutually advantageous collaboration.

With this perspective, I hope that the session that is beginning now is crowned with success, thanks to your persistent efforts, since our schedule, as you will note, is quite full.

This is the moment to congratulate once more Mr. Beckett, of Canada, and the Standing Committee on Research and Statistics over which he presides, for the very high quality scientific work they have presented to us in a manner that facilitates our understanding.

By repeating my sincere wishes for a pleasant and fruitful stay in Funchal, I officially open the Third Special Meeting of the Commission for the Conservation of Atlantic Tunas.

STATEMENT BY THE HEAD DELEGATE OF PORTUGAL

As the Third Special Meeting of the Commission draws to a close, I would like, Mr. Chairman, to make two brief statements in the name of the Central Government of Portugal which I represent.

First of all, I would like to express my Government's appreciation to the Commission for having accepted its invitation to hold this meeting on Portuguese territory and particularly to thank the Contracting Parties once again for this meeting--Spain and so many others--for their kind words about Portuguese hospitality. Through the collaboration and interest of the Regional Government of Madeira, we have tried to make this meeting the best we could, within economic limits. To all of you without exception, "many thanks" from my Government and the Regional Government of Madeira.

Secondly, I would like to refer, naturally, to a recent event which established new juridic legislation over the seas. This legislation, at least from the point of view of my country, will have an enormous impact on the structure and financing of this international commission, whose main purpose, as you know, is to protect an important segment of the so-called "highly migratory species", particularly Atlantic tunas.

I am referring to the United Nations Convention on the Law of the Sea, recently approved at the Third United Nations Conference on the Law of the Sea, which my country intends to sign in December and ratify, as was declared by the Prime Minister of Portugal at the U.N. General Assembly.

Mr. Chairman, the provisions of the Law of the Sea Conference, specific to the conservation and management of fishery resources, are contained in Part V (which refers to the Exclusive Economic Zone), and Part VII (referring to "high seas"). These provisions received an affirmative vote of 130 countries and these countries adopted the Convention on April 30, 1982. Since the Proceedings of the Meeting in which this multilateral Convention was adopted do not show any objection to the referred juridic fishing regime, my country concludes that that procedure represents the approval of all the international communities.

My Government believes that it should be pointed out that the aforementioned new juridic fishing regime is not a mere codification of the rules of international law, or of the generally practiced law which existed at the time Portugal adhered to ICCAT (1966), but rather it is a direct result of the progressive development of international law. On the other hand, this juridic regime is already in effect in the majority of the coastal states.

In conclusion, Portugal is, consequently, of the opinion that it is necessary to re-define ICCAT, aligning the Convention to the new juridic order of the seas, adopted unanimously for all the marine extensions both inside and outside the Exclusive Economic Zone.

In analyzing this juridic regime, my country is certain that Article 64 is the one that specifically applies to the Atlantic tunas. In this context, my country interprets the article as follows:

"1. That the coastal states and other states whose nationals fish tunas in the area cooperate, either directly or through ICCAT as intermediary, to assure the conservation and optimum utilization of the aforementioned species in the entire area, both within and outside the Exclusive Economic Zones.

"2. The aforementioned provisions will be applied jointly with the other provisions contained in Part V (relative to the Exclusive Economic Zone)."

On the other hand, Article 56 of Part V of the Convention (EEZ) confers in its sub-paragraph a), paragraph 1, to the coastal state "rights of sovereignty for purposes of exploitation, conservation and administration of both living and non-living natural resources of the ocean's bed and subsoil and supra-adjacent waters", that is, the rights over all the fishery species whatever their characteristics (biological, sedentary, migratory, etc.). Article 64 of the Convention, cited earlier, as concerns that part which is applicable to our ICCAT Convention, stipulates that the provisions of a juridic nature contained in Articles 61 and 62 of Part V of the Convention of the United Nations on the Law of the Sea relative to the conservation and utilization of the established living marine resources are all applicable to tunas.

With reference to this topic, it is certain, however, that within the framework of this Law of the Sea Convention, in terms of Atlantic tunas, the coastal states of this ocean have, therefore, the obligation to cooperate with other states which fish in this region, either directly or through ICCAT (or by another Commission which could substitute it) in order to assure the conservation and optimum utilization of all those marine species in the total geographic area where it applies.

Mr. Chairman, it is evident that the underlying philosophy in the actual basic text of our ICCAT Convention differs substantially from the new concepts of exploration, exploitation, conservation and management of the living marine resources adopted by the majority, if not all, of the present members of the international community, which we have referred to and interpreted. This being so, and in the opinion of my country, we have to redefine the current text of our Convention, which could be done at a diplomatic conference, called for this purpose. If most of the Contracting Parties are in agreement with this opinion, my country would be glad to host this diplomatic conference.

Finally, Mr. Chairman, I would like to request that my statement be reported in detail in the Proceedings of this meeting, and in the interest of my country ask that this item be included in the Agenda of the next meeting. Thank you, Mr. Chairman.

ICCAT MEETING OF LEGAL EXPERTS

(Paris, May 24-26, 1982)

In accordance with the recommendation made at the Seventh Regular Meeting of the International Commission for the Conservation of Atlantic Tunas (ICCAT) (Tenerife, November 1981) and at the invitation of the Government of France, a meeting of ICCAT legal experts was held in Paris on May 24-26, at the "Centre de Conférences Internationales du Ministère des Relations Extérieures". The purpose of the meeting was 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 accession of the European Economic Community (EEC).

The Secretariat of the Commission, in collaboration with the French authorities, organized the meeting and all the ICCAT member countries were invited as well as the EEC and the Food and Agriculture Organization of the United Nations (FAO) (as depositary of the Convention). At the request of the Executive Secretary of the International Commission for the Southeast Atlantic Fisheries (ICSEAF), that organization was also invited to attend the meeting in an observer capacity.

The EEC accepted the financial responsibilities for holding the meeting.

The following countries and organizations participated: Brazil, Canada, France, Gabon, Ghana, Ivory Coast, Japan, Portugal, Senegal, Spain, U.S.A., U.S.S.R., EEC, FAO and ICSEAF.

The Secretariat of the Commission was represented by the Executive Secretary and three secretaries.

ITEM 1. OPENING OF THE MEETING

Mr. B. Labrousse (France) opened the meeting and welcomed all the member country delegates and observers, on behalf of the Government of France. He noted that the group had considerable work before it and very little time in which to complete its tasks. However, he expressed his confidence in the results because of the high level of expertise of the participants.

ITEM 2. ELECTION OF CHAIRMAN

At the proposal of France, seconded by Spain and Portugal, Mr. M. Hunter (Canada) was elected Chairman of the meeting.

ITEM 3. ELECTION OF RAPPORTEUR

Mr. A. Bordes (France) was elected Rapporteur.

ITEM 4. ADOPTION OF AGENDA AND ARRANGEMENTS FOR THE MEETING

The ICCAT Executive Secretary reviewed the Tentative Agenda (Appendix 1). The member country delegations were presented and a special welcome was extended to Mr. A. Roche (FAO Legal Advisor), the EEC delegation and ICSEAF. (See Appendix 2, List of Participants.)

The Chairman expressed his desire for a smooth-running meeting and for the active participation of all the delegates and observers.

ITEM 5. REVIEW OF BACKGROUND INFORMATION ON THIS SUBJECT

5.1 Document A (background information on the EEC's request for admission to ICCAT) was discussed briefly by the ICCAT Executive Secretary. This document includes the correspondence exchanged between ICCAT and FAO, the Government of France and the EEC concerning accession to ICCAT from the onset of discussions (May, 1979) to the latest correspondence received at ICCAT (April 15, 1982). It also includes the pertinent texts of the Biennial Reports where the subject was discussed at ICCAT meetings.

5.2 Document B (Review of ICCAT Basic Texts) was also reviewed by the ICCAT Executive Secretary. He explained the reasoning behind the preparation of this document and pointed out the specific parts it contains:

- B-1 Comparison of the FAO Archives version of the Convention with the FAO Published version and the Convention as contained in the ICCAT Basic Texts.
- B-2 Comparison of the ICCAT Convention in the three linguistic versions (English/French/Spanish).
- B-3 The Rules of Procedure in the three languages.
- B-4 The Financial Regulations in the three languages.

ITEM 6. REVIEW OF THE LINGUISTIC DISCREPANCIES IN THE THREE LANGUAGE VERSIONS OF THE ICCAT BASIC TEXTS

Due to the extreme shortage of time, it was suggested that the group go immediately to the Convention discrepancies and specifically to those articles which have a bearing on an amendment to permit the EEC's accession to ICCAT. The Chairman noted, however, that the other discrepancies should not be ignored. FAO noted that emphasis should be placed on those differences between the FAO Archives text and the FAO Published version. He also pointed out that the discrepancies in the ICCAT Basic Texts version could be handled by the ICCAT Secretariat. It was, therefore, recommended that the Executive Secretary review carefully the discrepancies between the FAO Archives version and the ICCAT Basic Texts and issue a new version of the latter.

The Group noted that the discrepancies shown in Document B-1 between the versions of the Convention deposited in the FAO Archives and those reproduced in the certified true copies published by FAO did not involve matters of interpretation but were of an editorial or terminological nature. The Group recommended that appropriate measures be taken for such discrepancies which were not purely editorial, e.g. capital letters or hyphens, to be corrected.

Therefore, discussion then centered on the three language versions of Document B-2 and the Convention was reviewed Article by Article. The group decided that if the discrepancies between languages were of a stylistic nature and there was no possibility of confusion or misinterpretation between the texts then the texts should be left as is. The text of those articles which, according to the group, could be misinterpreted are attached herewith as Appendix 3*.

Bearing the above in mind, the group recommended that the Commission request the Director-General of FAO, as depository of the Convention (i) to circulate to the signatory and Contracting Parties the proposed amendments to the original version of the Convention found in the FAO Archives designed to incorporate in that text the corrections that had already been made in the certified copies found in the FAO Published versions and the further proposed amendments designed to harmonize the text of the Convention in the three languages in which an authoritative version of the Convention was adopted in Rio de Janeiro, and (ii) if, in accordance with prevailing practice, no signatory or Contracting Party communicates to him any objection to the proposed amendments, to draw up and circulate a *proces-verbal* of the corrections to the original version of the Convention and rectification of the certified true copies.

ITEM 7. PROCEDURE AND TEXT OF AN AMENDMENT TO THE CONVENTION TO FACILITATE THE EEC'S ACCESSION TO THE COMMISSION

The results of the debate on this item can be stated as follows:

1) Procedure to be followed for the adoption of an amendment

France presented changes to its originally proposed text of an amendment and stressed its view that it should be the procedure of Article XIII, which has been specifically foreseen by the Convention itself, that must be used, instead of the two other proposals made at the Tenerife meeting of ICCAT (November 1981).

There was a consensus in favor of this view and consequently, the group recommended that the Commission initiate the procedure of amendment to the Convention which is necessary to permit the entry of the EEC to the Convention in accordance with the provisions of Article XIII.

2) Scope of the said amendment

It was noted that the EEC's accession to ICCAT was somewhat different from that organization's accession to the Law of the Sea as far as competences were concerned. It was also noted that the French proposed amendment was perhaps too complex and that

*Appendix 3 is not included in the Proceedings of the Commission.

the inclusion of "customs unions, communities or other regional economic integration groupings" could be troublesome in such a general proposal. Therefore, the group focussed its attention on the question of the accession of the EEC alone.

This view was shared by most of the delegations and answered satisfactorily the point raised by the FAO which, as the depository of the Convention, would have to verify the right of all the organizations involved in the French proposal to adhere to the Convention.

The French delegation and the EEC expressed their flexibility with respect to this matter.

The delegate from Spain strongly expressed the view that the amendments, however, should take into consideration the results of Annex 9 of the Third Law of the Sea Conference.

Many delegations and the Chair underlined that such an approach does not mean that requests for adherence of other hypothetical organizations would not be taken into account if requests occur in the future.

The amendment is not intended to preclude application and possible acceptance of other organizations.

3) Wording of the amendment

The point concerning the possibility of the EEC becoming a member through the procedure of an instrument of ratification was made clear after the FAO delegate confirmed that the Convention was open to signature without any time limitation. Most of the discussions centered then on the elaboration of revisions and clarifications to French and Canadian proposals for the text of an amendment. On a U.S. initiative a combined Canadian/French text was presented and studied by the group and finally a consensus was reached on the version which is attached as Appendix 4 to Annex 6.* The group concluded its debate by recommending that this final version of the proposed amendment to the ICCAT Convention be submitted, in accordance with the appropriate procedure, to become Article XIV-*bis* of the Convention.

ITEM 8. ADOPTION OF REPORT

The Report was adopted.

*The changes suggested by the FAO Legal Officer are shown in Appendix 4 to this Annex.

Agenda

1. Opening of the meeting
2. Election of Chairman
3. Election of Rapporteur
4. Adoption of Agenda and Arrangements for the meeting
5. Review of background information on the subject
6. Review of the linguistic discrepancies in the three language versions of the ICCAT "Basic Texts"
7. Procedure and text of an amendment to the Convention to facilitate the EEC's accession to the Commission
8. Adoption of Report

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Bruxelles**Statement of the Soviet Delegation to the
Paris Meeting of ICCAT Legal Experts**

Taking into consideration that the majority of the countries at this meeting are ready to accept the EEC as a Contracting Party to the ICCAT Convention, the Soviet Delegation would like to receive written information from the EEC on the following points:

- a) The competence of the EEC -- between the EEC and the governments of its Member States and EEC fishery policy, particularly regarding highly migratory species.
- b) EEC policy on the inspection of foreign vessels in port and the Community's responsibility in this matter.

The Soviet Delegation reserves the right to make any necessary comments and changes to the draft amendments to the Convention at the time of the Plenary Sessions of the ICCAT Commission Meeting (November, 1982), if necessary.

Article XIV – bis*

1. This Convention shall be open for signature or adherence by the European Economic Community, (*hereinafter referred to as "the EEC"*).

2. *On the date of its* [Upon] deposit of [its] *an* instrument of formal confirmation or adherence *with the Director-General of the Food and Agriculture Organization of the United Nations*, the EEC shall become a Contracting Party with the same rights and obligations pursuant to the provisions of the Convention as other Contracting Parties and references in the Convention to the terms "State" and "Government" shall be [understood] *construed* accordingly.

3. Except as provided in paragraph 4 of this Article, a member state of the EEC may not be a Contracting Party if the EEC is a Contracting Party. [Accordingly] *Therefore*, a member state *of the EEC* shall cease to be a Contracting Party [at the time that] *on the date on which* the EEC becomes a Contracting Party and, notwithstanding paragraphs 1 and 2 of Article XIV, such a member state may not become a Contracting Party for such time as the EEC is a Contracting Party.

4. A member state of the EEC may remain or become a Contracting Party concurrently with the EEC, if it has notified the Director-General of the *Food and Agriculture Organization of the United Nations* [FAO] in a formal declaration, [indicating] that it is exercising its competence over a territory to which the Treaty establishing the [European Economic Community] *EEC* does not apply.

Article XV*

The Director-General of the Food and Agriculture Organization of the United Nations shall inform all Governments referred to in paragraph 1 of Article XIV of deposits of instruments of ratification, approval, *formal confirmation* or adherence, the entry into force of this Convention, proposals for amendments, notifications of acceptance of amendments, entry into force of amendments, *declarations made pursuant to paragraph 4 of Article XIV – BIS*, and notifications of withdrawal.

*The words between slashes in the text are those proposed by the Experts at the time of the meeting. The words in italics are those suggested as changes by the FAO Principal Legal Officer after the meeting.

Status of the Regulatory Measures on Size Limits adopted by the Member Countries

Species	YELLOWFIN	BIGEYE	BLUEFIN
Type of regulation	<i>Size limit (3.2 kg)</i>	<i>Size limit (3.2 kg)</i>	<i>Size limit (6.4 kg)</i>
Area of application	<i>Entire Atlantic</i>	<i>Entire Atlantic</i>	<i>Entire Atlantic</i>
Date of entry into effect	<i>July 1, 1973</i>	<i>Sept. 7, 1980</i>	<i>Aug. 10, 1975</i>
Date of expiration	<i>Indefinite period</i>	<i>End of 1983</i>	<i>Indefinite period</i>
Angola	June 17, 1979		No fishing
Benin			
Brazil	Feb. 23, 1973	Nov. 17, 1980*	Aug. 18, 1977
Canada	Sept. 4, 1973	No fishing	Feb. 17, 1976
Cape Verde			
Cuba	July 1, 1973	Sept. 7, 1980	No fishing
France	June 29, 1973	Mar. 3, 1981	Aug. 8, 1975
Gabon	No fishing or landings	Measures being considered	No fishing or landings
Ghana	June 19, 1976		
Ivory Coast	Mar. 2, 1970	Mar. 2, 1970	
Japan	June 14, 1973	Sept. 7, 1980	Apr. 16, 1975
Korea	Jan. 21, 1973	Sept. 15, 1980	Dec. 17, 1975
Morocco	No fishing	July 17, 1981	
Portugal	Nov. 26, 1973	May 4, 1981*	Nov. 27, 1976
Senegal	July 2, 1976	July 2, 1976*	
South Africa	May, 1973	Dec. 5, 1980	June 27, 1975
Spain	May 29, 1974		Mar. 3, 1975
U.S.A.	Nov. 5, 1975	Mar. 30, 1981	Aug. 13, 1975
U.S.S.R.	Sept. 28, 1978	Nov. 4, 1980	Sept. 28, 1978

*Awaiting written confirmation.

Status of Bluefin Regulatory Measures (other than size limit) adopted by the Member Countries

Type of regulation	Limiting fishing mortality to recent levels	First Extension	Second Extension	Third Extension	Fourth Extension	Catch prohibited, except for monitoring
Area of application	Entire Atlantic	Entire Atlantic	Entire Atlantic	Entire Atlantic	East Atlantic only	West Atlantic only
Date of entry into effect	Aug. 10, 1975	Aug. 10, 1976	Oct. 10, 1978	Sept. 4, 1980	July 21, 1982	Feb. , 1982
Date of expiration	Aug. 10, 1976	Aug. 10, 1978	Aug. 10, 1980	Aug. 10, 1982	Indefinite	Feb. , 1984
Angola	No fishing					
Benin						
Brazil	Aug. 10, 1977	Aug. 18, 1977	Mar. 2, 1979	Nov. 17, 1980*		
Canada	Feb. 17, 1976	Feb. 17, 1976	Feb. 15, 1979	Feb. 15, 1979		June 14, 1982
Cape Verde						
Cuba	No fishing for the 3-year period					
France		Dec. 27, 1974	Dec. 27, 1974	Dec. 27, 1974		
Gabon	No fishing or landings					
Ghana						
Ivory Coast						
Japan	Apr. 16, 1975	Apr. 16, 1975	Apr. 16, 1975	Apr. 16, 1980	Mar. 3, 1982	Mar. 3, 1982
Korea	Dec. 17, 1975	Dec. 17, 1975	Oct. 14, 1978	Sept. 15, 1980		
Morocco						
Portugal		Nov. 27, 1976	**	**	**	
Senegal					Mar. 11, 1982	
South Africa	June 27, 1975	Oct. 19, 1976	Feb. 9, 1979	Jan. 11, 1980		
Spain	Feb. 19, 1976	Feb. 19, 1976	Feb. 19, 1976	Jan. 24, 1980		
U.S.A.	Aug. 13, 1975	May 18, 1976	June 15, 1979	June 13, 1980		June 11, 1982
U.S.S.R.	Sept. 28, 1978	Sept. 28, 1978				

*In process.

**Objections presented and ratified on November 16, 1978, March 19, 1980 and July 21, 1982.

REPORTS OF THE MEETINGS OF PANELS 1-4

Report of the Meeting of Panel 1

Funchal, Madeira (Portugal), November 1982

1. OPENING

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

2. ADOPTION OF AGENDA

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

3. ELECTION OF RAPPORTEUR

Mr. D. Fitch (U.S.A.) was appointed rapporteur.

4. REVIEW OF PANEL MEMBERSHIP

There were no changes in the Panel membership. All Panel members were present at the first session of the Panel, except Morocco, Senegal and the U.S.S.R. At the second session of the Panel, at which the report was adopted, all Panel members except Morocco and Senegal were present.

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

Mr. Mensah asked the SCRS Chairman, Mr. J. S. Beckett, to summarize the Committee's report on yellowfin and skipjack.

5-a) Yellowfin

The yellowfin catch for 1981 equalled the 1978 record level of 133,000 MT. The 1981 increase was a result of a large Spanish purse seine catch. The steady increase of the carrying capacity of the total surface fleet appears to have levelled off in the last few years. Baitboat carrying capacity remains stable. Despite this, SCRS estimates show that

the level of effective fishing effort continues to increase, due largely to modifications and improvements in fishing technique and equipment.

The question of yellowfin stock structure remains unresolved. The findings of the SCRS were similar for a single stock (under the one-stock hypothesis) or for an eastern stock (under a two-stock hypothesis). Predicted MSY for a single Atlantic stock is about 120-130,000 MT, and for an eastern Atlantic stock about 110-120,000 MT. Developing fisheries in the western Atlantic involve very small amounts of yellowfin; it was not possible to make any conclusion about the status of a western stock, or its MSY, under a two-stock hypothesis.

It appears that catches of yellowfin in the total Atlantic or in the eastern Atlantic are currently above the lower end of the estimated range of respective MSY's. The present estimates of MSY are comparable to the ones obtained previously by the SCRS. The new element revealed by analyses this year is that the fishing effort in 1980-81 could be higher than the fishing effort corresponding to the MSY. This result is preliminary as it is based only on the production model. Complementary detailed analyses are necessary to judge the validity of current results and of the real condition of yellowfin stocks. If later detailed analyses confirm the present calculations, the SCRS might in the future recommend specific management strategies for yellowfin in the eastern Atlantic.

Mr. Beckett stated that the annual catch of undersized yellowfin was about 3,000,000 to 4,000,000 fish, indicating that the minimum size limit regulation is not being followed. The SCRS believes that several problems with regard to the information on such catches have been resolved, for example that small yellowfin are no longer being confused in statistics with small bigeye, that unreported discards at sea are fewer, and that undersized yellowfin are not being sold in a manner that frustrates the collection of statistics.

5-b) Skipjack

Skipjack catch increased in 1981 to 138,000 MT. This consisted of 19,000 MT in the western Atlantic and 119,000 MT in the eastern Atlantic, both being the highest recorded. Brazilian baitboats have tripled their catch in recent years.

Assessing trends in catch-per-unit-effort for skipjack is complicated by the fact that much of the skipjack is caught in a mixed fishery with yellowfin. The SCRS reviewed some information suggesting population separation, but it is unclear whether this reflects stock structure. It does not appear that the catch potential for skipjack has yet been achieved.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS

6-a) Yellowfin

The delegate from Ivory Coast expressed concern about yellowfin stock levels. He was surprised that SCRS was not more troubled by the increased fishing effort and expressed his concern about the economic effects on fleet operations. Mr. Beckett explained that increasing effort in any fishery would cause a decrease in CPUE, and in fact the point where reduction in incremental additional yield becomes most noticeable is at the point where effort is approximately two-thirds that necessary to catch the MSY.

The delegate from the U.S.A. asked what, in SCRS's view, could be done to bring the catches of small yellowfin under control, and suggested that the delegates might consider this matter when looking into the formation of an infractions committee. Mr. Beckett responded that the Commission could take such actions as closing areas or specific fisheries, and that the Commission had asked SCRS's advice on the fisheries implications of such measures. In that study, SCRS will attempt to provide the Commission with the information necessary to evaluate alternative strategies and management measures; however, although the Commission has asked for a report in 1983, SCRS has requested to postpone the report until 1984 so that all the results of the International Skipjack Year Program may be incorporated into it. Management recommendations will await that report.

6-b) Skipjack

There were no comments.

7. RESEARCH NEEDED TO BE CARRIED OUT

7-a) Yellowfin

Mr. Beckett stated that SCRS has identified research needs in several areas, particularly to address the uncertainty regarding stock structure, to standardize effort measures, to improve information in the western Atlantic, and to improve estimates of spawning biomass and recruitment levels. Possible ways to reduce the catch of small yellowfin should also be investigated.

7-b) Skipjack

Last year's International Skipjack Year study had gone well and its results are still being assimilated and evaluated. Therefore, no new research on skipjack is proposed at present.

8. DATE AND PLACE OF NEXT MEETING

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

9. OTHER MATTERS

No other matters were discussed.

10. ADOPTION OF REPORT

The report was adopted.

11. ADJOURNMENT

The meeting was adjourned.

Report of the Meeting of Panel 2

Funchal, Madeira (Portugal), November 1982

1. OPENING

The meeting was opened by the Commission Chairman, Dr. L. Koffi, in the absence of the Panel 2 Chairman, Morocco. Dr. Koffi asked for nominations for an interim chairman for the session. France proposed Canada as Chairman. The proposal was seconded by all the members of Panel 2. Mr. M. Hunter (Canada) chaired the 1982 session of Panel 2.

2. ADOPTION OF AGENDA

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

3. ELECTION OF RAPPORTEUR

The Secretariat was appointed rapporteur.

4. REVIEW OF PANEL MEMBERSHIP

There have been no changes in panel membership. Canada, France, Japan, Korea, Portugal, Spain and the U.S.A. were present.

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

5-a) Bluefin

The SCRS Chairman, Mr. J. S. Beckett, presented results of SCRS studies. Fourteen papers were reviewed. The catch trend was explained and assessments were made for total Atlantic, east Atlantic and west Atlantic stocks.

Currently two temporally and spatially separate spawning areas are certain and a small variable interchange between the two stocks is known to take place, but the exact magnitude or frequency of interchange is not yet known.

Mr. Beckett pointed out that the SCRS determined that last year's assessment on which the 1981 SCRS recommendations were based should not be used this year because of changes in the historical data base reported during 1981-82, and because the stock-recruitment relation used is now considered to be erroneous.

Virtual population analyses which were improved since last year's analyses were used in two different papers which produced quite different results in estimating population size of younger fish. The differences are not so great in estimating older fish, particularly for the western Atlantic stock.

One opinion is that the abundance of juvenile and adult fish in the western Atlantic stock has decreased steadily since 1960. Juvenile levels are 21 percent of the 1960 level, hence adult abundance will further decline. If recruitment remains at the 1975-80 level, the abundance of the adult stock will continue to decline at any fishing rate.

The other opinion is that adult stock abundance increased drastically from 1974-1977, then decreased somewhat, but levels are still much higher than those before 1975. Some decrease in recruitment and juvenile stock size has occurred since 1975 with 1975-1980 recruitment levels being lower than in all previous years. The spawning biomass and potential will increase until 1983, and a decreasing trend will occur thereafter. Annual removals at the 1981 level will not drive the stock size and spawning potential below past average levels.

The differences in assumptions used in each study were reviewed critically by scientists and are reported in the SCRS Report, Section 6-C.

For the eastern Atlantic, as well as total Atlantic stock analyses, two papers also indicated different conclusions. However, Mr. Beckett said that both the data base and the assumptions used are very questionable. Significant changes in historical catch statistics have been reported to ICCAT since last year's assessment. All assessment results are therefore very uncertain. The SCRS believes this uncertainty is too great to allow conclusions as to the status of the stock.

The SCRS Chairman reported that for the west Atlantic, risk is involved in the face of uncertainty as to an appropriate catch level in considering the present stock condition. The SCRS is unable to determine whether a 6,000 MT catch will cause a decline or whether a decline will occur regardless of any catch. It was not possible to find agreement within this range. There exists concern that 1982 catches are insufficient to monitor the stock, but the weight of evidence suggests that catch levels for monitoring should be conservative.

For the east Atlantic stock, evidence suggests that the present regulation limiting fishing mortality and the catching of fish less than 6.4 kg should be maintained.

If the stock is to be managed as if it were a single Atlantic-wide stock, the evidence suggests that declines have occurred, thus the regulation limiting fishing mortality and the catching of fish less than 6.4 kg should be maintained.

5-b) Albacore, North

The SCRS Chairman pointed out that the northern Atlantic albacore stock is currently moderately exploited. Recent catch and effort figures have continued to decrease. An increase in effort may produce an increase in catches, although it must be noted that the stock is in a phase of reduced recruitment.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS

6-a) Bluefin

The Japanese delegate presented a statement which is attached as Appendix 2.

The United States noted that it would have preferred clearer advice from the SCRS concerning the management of bluefin tuna stocks, but recognized that this had not been possible. In 1981, the Commission responded to the data and information available at that time. While the scientific information developed up to this year may have had weaknesses, it has not been a waste of effort. And even though the two analyses presented to SCRS this year both appear to have some difficulties, what is available this year does not

appear so radically different from last year in many respects. It is obvious from the data that the Commission is still confronting a depressed bluefin tuna fishery. Even though the quotas (domestic) in the western Atlantic were smaller in 1980 and 1981 than in previous years, none of the countries fishing in this area for bluefin tuna were able to take their target catches in those years. As the SCRS has indicated, the catch level at which the stock will decline cannot be specified, although a range has been noted.

The United States must take issue with the Japanese comment that the truth has been hidden by political clouds and believes that none of the countries present would support this view. The United States noted concern for the bluefin tuna resource began over a decade ago.

The United States emphasized that U.S. fishermen have also suffered economic consequences from the actions taken by ICCAT in 1981. However, the U.S. prefers to pursue whatever options exist in a very cautious manner, for to follow the most optimistic view of the status of the stocks could well lead to a resource disaster with far-reaching consequences. The U.S. does not see much flexibility in the Commission's options, but if there is some, it can only be very slight.

The Canadian delegate made a statement which is attached as Appendix 3.

The delegate from France noted that the Panel is now in an embarrassing position, in view of the contradictory nature of the various opinions expressed by the parties. He stressed that he hoped the differences between the various points of view could be reconciled in keeping with ICCAT tradition. This agreement should be reached at this time in order to avoid repeating the error made at the Miami meeting where decisions that should have been taken by the Commission were taken by a working group. France indicated that the term "quota" used during the Miami meeting seemed inappropriate. In fact, it deals with special allocations made for scientific purposes.

France would like, if last year's recommendation is continued, to emphasize the maintenance of the prohibition of transfer of fishing effort from the western to the eastern area of the Atlantic. France agrees with the minimum size limitation (6.4 kg) and with maintaining fishing mortality at present levels.

In response to the French statement, the U.S. delegate said that he believed that the Miami meeting was held under the ICCAT umbrella. He agreed that the management scheme should be agreed upon this year during the Commission's sessions if possible. However, the Commission may find that a meeting in early 1983 similar to the one held in Miami may become necessary, if the Commission cannot reach a final agreement and if the Commission wishes to take timely management measures.

The Japanese delegate, taking note that the SCRS determined that last year's assessment on which the 1981 SCRS recommendations were based should not be used this year, proposed that a special SCRS meeting be held sometime as early in 1983 as possible at a place to be agreed upon by the scientists. The SCRS, on that occasion, should review assumptions and methods employed in the assessment in order to narrow the gaps between the two opinions.

Japan further proposed that until a firm conclusion is reached at such a meeting, the Commission should provisionally revert to the old regulation of limiting fishing mortality to recent levels.

Canada agreed with the French opinion that the problem should be settled at this session.

The Spanish delegate indicated that the concept of quotas is foreign to the spirit of the Convention. He supported the Japanese proposal to revert to the former management regime while resolving the conflicting scientific views on stock assessment.

After a recess the meeting resumed. The Canadian delegate noted different opinions expressed by scientists concerning stock status, and that the SCRS had mentioned that the catches allowed in 1982 were insufficient for monitoring. Considering the statements of delegates from countries which had been actively engaged in bluefin fishing in the western Atlantic and of some others who have some interest in the stock, the Canadian delegate proposed a new regulation for the west Atlantic bluefin tuna catch.

The Spanish delegate agreed with the Canadian proposal. The U.S. delegate stated his agreement with the Canadian proposal.

The Japanese delegate stated that Japan's position remains that the regulatory measures adopted last year should be abolished because they were based on a faulty stock assessment. However, after expressing Japan's sincere appreciation to those countries who have supported or extended warm sympathy to the Japanese position, Japan reluctantly agreed to accept the Canadian proposal in the spirit of compromise, expressing its earnest desire that a conclusion on this matter be reached at this meeting.

The French delegate stated his satisfaction that agreement was reached among the concerned countries.

Portugal agreed with the recommendation by Canada but stated that Portugal wished to reserve its position on the recommendation to keep fishing mortality limited to recent levels. Brazil (an observer) noted that the fifth paragraph of the Canadian proposal provides an exemption for Brazil's developing bluefin tuna fisheries and thanked the Panel for considering his country's fisheries.

After some modifications of an editorial nature suggested by Canada, Japan and Spain, the recommendations proposed were adopted and the Panel recommended that the Commission consider these recommendations, attached herewith as Appendix 4.

6-b) Albacore, North

No comments were made by any delegates.

7. RESEARCH NEEDED TO BE CARRIED OUT

The SCRS Chairman referred the Panel to the recommendations on research for both bluefin and albacore which are included in the SCRS Report. 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. ADOPTION OF REPORT

The report was adopted.

11. ADJOURNMENT

The meeting was adjourned.

Report of the Meeting of Panel 3

Funchal, Madeira (Portugal), November 1982

1. OPENING

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

2. ADOPTION OF AGENDA

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

3. ELECTION OF RAPPORTEUR

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

4. REVIEW OF PANEL MEMBERSHIP

The Chairman invited comment from each Panel member delegation regarding its current and future status. Brazil, Japan, South Africa and the United States responded that their desire was to continue as Panel members and to contribute to the Panel. The absence of the delegate from the U.S.S.R. was noted. It was concluded by the Chairman that the Panel membership, as currently composed, would remain unchanged.

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

Mr. J. S. Beckett, SCRS Chairman, summarized the findings of the SCRS regarding the southern bluefin and albacore in the south Atlantic, representing the two species of interest to Panel 3. Particularly worthy issues were emphasized and are presented below.

5-a) Southern bluefin

The southern bluefin is found in three oceans, including the Atlantic, which represents the most variable and lowest annual harvest source for this species. Three countries fish this stock, which spawns in northeastern waters of the southern Indian Ocean. Japan

conducts a longline fishery, while Australian harvest techniques rely on baitboats and purse seiners. New Zealand has recently initiated a coastal handline fishery.

Harvest levels in recent years were in the vicinity of 23,000 to 33,000 MT, representing a decline from earlier harvest levels, i.e., 40,000 MT in 1970. The 1980 harvest was 29,000 MT, of which only 2,000 MT were taken from the Atlantic.

The SCRS Chairman emphasized that the stock is heavily exploited, and that an increase in fishing effort over current levels will not likely result in an increased harvest. Noting plans for a regional meeting to be convened for assessment of this species in the near future, the SCRS Chairman suggested that a revised opinion concerning this stock may be forthcoming. He implied that the SCRS is not quite comfortable dealing with this stock since most of the harvest does not occur in the Atlantic. Results of the regional meeting will be closely monitored.

5-b) Albacore, South

The SCRS Chairman stated that this species is considered to comprise a distinct southern Atlantic stock. Harvest techniques involve primarily longlines. The harvest in 1980 was 22,000 MT, representing a somewhat lower but stable level when compared to former years. This fishery was initiated during the 1950's, increased significantly through the early 1970's, then was reduced in 1975 to about 17,000 MT.

Effort in this fishery, which was initiated by Japan and now conducted primarily by vessels from Taiwan, has remained at a relatively high but stable level. The CPUE, which was originally quite high, is currently low, but stable.

A production model developed by the SCRS indicates that current fishing levels are well beyond MSY. The SCRS suggests that about one-half the present effort in this fishery would achieve the calculated MSY level. The SCRS Chairman stressed that this analysis presented used a new calculation of effective effort and that it would be desirable to verify the standardization of effort for this fishery. Careful monitoring of this fishery is needed in view of a developing surface fishery, which in 1981 harvested more than 3,000 MT. If this fishery increases, it could impact the apparent balance noted.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS

6-a) Southern bluefin

The SCRS Chairman noted Japan's implementation of voluntary closed areas and seasons to reduce the mortality of small fish. Based upon the lack of specific stock data, however, the SCRS was in no position to recommend any management measures at this time.

6-b) Albacore, South

The SCRS made no recommendations regarding this fishery. It was noted, however, that if the current CPUE declines, specific management actions may be necessary.

7. RESEARCH NEEDED TO BE CARRIED OUT

7-a) *Southern bluefin*

To assist the SCRS, the Secretariat was requested to contact the regional meeting delegates to express ICCAT's interest, and to secure copies of all scientific papers presented and conclusions reached.

7-b) *Albacore, South*

The SCRS determined the need to monitor the longline fishery and encouraged Japan and Taiwan to continue their cooperative studies.

8. DATE AND PLACE OF NEXT PANEL MEETING

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

9. OTHER MATTERS

No other matters were discussed.

10. ADOPTION OF REPORT

The report was adopted.

11. ADJOURNMENT

Panel 3 adjourned.

Report of the Meeting of Panel 4

Funchal, Madeira (Portugal), November 1982

1. OPENING

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

2. ADOPTION OF AGENDA

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

3. ELECTION OF RAPPORTEUR

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

4. REVIEW OF PANEL MEMBERSHIP

All the Panel members, except the U.S.S.R., were present at the meeting.

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

5-a) Bigeye

Bigeye catches reached one of the highest levels in the first half of the 1970's, when the 1974 catch reached 60,000 MT. Since then catches have ranged between 38,400 MT in 1976 and 60,400 MT in 1980, when an increase in catches was again noted.

The longline fisheries extend over almost the total distribution area of the species, while baitboat fisheries which direct their effort toward bigeye operate mainly in the areas off Madeira, Azores, Canary Islands and Dakar.

With regard to the state of the stocks, the SCRS considered two hypotheses. The first assumes the existence of one stock in the total Atlantic, while the other assumes the existence of two separate stocks, a north stock and a south stock.

The production model analysis for the total Atlantic stock suggests that the stock is currently being exploited close to the lowest estimates of MSY, which are between 52,900 and 111,200 MT. It is not expected that an increase in fishing effort will cause significant sustainable increases in catches with the present operation of the fishery.

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 production model analysis shows an estimated MSY between 32,900 and 70,900 MT. Catch as well as estimated effort has been lower than estimated MSY. Therefore, if indeed there is a north Atlantic bigeye stock, then there could be an increase in sustainable catch by increasing the effort, although this increase will be marginal.

For the south stock, estimated catch and effort in 1980 were higher than the lowest limit of the MSY. Bearing in mind present levels, an increase in effort would not produce a sustainable increase in catches, if the fishery is operating close to MSY. The population appears to be stable under present fishing patterns, therefore, no additional management measures are recommended.

During tagging activities carried out in conjunction with the International Skipjack Year Program, numerous bigeye were also tagged. The results of this tagging experiment are not yet known.

The bigeye minimum size regulation approved by the Commission expires at the end of 1983. The SCRS, however, requested a delay in reporting on the analysis of alternative management strategies until 1984, in order to have more time available to compile and analyze the information on bigeye resulting from the Skipjack Program. This suggests it might be advisable to extend the minimum size regulation through 1984. With regard

to bigeye statistics, it is necessary to improve the data on the purse seine and baitboat fleets based in Tema.

5-b) Blue marlin

Blue marlin landings for the total Atlantic showed a continual decrease during the 1975-1979 period but increased in 1980. There are signs that the stock is recovering and the fishery should be closely monitored for any significant decreases in CPUE, in which case pertinent measures should be taken to try to halt such decreases.

The SCRS considers that fisheries taking blue marlin either directly or as by-catch should be closely monitored.

5-c) White marlin

Landings of white marlin for the total Atlantic show a decreasing trend during the 1971-1980 period. Total Atlantic CPUE dropped sharply from 1961 to 1964, increased in 1967, and showed a decreasing trend in later years. As in the past, the SCRS has no reliable information available for white marlin. The SCRS expressed concern about this lack of information, especially in view of the decreasing trends and the low CPUE levels of recent years. The SCRS noted that fisheries, either directed or undirected, taking white marlin should be closely monitored.

5-d) Sailfish

There are some problems in catch statistics for the major sailfish fisheries, since the catches of this species are reported mixed with those of spearfish. The SCRS pointed out the uncertainty which exists concerning the distribution of the historical data on mixed catches. It recommended that the artisanal sailfish fisheries developing off the coast of west Africa be closely monitored.

5-e) Swordfish

The total annual catch of swordfish in the Atlantic (excluding the Mediterranean) decreased from 14,600 MT in 1970 to 7,100 MT in 1971, when fishing was reduced because of mercury content restrictions by countries which are major consumers of swordfish. The 1981 swordfish catches (10,200 MT) decreased in comparison to 1980 catches (15,700 MT).

The CPUE of the major fisheries shows stability, although it shows a decreasing trend in the northwest Atlantic.

5-f) Small tunas

This group includes, among other species, blackfin tuna, Atlantic little tuna, bonito, king mackerels, and others. Fisheries directed towards small tunas are conducted off the coasts of Africa and in the Mediterranean. There are presently no management measures

on small tunas. Stock structure studies, separation of stocks, discards, improvement in statistics, etc., are areas which require more research work.

6. REVIEW OF POSSIBLE MEASURES FOR THE CONSERVATION OF STOCKS

The Panel reiterated the recommendations of the SCRS in relation to the stocks of blue marlin and white marlin.

No new management measures were proposed for the conservation of stocks. It was recommended, however, that the present bigeye minimum size limit, which expires at the end of 1983, be extended for one more year, i.e. through 1984, to allow more time for the results of bigeye research developed within the framework of the Skipjack Program to become available.

7. RESEARCH NEEDED TO BE CARRIED OUT

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

8. DATE AND PLACE OF THE 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. ADOPTION OF REPORT

The report was adopted.

11. ADJOURNMENT

The meeting of Panel 4 was adjourned.

Agendas 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) Southern bluefin
- b) Albacore

Panel 4

- a) Bigeye
- b) Atl. 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. Adoption of Report
11. Adjournment

**Japanese Statement
Regarding the Management of Bluefin Tuna**

(Attached to Report of Panel 2)

1. At the 1981 meeting, as you may recall, Japan strongly expressed its serious doubt and reservations concerning the validity of the analysis presented by a certain scientist on which the proposed regulatory measures on bluefin tuna in the western Atlantic were based. At that time, Japan requested repeatedly that time be given for comprehensive review of the analysis by employing the same method and data base, since such radical regulatory measures should not be adopted without reasonable and convincing scientific evidence confirmed by careful examination of the SCRS. Nevertheless, the proposed measures to drastically reduce bluefin catches in the western Atlantic were adopted by a majority of unfortunately misled ICCAT members over the objections of Japan.

The Japanese delegation would like to take this opportunity to express its sincere admiration and respect to the scientists of the SCRS who have always been so eager to pursue the truth. As we now have learned, the truth cannot be hidden even though it may temporarily be covered by political clouds.

2. Although it was felt that adoption of these measures was extremely disappointing and imprudent, Japan was the first country to implement the new regulations. Japan supports the objectives of the ICCAT Convention and believes that proper conservation and optimum utilization of tuna resources in the Atlantic should be attained within this international organization. Additionally, any error found in the ICCAT management decisions should be corrected immediately within ICCAT.

3. The regulatory measures adopted last year on bluefin tuna resulted in a drastic reduction of Japan's catch from approximately 3,500 MT to 305 MT which caused serious damage to the Japanese tuna industry. Thus, Japanese tuna fishermen suffered severe economic losses and some of them have already gone into bankruptcy with more anticipated to follow.

4. After the 1981 ICCAT meeting, Japanese scientists actively continued their study on stock conditions for the purpose of improving last year's assessment submitted to that meeting. Their analysis has shown that stock conditions will allow catch levels accepted by the ICCAT before 1981 without impairing spawning potential.

5. SCRS unanimously agreed that the current scientific monitoring program is inadequate and will not provide the desperately needed data on the key fisheries. ICCAT will never know the status of the bluefin stocks if catch remains at the current level, therefore, this problem must be corrected. Japan also urges to strengthen the study of bluefin stocks to provide better scientific information and understanding of the stock conditions.

6. In view of the above, we would urge that the ICCAT should abolish these measures adopted last year to return to the previous regulatory measures as its immediate

action. We hope that the ICCAT will always function as a responsible organization to ensure optimum utilization of tuna in the Atlantic Ocean, with reasonable recommendations for that purpose.

Appendix 3 to Annex 8

**Statement of the Canadian Delegation
Concerning Atlantic Bluefin Tuna**

(Attached to Report of Panel 2)

As members of this Panel are aware, Canada has been concerned for many years about the status of the bluefin tuna stock in the North Atlantic. These concerns were reinforced by last year's scientific advice which indicated that the western Atlantic bluefin stock was in serious difficulty and that drastic conservation measures were required to arrest the apparent dramatic stock decline. Indeed, the SCRS Report last year recommended that the catch be kept as near zero as feasible.

At some considerable cost to various sectors of the Canadian bluefin fishery, we agreed with the other countries actively fishing this stock to take restrictive measures for 1982 and 1983 in the interests of resource conservation. While the Total Allowable Catch of 1,160 MT adopted in February of this year was not as restrictive as SCRS had recommended, it nonetheless represented a very real constraint upon the Canadian fishery in 1982. In fact, the Canadian quota had to be sub-allocated among six fleet sectors and different gear types and all of these sectors reached their quotas very early in the fishing season and the fisheries had to be closed to prevent quota overruns. Without these quotas, the Canadian catch in 1982 would have been several-fold what it was, thus Canadian fishermen made a very real sacrifice for conservation purposes this year.

Now, at this meeting, the Commission has received advice from the SCRS for bluefin which is, to say the least, ambiguous. While the scientific advice in 1981 was quite categorical, this year SCRS has given a wide range of advice and left it to the Commission to sort it out. The Canadian delegation is puzzled by this most recent advice. We do not fully understand the reasons for the apparent change in the scientific views of the status of and future prospects for the western North Atlantic bluefin stock. On the other hand, perhaps it leaves a little room for some optimism that the stock is in better shape than was thought last year.

Given the high degree of uncertainty which is evident throughout the entire scientific report on bluefin, the Commission faces a very difficult task in reviewing the management measures in place for 1983 and deciding on future measures. There is obviously considerable room for error since the scientists have been unable to agree on many of the stock parameters. Given this situation, it is the view of the Canadian delegation that, if the Commission is to err, it should err on the side of caution since the consequences of

error in overestimating stock abundance, and hence overfishing the stock, could have a major detrimental impact upon the future of the bluefin tuna fishery in Canada and elsewhere. In this connection it should be noted that SCRS has confirmed the existence of two temporally and spatially separate spawning areas. This requires that we continue to manage the North Atlantic bluefin as two stocks rather than one.

Since Canadian tuna fishermen have no alternatives if the western North Atlantic bluefin tuna stock is severely depleted (because of the nature of our fishery), we believe that a conservative and prudent approach to management is necessary. Conservation of the resource must be our first priority. The SCRS has indicated that the "weight of the evidence suggests that catch levels for monitoring should be conservative." SCRS has also noted a "concern that 1982 catches are insufficient to monitor the stock." While there is considerable uncertainty as to what an appropriate catch level should be, Canada is prepared to consider a modest increase in the Total Allowable Catch for western North Atlantic bluefin for 1983. We are prepared to enter into a dialogue as to what that level should be, bearing in mind the need for a cautious and prudent approach to management of this resource, particularly in light of the considerable uncertainties in the scientific advice.

Appendix 4 to Annex 8

**Proposed New Regulations
for the Atlantic Bluefin Tuna Catch**

(Attached to Report of Panel 2)

Recognizing that the Commission at its Seventh Regular Meeting in Tenerife, Spain, recommended that the annual level of catch of bluefin tuna in the western Atlantic be adjusted on the basis of the scientific evidence produced by the SCRS to insure the stabilization or increase of the stock,

Taking into account the findings of the SCRS on bluefin tuna in the western Atlantic provided to the Third Special Meeting of the Commission,

The Commission recommends:

FIRST: In order to maintain and improve the data necessary to index the abundance of the stock of bluefin tuna in the western Atlantic

a) the Contracting Parties whose nationals have been actively fishing for bluefin tuna in the western Atlantic take measures to limit the catch for scientific monitoring in 1983 to 2,660 metric tons (MT);

b) the catch of 2,660 MT be taken by these Contracting Parties in the same proportions as previously agreed for 1982, and

c) further scientific investigations, including the work of the Ad Hoc Working Group on Bluefin Analysis Techniques that is to meet in April or May, 1983, be

carried out in order that the Eighth Regular Meeting in November, 1983, has additional information upon which to base bluefin tuna management measures.

SECOND: 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.

THIRD: That in recognition of the possible lower level of abundance of small bluefin in recent years, no more than 15 percent in weight of the catch in the western Atlantic may consist of bluefin smaller than 120 cm fork length.

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

FIFTH: That the developing bluefin tuna fisheries in the western Atlantic of Brazil and Cuba shall not be subject to the limitation addressed herein during 1983.

SIXTH: That during 1983 there will be no directed fishery on the bluefin tuna spawning stocks in the western Atlantic in spawning areas such as the Gulf of Mexico.

SEVENTH: That, notwithstanding the provisions of Article VIII, paragraph 2 of the Convention, with respect to paragraphs a and b of the First recommendation, the Contracting Parties whose nationals have been actively fishing for bluefin tuna in the western Atlantic take steps to implement this recommendation as soon as possible in accordance with the regulatory procedures of each country.

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

Funchal, Madeira (Portugal), November 1982

Table of Contents

Text of Report

Appendix 1 – Agenda

Appendix 2 – Revised 1983 Skipjack Program Budget

Item 1. OPENING OF THE MEETING

1.1 Mr. C. J. Blondin (U.S.A.), Chairman of the Committee, opened the meeting. He pointed out that Commission Agenda items 4-15, 27 and 29 have been referred to the Committee. He noted that various items had been pending from the 1981 meeting and commended the Executive Secretary and his staff for the excellent preparation of the background documents for these items.

Item 2. ADOPTION OF AGENDA

2.1 After reviewing the Commission Agenda items referred to STACFAD, the Tentative Agenda, prepared prior to the meeting by the Secretariat, was adopted (Appendix I).

Item 3. ELECTION OF RAPPORTEUR

3.1 The Secretariat was designated rapporteur.

Item 4. PANEL MEMBERSHIP

4.1 The Chairman referred the Committee to document COM/82/11 and reviewed panel membership. As there were no changes presented the current panel membership was confirmed.

Item 5. ADMINISTRATIVE REPORT

5.1 The Administrative Report (COM/82/9) was reviewed by the Executive Secretary. He outlined the general activities of the Secretariat, Commission membership, ICCAT-related meetings, meetings at which ICCAT was represented, cooperation with other organizations, coordination of research activities, Commission publications, etc.

5.2 The Report was adopted by the Committee and recommended to the Commission for approval.

Item 6. RELATIONS WITH OTHER ORGANIZATIONS

6.1 A brief overview of the relationships the Commission maintains with various international organizations, as contained in COM/82/9 was presented; the Committee found these to be satisfactory.

Item 7. COMMISSION PUBLICATIONS

7.1 The Committee studied the pertinent sections of the Administrative Report pertaining to Commission publications. It was recommended that the current ICCAT publication policy be maintained.

Item 8. MATTERS CONCERNING THE SECRETARIAT STAFF

8.1 Pension plan

The Executive Secretary, in explaining the background of this matter, reiterated the Commission's past decisions regarding staff pension and other social benefits. He noted that when the Secretariat was first set up in 1970, it was suggested that 20 percent of the base salary be paid in compensation for the various social benefits which the Commission did not provide. In 1981, a small working group was formed to study the Secretariat salaries and benefits. The group's report was presented to the 1981 Commission meeting. In accordance with the recommendations made by the working group, the Executive Secretary and his staff carried out a comprehensive study of various pension plans. The three fundamental objectives of the study were:

- To comply with the Commission's decision to select a pension plan.
- To ensure that the Commission's Budget would remain practically unchanged by the financial obligations involved in implementing a pension plan.
- To ensure that the Secretariat staff is not adversely affected, in either the short- or long-term, so that the decision adopted by the Commission will be acceptable to the majority of the staff.

Therefore, the Executive Secretary proposed the following to the Commission:

1. That the Commission, on behalf of the Secretariat staff, participate in the Van Breda Retirement Benefit Plan.
2. That participation in the Van Breda Plan be *voluntary* for present Secretariat employees and *compulsory* for future employees.
3. That the Commission contribute up to 20 percent of base salary for compulsory retirement, medical, accident, disability and optional life insurance coverage (see Article 27 of the 1973 Staff Rules). The Working Group on Salaries and Benefits estimated the total cost of these benefits would be 27 to 30 percent of base salary. The employee will contribute the difference between the 20 percent and the actual cost of these benefits.

As regards those present employees who do *not* choose to participate in the Van Breda Plan, the Executive Secretary recommended:

4. That the Commission pay these staff members who do not join the Van Breda Plan, but have private or other pension plans of their own arrangements, an amount equal to the benefit that the staff who participates in the Van Breda Plan would receive, upon presentation of the appropriate documentation.
5. That in the case of employees contracted on a fixed-term basis, an alternate plan could be considered, to be negotiated between the employee in question and the Executive Secretary, in consultation with the STACFAD Chairman.

The Executive Secretary believed that these provisions comply with the spirit and letter of the Commission's mandate, as well as with the fundamental objectives mentioned earlier.

The Committee noted that the Van Breda Company is a reputable international firm which is financially sound. The Committee also confirmed that the adoption of the Van Breda plan would have no impact on the Commission's present or future budget.

The Committee approved the selection of the plan presented by the Executive Secretary and recommended that the plan as well as the above-mentioned proposals be adopted by the Commission.

8.2 Staff classifications

Following the recommendation made at the 1981 Commission meeting, the Executive Secretary updated and reviewed the job descriptions of the staff and consulted the Personnel Division of FAO for advice. The Executive Secretary presented the results of his study as well as a copy of the communication received from FAO concerning this matter. He recommended that the biostatistician, Mr. J. P. Wise, contracted at P-3, complete the second year of his contract at P-4, Step I, and that the systems analyst, Ms. V. Nordström, contracted at P-2, be promoted to P-3, Step I.

The Committee noted that these classification changes will not affect the total budget for 1983. The Committee pointed out that the classification of the biostatistician was based on the high qualifications of the person presently employed in this position, but it was noted that this would not establish a precedent for the position. With this understanding, the Committee reiterated the recommendations and suggested that the Commission approve them.

It was further reported that the study on the classification of General Services staff has not yet been completed. Upon completion, and after consulting with the STACFAD Chairman, the Executive Secretary will make the pertinent decision, always bearing in mind that there be no financial repercussions that would modify the 1983 budget approved by the Commission.

8.3 Staff Rules

At the Seventh Regular Meeting of the Commission (Tenerife, November 1981),

the revised Staff Rules were approved and entered into effect on January 1, 1982. It was agreed that the Staff Rules would be considered provisional for one year and would be ratified or modified at the 1982 Commission meeting. It was also recommended that these be updated every two years. The Secretariat carefully reviewed the texts of the Staff Rules and introduced minimal changes of an editorial nature, for clarification or to align translations (COM/82/12). The Committee reviewed these changes and approved them.

Item 9. AUDITOR'S REPORT--1981

9.1 The Executive Secretary informed the Committee that Mr. A. Oliver, the auditor named by the "Instituto de Censores Jurados de Cuentas de España" (Spanish Institute of Auditors) passed away in 1982. Mr. Oliver served as auditor for the Commission since its creation and his excellent service to the Commission was commended.

9.2 Mr. B. Tahoces Acebo, also a member of the Spanish Institute of Auditors, was appointed by the Institute to replace Mr. Oliver. The Committee recommended that the Commission confirm his appointment as formal ICCAT Auditor.

9.3 It was noted that the 1981 Auditor's Report was translated and circulated to the head of each delegation in mid-1982. The Report was reviewed by the Committee and then recommended to the Commission for adoption.

Item 10. FINANCIAL STATUS OF THE REGULAR BUDGET--1982

10.1 The 1982 Financial Report (COM/82/10) was presented and duly explained by the Executive Secretary. He noted the considerable interest income on Commission bank accounts. The Executive Secretary reported that the financial status of the Commission is good and that a positive balance of approximately \$160,500 is expected at the end of this fiscal year.

10.2 Once again, the matter of outstanding member country contributions to the Commission budget was mentioned. Fortunately, because of the Working Capital Fund, there were no difficulties encountered in meeting expenses.

Item 11. WORKING CAPITAL FUND--REGULAR BUDGET

11.1 The Committee reviewed Statement 9 of the 1981 Financial Report (COM/82/10). The Executive Secretary, in explaining this statement, noted that the interest earned on Commission accounts was deposited to this Fund.

11.2 The Committee recommended that all the unbudgeted income and the unused balance from the 1982 Budget be deposited to the Working Capital Fund.

Item 12. REVIEW OF THE SECOND HALF OF THE BIENNIAL BUDGET--1982

12.1 The Executive Secretary referred the Committee to the Financial Report (COM/82/10), and pointed out that the biennial budget for 1982-83 had been adopted

at the 1981 Commission meeting. He stated that the various new activities proposed at this meeting can be covered by the present budget and if necessary these could be facilitated by shifting some funds from one budget chapter to another.

12.2 The Committee reviewed the second half of the biennial budget for the 1982-83 period and recommended that the Commission adopt it without change.

Item 13. FINANCIAL STATUS OF THE SKIPJACK PROGRAM--1982

13.1 The financial status of the International Skipjack Year Program, which is estimated to the end of 1982, is reported in COM/82/10.

Item 14. WORKING CAPITAL FUND--SKIPJACK BUDGET

14.1 The Committee reviewed Statement 9 of the 1981 Financial Report (COM/82/10), which refers to the Special Skipjack Working Capital Fund and noted that about \$205,805.95 will be in the Fund at the end of 1982.

Item 15. REVIEW OF THE SKIPJACK BUDGET AND CONTRIBUTIONS--1983

15.1 The Committee reviewed document COM/82/27. It was noted that the four-year Skipjack Program had been extended for one more year, i.e., through 1983, to assure adequate time for data analysis. The Committee was also reminded that the Skipjack Conference proposed at the 1981 meeting will be held in Tenerife, Canary Islands, Spain, in June, 1983.

15.2 It was pointed out that the skipjack budget of \$100,000 originally approved for 1983 would be insufficient to meet all the expenses of the Conference. The Convener of the Sub-Committee on Skipjack explained that the projected costs were carefully studied before reaching the conclusion that a \$200,000 budget would be more realistic to adequately meet 1983 expenses. After several inquiries from delegations present at the STACFAD meeting, the Committee recognized that because of considerable savings in former skipjack budgets due to the excellent management of funds, no new contributions would be necessary to meet the 1983 budget. Rather, it would be those savings included in the Skipjack Working Capital Fund which would be used to meet Conference and post-Conference Program expenses.

15.3 After these explanations, there was unanimous approval of the revised 1983 budget and several delegations voiced approval that these expenses are for the direct benefit of the objectives of this Commission, to conserve the stocks. The Budget (Appendix 2) was recommended to the Commission for approval.

Item 16. TRAINING PROGRAM FOR DEVELOPING COUNTRIES

16.1 Document COM-SCRS/82/26 was presented and reviewed by the Committee. It was noted that the Secretariat circulated a questionnaire on training and a follow-up in 1982. The summary of the responses is contained in an appendix to the aforementioned document.

16.2 Immediate future training includes a 10-day course in early February, 1983, in Abidjan, Ivory Coast, to which CEECAF member countries which are not ICCAT members have also been invited to send trainees. With regard to this course, France and the EEC mentioned that they have scholarship funds available for this purpose on a bilateral basis.

16.3 Other plans include possible training for Brazil and Cuba to be arranged at a later date. The delegate from Japan stated that certain training programs are under consideration in Japan. The Secretariat will be informed of programs when they materialize.

16.4 The Committee was reminded of a recent 10-day, on-the-job training course at the Secretariat in Madrid for trainees from Madeira and the Azores. It was noted, however, that travel and per diem expenses were borne by the organizations for which these trainees work.

16.5 The delegate from Portugal expressed his Government's sincere thanks to the Secretariat and the Commission for the top-level training given to the Portuguese scientists and technicians and for the excellent facilities afforded these trainees.

16.6 The Executive Secretary noted that after carefully studying the budget for 1983 he feels that the Commission could contribute between \$20,000 and \$25,000 towards the training program without affecting the total budget for 1983. The Committee recommended that the Commission approve the training program as presented in general terms and that the Executive Secretary be granted the authority to review the requests for financial aid for training, taking into account the other aid available from France and the EEC.

Item 17. DATE AND PLACE OF THE NEXT REGULAR MEETING OF THE COMMISSION

17.1 The Committee was unanimous in expressing its sincere appreciation to the Portuguese and Regional Government authorities for the excellent organization of the Third Special Meeting of the Commission and for the warm hospitality afforded all the ICCAT delegates and families.

17.2 The delegate from Spain noted his country's concern that meeting costs be kept at a minimum and suggested that the 1983 meeting be held at the ICCAT headquarters city, Madrid. France also voiced its concern to keep within the budgetary framework and suggested that, in principle, the meeting be held in Madrid, but that the Executive Secretary be authorized to carry out a study, through contacts with other member countries, on the possibility of holding the meeting in another member country, with no impact on the present budget. Other delegations also expressed the need for economy and supported the French proposal.

17.3 The delegate from Ivory Coast noted that if the Commission expressed a desire to hold the 1983 meeting in his country he would be happy to relay those feelings to the proper authorities.

17.4 The Committee recommended to the Commission that the Eighth Regular Meeting of the Commission be held for one week starting November 9, 1983.

Item 18. OTHER MATTERS

18.1 No other matters were discussed.

Item 19. ADOPTION OF REPORT

19.1 The Report was adopted.

Item 20. ADJOURNMENT

20.1 The meeting was adjourned.

Appendix 1 to Annex 9

**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. Matters concerning the Secretariat staff
 - 8.1 Pension plan
 - 8.2 Staff classifications
 - 8.3 Staff Rules
9. Auditor's Report--1981
10. Financial status of the Regular Budget--1982
11. Working Capital Fund--Regular Budget
12. Review of the second half of the biennial budget--1983
13. Financial status of the Skipjack Program--1982
14. Working Capital Fund--Skipjack Budget
15. Review of the Skipjack Budget and Contributions--1983
16. Training program for developing countries
17. Date and place of the next Regular Meeting of the Commission
18. Other matters
19. Adoption of Report
20. Adjournment

Appendix 2 to Annex 9

Revised 1983 Skipjack Program Budget (US\$)

	<i>Approved by Commission (Tenerife, Nov. 1981)</i>	<i>Revised Budget</i>
1. Salaries (Coordinator and 1 secretary) . . .	65,200	65,200
2. Office equipment and materials	0	0
3. Travel	0	10,000
4. Operations and contracts	14,800	20,000
5. Skipjack Conference		
a) Facilities	20,000	30,000
b) Travel		
i) Invitational*	0	6,000
ii) Member scientist**	0	38,000
6. Publication		
a) Printing and binding	0	25,000
b) Art work	0	5,800
TOTAL	100,000	200,000

* 2 persons at \$3,000 each.

**19 persons at \$2,000 each.

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

Funchal, Madeira (Portugal), November 5-9, 1982

Table of Contents

Text of Report

Table and Figures

Appendix 1 – Agenda

2 – List of Documents

3 – Report of the Ad Hoc Working Group to Review the
Acceptance of Documents

4 – Report of the Sub-Committee on Statistics

5 – Report of the Sub-Committee on Skipjack

6 – Report of the Working Group on Juvenile Tropical Tunas

7 – Table of Assignments

8 – Report of the Ad Hoc Working Group on Tagging Accounting

9 – Report of the Symposium on Criteria to Define Stock Units

Item 1. OPENING OF THE MEETING

The Chairman, Mr. J. S. Beckett (Canada), opened the Thirteenth Regular Meeting of the Standing Committee on Research and Statistics (SCRS). He thanked the Portuguese Government, the Regional Government of Madeira, the Secretary of Agriculture and Fisheries of the Regional Government of Madeira and the hotel management for their hospitality and cooperation.

He welcomed all the scientific representatives of member and non-member countries and organizations. Each member country introduced its scientific delegation (the List of Participants is attached as Annex 2 to the Proceedings).

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	A. Fonteneau*
Yellowfin	F. X. Bard
Bigeye	S. Kume
Skipjack	R. Pianet
6-B Albacore	L. Antoine*, N. Bartoo
6-C Bluefin	M. Parrack*, Z. Suzuki, J. Cort, P. Hurley
6-D Billfishes	
Billfish	S. Kikawa*, R. Conser
Swordfish	M. Farber*, J. C. Rey
Southern bluefin	S. Kume
6-E Small tunas	J. Wise
6-F Multi-species interactions	
Tropical	G. T. Sakagawa
Temperate	N. Bartoo

Dr. G. D. Sharp (FAO) was asked to assist rapporteurs in preparing their drafts. Dr. P.M. Miyake (Secretariat) was asked to be rapporteur for all other agenda items.

The SCRS Chairman noted that the following groups were scheduled to meet during the Plenary Sessions: Sub-Committee on Skipjack, Sub-Committee on Statistics, Working Group on Juvenile Tropical Tunas, Working Group on Juvenile Bluefin, and Working Group on the Eco-Biological Aspects of Tunas.

An Ad Hoc Working Group on Tagging Accounting was set up and convened by A. Fonteneau. Other members of this Group are S. Kume (Japan), P. Cayré (Senegal), M. Mensah (Ghana), J. C. Rey (Spain), F. X. Bard (Ivory Coast), M. Farber (U.S.A.), J. Pereira (Portugal), L. Aloncle (France), A. Rodríguez (Cuba), J. U. Lee (Korea), H. Santa Rita Vieira (Cape Verde), W. Bayliff (IATTC), P. M. Miyake and P. E. K. Symons (Secretariat).

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, the Chairman formed a small group made up of R. Letacounoux (Convener), A. González-Garcés, T. Diouf, I. Barrett, E. Kwei and P. M. Miyake.

* Head rapporteur.

Mr. Letaconnoux later reported the recommendations of the group, which are attached as Appendix 3. The SCRS agreed with all the recommendations suggested by the group; the accepted documents are listed in Appendix 2.

Item 5. REVIEW OF NATIONAL FISHERIES AND RESEARCH PROGRAMS

5.1 ANGOLA

Approximately 5.2 thousand MT of tuna were caught in 1981 and, according to estimated data, catches from the first half of 1982 are around 2.7 thousand MT. The total 1982 catch is estimated to be at the same level as 1981. Although there are four less fishing vessels, the possible acquisition of new vessels may lead to variations in the fishing effort from one year to another and to an improvement in 1983.

In 1981, around 1,665 skipjack, 1,958 Atlantic little tuna, 555 yellowfin, 250 frigate tuna and 756 bigeye, for a total of 5,184 fish, were sampled.

Task I, Task II and frequency statistics were sent to ICCAT and this work will continue developing during this year.

Since the results up to now have not been very satisfactory, this year there will be another tagging cruise which should improve tag recoveries.

5.2 BENIN

No report was submitted.

5.3 BRAZIL

The tuna fishery in Brazil is conducted along all the coast. In the northeast region, the exploitation is typically artisanal while in the southeast there is a concentrated industrial fleet.

The artisanal fleet has not presented any significant changes in technology and the number of boats has been constant in the last years. The industrial fleet is comprised of two types of boats: longliners and baitboats. The number of longliners, three national and three under leasing contract, has been the same in the last years. The number of baitboats continues to grow. At the end of 1981, 75 national and 4 foreign boats under leasing contract were engaged in this fishery, although about half of them operated for some months only. The main fishing grounds for the longliners continue to be the southeast coast; however, in the case of the leased boats, activities are concentrated in the south.

The development of the baitboat fleet in other states such as Sao Paulo and Santa Catarina resulted in the expansion of the fishing area. Four fishing grounds of good productivity are now known. During 1981, the total landings of the national longliners (996.4 MT) was about 40 percent less than in 1980. This decrease was due to the partial paralyzation of two units of the fleet as well as the low catch of swordfish that was similar to the years before 1980.

The leased fleet landed about 1,738.8 MT in 1981 and the total fishing effort was 1,178,950 hooks, a relatively low level compared to 1980. A significant increase of

40 percent was noted in the yield of this fishery.

The baitboat fleet continues to increase its production. In 1981 the total catch reached 14,992 MT, an increase of 118 percent over 1980. The fishing effort of this fishery is covered only partially now. The average yield was 5.2 MT per effective fishing day, considering 242 trips surveyed. Estimations of total effort are still not available at the moment.

Good statistical information on the artisanal fleet is not available and only figures of total catch can be estimated for 1981 (2,588.6 MT).

5.4 CANADA

The Canadian tuna catch in 1981 amounted to 505 MT, consisting of 425 MT of bluefin and 180 MT of skipjack. The skipjack catch, together with 105 MT of juvenile bluefin, was taken by small purse seiners fishing off the east coast of the U.S.A. The remaining 320 MT of bluefin consisted entirely of large bluefin taken in Canadian inshore waters. Catches in the trap net fishery remained low for the third consecutive year. A new handgear was introduced into the rod-and-reel fishery and the catch by these gears amounted to 279 MT. Bluefin catches in 1982 will attain the 250 MT allocation and be comprised entirely of large fish. There was no purse seine effort.

The swordfish longline fishery took 542 MT in 1981 while 19 MT were taken by harpoon. This represents a substantial decrease from 1,885 MT reported last year. Preliminary data indicate that the 1982 swordfish catch will not exceed 300 MT. These reductions in catch are a result of decreases in effort due primarily to a lack of available markets.

Swordfish research efforts have been concentrated on the analysis of material collected during the 1980 research survey, particularly on gut and gill parasites, feeding habits, electrophoretic analysis and ageing techniques. Growth studies on bluefin tuna were continued and a minor tagging experiment was conducted in cooperation with U.S.A. scientists during the purse seine fishery to evaluate a new tag design. Monitoring of both the bluefin tuna fisheries and the swordfish longline fishery continued in 1981 through the analysis of fishing logs.

5.5 CAPE VERDE

In 1981, the active tuna fleet was comprised of three baitboats with freezer facilities and 19 baitboats without freezer facilities. The freezer baitboats operated off Angola for almost two months at the beginning of the year and off Cape Verde from the end of September. The other baitboat vessels made only 10- to 12-hour trips in the areas close to Cape Verde, where they are based.

The total tuna catch in 1982 (up to the end of September) reached 1,537 MT, broken down as follows: 620 MT yellowfin, 202 MT bigeye, 474 MT skipjack and 241 MT others. Cape Verde has been following ICCAT recommendations with regards to statistics.

For the International Skipjack Year Program, Cape Verde carried out a tagging cruise from September 28 to October 10, in which 4,566 tuna (mainly skipjack) were tagged. Also, surface temperatures were taken regularly and 75 skipjack were sampled.

Up to the end of September, 333 skipjack taken in three 5° x 5° areas were sampled.

5.6 CUBA

Cuban fishing activities during 1981 were carried out in the central western and central eastern Atlantic. The Cuban fleet was comprised of 21 longliners, 1 purse seiner, 65 baitboats and 2 new longliners of an experimental nature which are operating in Cuban waters.

Cuban tuna catches in 1981 reached 9,700 MT, slightly less than in 1980 when 11,800 MT were taken.

With regard to the International Skipjack Year Program, research activities such as port sampling, tagging with dart tags, exploratory fishing, fisheries oceanography and larval surveys have been carried out in Cuban waters.

5.7 FRANCE

In 1981, French tuna catches amounted to 74,000 MT, of which 45,600 MT were yellowfin tuna, 27,200 MT skipjack, 3,300 MT albacore, 2,400 MT bluefin and 400 MT bigeye tuna.

Studies were carried out by COB/CNEXO, ISTPM and ORSTOM, and included the following:

Studies were made on the population structure of the east Atlantic albacore, environmental conditions and the age composition of catches, as well as studies on effort value and CPUE.

Bluefin tuna studies included an evaluation of the catches and the age composition of Mediterranean bluefin.

For tropical tunas, studies were carried out on stock assessment and effort data from the FISME (France-Ivory Coast-Senegal-Morocco-Spain) fleet.

France also took an active part in the Skipjack Year Program, in particular, in studies on age determination, growth, tagging, intensive sampling and physical oceanography.

5.8 GABON

A tuna fishery project in Gabon is in the process of being carried out. The Government has already financed the construction of a fishing dock (length 275 m, draught about 10 m) in Port Gentil near Cape Lopez, which has been in operation since 1980. Spanish tuna fishing vessels carry out transshipment operations at Gabon. As yet the port does not have any infrastructures and this project is in the hands of private enterprise.

The Gabon tuna fishery project also includes the purchase of four fishing boats and the construction of a medium-sized cannery. At present the Gabon Government is negotiating with foreign companies concerning joint exploitation of tunas off its coasts.

5.9 GHANA

Since 1981 there have been some movements and improvements in the tuna fleet situation. By the end of 1981, the tuna fleet had increased from 42 in 1980 to 51. Ghanaian flag vessels increased from 12 to 14, the number of baitboats increased from 10 to 18, while purse seiners increased from 2 to 4. Only one foreign flag purse seiner left the fleet during 1981.

In 1982, one foreign flag purse seiner joined the fleet, while one Ghanaian flag purse seiner left the fleet. Five baitboats have recently joined the Ghanaian flag vessels. Two baitboats from Cape Verde have left the fleet.

In 1981, the industrial fleet of Ghana caught 14,358 MT while the artisanal fleet caught 5,826 MT of tunas. The total catch in 1982 is not expected to show any significant increase.

Ghana continued to sample tuna landings for length and weight and to collect Task II and other biological data. For the Skipjack Year Program, in particular, Ghana carried out port sampling, two intensive samplings on board baitboats, and made recaptures of tagged tunas; approximately 230 recoveries have been made. For the second time in two years, a tag recaptured by Ghana won a \$500 reward in the 1981 ICCAT tagging lottery. Ghana also collected 165 samples of spines, 172 samples of otoliths, 146 samples of gonads and 40 samples of stomachs of skipjack.

Ghana also participated in the Regional Working Group meeting in Dakar in June, 1982, at which skipjack data collected by FISM, Spanish and Ghanaian tuna fleets were processed. In 1982, skipjack samples of gonads and stomachs are being analyzed. Ghana is still carrying out port sampling, particularly on skipjack gonad samples and sex structure. Efforts will continue to improve Task II and biological data, size sampling and logbook coverage.

5.10 IVORY COAST

Tuna catches of the Ivory Coast fleet in 1981 increased to 17,568 MT, made up mainly of yellowfin (56 percent) and skipjack (43 percent). Canned production of tuna is about 9,000 MT net weight.

The landings and transshipments of tuna at the port of Abidjan were between 100,000 and 120,000 MT. They were regularly covered by the CRO at Abidjan which collected the statistics necessary for ICCAT Task I, Task II and biological data.

The "Centre de Recherches Océanographiques" of Abidjan actively participated in the Skipjack Year Program with tagging cruises, improved fishery statistics and collection of biological data. Ivory Coast also contributed to skipjack data processing and analysis.

5.11 JAPAN

In 1981, the catches of tunas and tuna-like fishes caught by Japanese Atlantic tuna fleets increased to 55,500 MT, about 14 percent higher than those of the preceding year. The longline fleet of 320 vessels yielded 39,300 MT of various tunas and billfishes (90 percent of the total catch), more than half of which were comprised of bigeye tuna. Ten

Tema-based pole-and-line boats harvested 16,200 MT of tropical tunas (an increase of 15 percent over the 1980 catch), of which skipjack accounted for 95 percent. In 1982, the Japanese longline fleet reduced its activities to some extent in the Atlantic. The number of Tema-based baitboats decreased to seven in 1982. Both fleets were under internal measures to comply with the ICCAT regulations for yellowfin, bigeye and bluefin tunas.

During 1981 and 1982, collection and compilation of fisheries data and scientific research on Atlantic tunas and tuna-like fishes were carried out by the Far Seas Fisheries Research Laboratory. Extensive on-board biological sampling of longline catches has been continued. Fisheries statistics and size data were submitted to the ICCAT Secretariat as requested by the SCRS. The results of the analyses on bluefin tuna stocks in the west Atlantic were documented in six working papers presented at the Miami meeting on bluefin (February, 1982). Updated scientific findings on fishery biology and stock assessment analyses were presented to the present SCRS in ten documents. For the International Skipjack Year Program, data on tag release-recapture and those from the intensive sampling of fisheries are being compiled for analysis, and samples of predator stomachs collected from longliners were examined.

5.12 KOREA

In 1981, Korean catches of tunas and tuna-like fishes in the Atlantic amounted to about 32,000 MT, an increase of 10.3 percent over the previous year's catch. Fifty-six longliners caught about 22,300 MT, an increase of 17.7 percent, and 8 baitboats based at Tema harvested about 9,500 MT, a 3.8 percent decrease, over the 1980 figure.

Research on Atlantic tunas and related species has been carried out by the Fisheries Research and Development Agency as in past years. For the ICCAT Skipjack Year Program, a scientist and fishermen on Korean baitboats have conducted dart tagging and provided biological data. The scientist was sent to Tema in May, 1982, for this task. From 1981 to the end of June, 1982, 530 dart tags had been released and 9 of these have been recovered in the Gulf of Guinea.

5.13 MOROCCO

No report was submitted.

5.14 PORTUGAL

Portuguese tuna catches made by Azorian and Madeiran baitboats reached 6,286 MT in 1981, a 13 percent increase over that of 1980 (excluding tropical purse seiners). The breakdown of the catches of the principal species is as follows: a total of 5,752 MT of tunas was taken by Azores comprised of 2,663 MT of bigeye, 2,619 MT of skipjack and 440 MT of albacore. Madeiran catches totaled 534 MT, of which 440 MT were bigeye tuna and 77 MT were skipjack.

Preliminary 1982 estimates indicate an important increase in skipjack catches and a significant decline in bigeye catches.

Research is centered on the principal species taken. Research activities within the International Skipjack Year Program have been particularly important and include inten-

sive sampling, removal and analysis of dorsal fin spines and gonads. Efforts have also been made to sample the artisanal skipjack fishery.

5.15 SENEGAL

The 1981 tuna catch (10,400 MT) made by the fleet based at Dakar (26 baitboats, 4 purse seiners) was 30 percent higher than in 1980. This increase, which includes yellowfin, skipjack and bigeye tuna, is mainly due to the activity of more purse seiners.

The landings and transshipments (19,600 MT) of foreign tuna fleets (France, Ivory Coast, Morocco and Spain) based at Dakar were also much higher. The total weight of tunas transshipped in Senegal is estimated at 35,000 MT.

In 1981 catches of small tunas (3,400 MT) were similar to those in the past, whereas catches of Atlantic sailfish (530 MT) increased by almost 60 percent.

Research activities carried out were mostly in conjunction with the Skipjack Year Program. Two tagging cruises, financed by the BEC, tagged 5,541 tunas in 1981 and 1982, of which 3,655 were skipjack. In 1981, three skipjack were tagged with acoustic tags and followed. The collection of skipjack gonads and dorsal spines continued in 1981.

In 1982, a regional working group, in which six ICCAT member countries participated, met at Dakar. After numerous data were collated, interesting preliminary results on the Skipjack Program were obtained.

5.16 SOUTH AFRICA

No report was submitted.

5.17 SPAIN

Spanish catches of tunas and tuna-like species rose in 1981 to 135,396 MT, which represents an increase of approximately 18,600 MT over 1980. This is mainly due to an increase in the tropical fleet catches; there were considerable increases in yellowfin as well as skipjack catches. There was only a slight increase in the catches taken by the Canary Islands fishery although a change was noted in that this year skipjack has become the most fished species in that area. The catches from the Peninsula decreased by around 4,400 MT. This decrease was caused mainly by the low catches of albacore and the decrease in small tuna catches.

Research was directed at carrying out the recommendations the SCRS made for the International Skipjack Year Program. Much attention was given to the intensive sampling activity of the Skipjack Program; five cruises were made by the tropical fleet to collect information concerning fishing and environmental conditions. Skipjack gonads, stomachs and otoliths were collected. These cruises were also used to analyze the yellowfin-bigeye percentages of the catches.

Tagging cruises were carried out on skipjack in the Canary Islands, on bluefin tuna in the Bay of Biscay and on swordfish south of the Canary Islands. For stock structure studies on bluefin, both internal and external parasites were collected.

Collection of biological data on all the tuna species caught by the Spanish fleets continued as usual in 1981 as well as 1982.

5.18 UNITED STATES

United States catches of Atlantic tunas and tuna-like species totaled approximately 14,000 MT in 1981, a 30 percent decrease from the 1980 catch of 20,000 MT. Tropical tuna catches totaled 7,300 MT in 1981, up from 5,900 MT in 1980. Bluefin tuna catches were limited to 1,500 MT in 1981, about the same as in 1980. Swordfish catches decreased from 3,500 MT in 1980 to 1,500 MT in 1981.

The United States tropical tuna and bluefin tuna fleets operated under regulations in 1981. The tropical tuna fleet was subject to 3.2 kg minimum size limits on yellowfin and bigeye tunas and the bluefin tuna fishery was subject to a minimum size limit quota and season regulation.

In 1980-1981, fishery and biological data were collected for tuna and tuna-like species taken in commercial and recreational fisheries. Tuna imported to the United States through Puerto Rico from the Atlantic were sampled for biological data.

Research activities addressed problems associated with stocks of swordfish, billfishes, albacore, yellowfin, skipjack and bluefin tunas. Additionally, fishery data taken in Puerto Rico were evaluated and reported.

5.19 U.S.S.R.

No report was submitted.

5.20 ARGENTINA

Tuna catches were made in 1968-1972 and 1976-1977 but since then Argentina has had practically no tuna catches except for the seasonal fishing of small tunas, namely Atlantic bonito (*Sarda sarda*) and mackerel, off the coasts of Buenos Aires. During this lapse, fishing activities mainly consisted of the catch of other species of appreciable commercial value.

Research is carried out in Argentina by the "Instituto de Investigación y Desarrollo Pesquero" (INIDEP) with its headquarters in Mar del Plata. It has modern laboratories and two research vessels, one of which was recently constructed in Japan and has sophisticated equipment. In addition, construction has begun on a third research vessel, similar to the one just mentioned, in West Germany. Research is carried out by this Institute on all the species caught including the fisheries of large tunas.

As some of the commercial species currently exploited are reaching MSY or the maximum catch permitted, Argentina is considering the exploitation of tunas, not only in its EEZ and in the so-called Common Fishing Zone that it shares with Uruguay as a result of the signing of the Rio de la Plata Treaty, but also exploitation on the high seas, beyond the 200-mile limit. It should be particularly noted that special research projects are already being carried out concerning the catch of tunas in these waters.

5.21 ITALY

The Italian tuna fishing fleet catches bluefin, broadbill swordfish, albacore and three varieties of small tuna (*Sarda sarda*, *Auxis rochei*, *Euthynnus alletteratus*). The

bluefin fishery in 1982 shows an increase in catches of adults as well as juveniles, with the season not yet at an end. The availability of official statistics and the limitations of catch estimates, which refer to certain fisheries only, do not permit exact figures to be given for the Italian tuna fishery. In order to improve this situation, a sampling survey on the Italian tuna fisheries is being carried out.

The ICCAT regulation on bluefin tuna fishing is applied in Italy. Law No. 41 of February, 1982, limits the fishery through a licensing system.

Italian scientists carry out research on the major bluefin tuna fisheries and in 1982 more than 3,000 tunas were sampled. Environmental studies were carried out during the fishing season as well as studies on the possibilities of bluefin breeding. In addition, studies were conducted on the reproduction of various species, on albacore growth and on the swordfish fishery.

**Item 6. REVIEW OF CONDITIONS OF STOCKS, WITH BRIEF PRESENTATION
OF MAJOR PAPERS ON THIS SUBJECT**

YFT-YELLOWFIN

YFT-1 Description of fisheries

Yellowfin tuna are fished throughout the tropical Atlantic, both by surface fisheries—purse seiners and baitboats—and by longliners. Figure 1 demonstrates the increasing importance of the surface fisheries. The detailed description of catches by country and gear is shown in Table 1.

Since 1975 the catches have tended to stabilize between 120,000 and 130,000 MT. The principal point to be considered about the Atlantic yellowfin fisheries is that they operate primarily along the African coast. In the western Atlantic the catches are dominated by longliners, although surface fisheries in that area have been growing rapidly in recent years.

Carrying capacity of the fleets which operate in the Atlantic are shown in Table 2 and Figure 2. The tendency for purse seiners was a continuous increase but it has been leveling in the past two years. The baitboat carrying capacity remains stable. There is reason to believe, however, that these data are only imperfect expressions of the effective effort.

YFT-2 Status of the stocks

The question of whether there is one or more Atlantic stocks of yellowfin has not yet been solved. Nonetheless, the great majority of the catches comes from the eastern Atlantic.

The standardized index of abundance based on data from the FISM seiners was compared at the last SCRS meeting with biomass estimates derived from cohort analyses (1981 SCRS Report). The two estimates demonstrate similar tendencies. Given the lack of any recent cohort analysis which takes the 1978-82 data into consideration, we must rely on the standardized FISM index as providing an indication of the abundance of the yellowfin stock for the whole period 1969-82 (Figure 3). Based on this estimate, it appears that the abundance of the yellowfin stock shows a decreasing trend from 1969 to 1982.

Although on the average, catches have not changed from 1975 to the present, a marked increase in the 1981 Spanish catches is not easy to understand. This increase is not followed by any unusual change in the FISM CPUE and therefore appears in the production model as a high increase in fishing effort.

It cannot be easily accounted for by a new catch-effort relationship, as the Spanish fleet has not increased the areas exploited. Two different hypotheses can explain this increase in Spanish catches:

1. A growth of the exploited biomass in 1980-1981 which does not appear in the FISM index;
2. A local increase in the catchability factor of the stock (q) for the Spanish fleet and/or Spanish fishing effort (f) and if so, it appears as a growth of fishing mortality (F) imposed upon yellowfin by the Spanish fleet (the largest yellowfin fishing fleet).

Although the FISM CPUE index may have potential biases and possibly does not demonstrate the real trend of the biomass, such as the bias due to effort diverted to skipjack during a strong abundance year for this species, the true situation is possibly close to the second situation (item 2 above). In this case, the conclusion of the production model analyses might have demonstrated the true situation of the stock and fishery under current exploitation conditions.

YFT-2.1 Total Atlantic (Figure 4)

The predicted MSY for an assumed single Atlantic stock is close to 123,000 MT for the $m = 1$ and $m = 2$ models. Current catches are near MSY, being 133,000 MT and 125,000 MT in 1981 and 1982 respectively. Estimated optimal effort for MSY is somewhere between 69,000 days fishing and 83,000 days fishing. The exact level of effort in 1981 and 1982 is not presently certain.

Based on FISM CPUE, total effort is estimated to have increased from 1980 to 1981 by approximately 69 percent and if such an increase is real, the total Atlantic yellowfin stock could have been exploited beyond the optimal level of effort.

YFT-2.2 Eastern Atlantic (Figure 4)

The predicted MSY for an eastern Atlantic stock using $m = 1$ and $m = 2$ models is about 108,000 MT. Catches have been near MSY in recent years. Effort associated with MSY is about 62,000 days fishing to 77,000 days fishing. As with the total Atlantic stock, the level of effort in 1981 and 1982 is not presently certain. FISM CPUE-based effort is estimated to have increased 66 percent from 1980 to 1981 to 93,500 days fishing, and if such an increase is real, the eastern Atlantic yellowfin stock could have been exploited beyond the optimal level of effort.

YFT-2.3 Western Atlantic

It is not possible to reach any conclusions on the status of a western stock, considering the lack of recent studies, the fact that the fisheries in the area are in rapid development, and the fact that so far we have only mediocre statistics on them.

An evaluation of the amount of recruitment from 1969 to 1979, based on the eastern Atlantic data, reveals fluctuations without any tendency (Figure 5). There is presently no study available on recruitment in the most recent years. This year the principal limiting factor for judging the current state of the yellowfin stock remains that only the production model can be utilized.

Mortality rates and recruitment trends must be analyzed so that the SCRS can formulate relevant and definitive advice.

YFT-3 Effects of current regulations

Since 1973 for yellowfin and 1980 for bigeye, there have been regulations limiting the landings of fish of less than 3.2 kg (subject to 15 percent incidental catch in number). Nonetheless, we note that the percentage of undersized fish landed in 1979 and 1980 is still very high, for both purse seiners and baitboats (Table 3).

Species identification and separation of statistics seem to be less of a problem. Furthermore, the Committee received new information that has caused it to change its opinion concerning the occurrence of unreported (dumping and clandestine sales) catches of undersized yellowfin. That is, virtually all undersized fish are currently being reported through normal statistical accounting systems and are entering ICCAT statistics used for assessment purposes.

YFT-4 Recommendations

YFT-4.1 Statistics

There has been considerable improvement in the currently available Spanish statistics, particularly for Task II and biological sampling, with good sampling rates. As a result, there is no longer any serious deficiency in yellowfin statistics. Nonetheless, we would like to make the following recommendations:

- i) There is a need for Task II and biological statistics for the new purse seine fleets, especially in the western Atlantic.
- ii) The ICCAT port sampling of longliners should be improved.

YFT-4.2 Research

The Committee recommends:

- i) That due to the current high levels of exploitation of the yellowfin stocks, estimates of the recent levels of spawning biomass and of recent recruitment be submitted regularly.
- ii) That studies on the western Atlantic yellowfin be carried out.
- iii) That research on alternative management strategies be carried out with the aim of decreasing the catches of small yellowfin and bigeye, thus improving the yield-per-recruit for these species.
- iv) That study of the Spanish and FISM fleet operations and resulting statistics on CPUE for years 1978 to 1982 be made.

YFT-4.3 Management

For the moment the Committee has no specific recommendation for supplementary management strategies other than to maintain the current regulation on minimum size. At the same time, in view of trends in catch and in the indices of abundance and effort, specific management strategies in the future could be required, if later detailed analyses confirm the current conclusions obtained by this year's production model analysis.

BET-BIGEYE

BET-1 Description of fisheries

Bigeye tuna are distributed widely in the temperate and tropical waters of the Atlantic between 40°N and 40°S. The spawning groups and juveniles inhabit the equatorial area and the fish at late juvenile and post-reproduction feeding stages migrate into the temperate waters north of 20°N or south of 20°S. The longline fishery is spread over almost the entire bigeye habitat. The baitboat fisheries directing their effort toward bigeye operate in local areas off Madeira, Azores, the Canary Islands and off Dakar. Bigeye are caught incidentally mixed with yellowfin and skipjack by the Tema-based baitboat fleet and the tropical purse seine fleet.

The historical catches by gear and country are given in Table 4. The longline fishery has been taking the largest share of the catch in past years (Figure 6). During the past 15 years, the total Atlantic catch increased to one of its highest levels, 60,000 MT in 1974, and since then has fluctuated between 38,400 MT in 1976 and 60,400 MT in 1980. The preliminary 1981 catch is 58,900 MT. The increase in catch in 1980 and 1981 was the reflection of the increased catch taken by the longline fishery.

BET-2 State of stocks

Whether or not Atlantic bigeye comprise a single stock unit is still uncertain, and the Committee assessed the state of the stock(s) under two hypotheses of stock structure: (1) a single Atlantic-wide stock, and (2) two separate stocks in the North and south Atlantic. Examination of adjusted CPUE of the longline fishery indicates that the recent level of relative abundance of adult stock is apparently two-thirds the level of the initial exploitation, regardless of the stock structure hypothesis (Figure 7). The Committee also used production models to evaluate the status of the stock for Atlantic bigeye (Table 5). The highest values of production estimates result from the case when $m = 0$ with infinite effort, and this unlikely situation indicates the theoretical upper limit of production.

BET-2.1 Total Atlantic stock

The total Atlantic stock appraisal made by production model analysis suggests that the stock is currently exploited at a high level close to the lower estimates of MSY. The MSY was estimated at between 52,900-111,200 MT, depending on the form of the curve

(Figure 8). Consequently, increasing fishing effort would probably not result in a substantial sustainable increase in yield given the current operating pattern of the fishery.

According to the previous examination by the Committee of the effect of certain time and area closures for the bigeye fishery, the results indicated that under various assumptions reduction of the catch of juvenile bigeye tuna would result in a minor gain in overall yield-per-recruit of up to 10 percent after 3 to 7 years. The overall gain would be distributed among the longline and baitboat fisheries that take large fish.

BET-2.2 North Atlantic stock

The updated production model analysis for the north stock resulted in MSY estimates with the range of 32,900-70,900 MT, depending on the parameters of the model used (Figure 9). These are unchanged from last year's estimates. Both observed catch and effort generated from the bigeye fishery during recent several years have been below the estimated levels of MSY. If the North Atlantic bigeye tuna comprise a unit stock, an increase in the sustainable catch would be expected by an increase in effort with the same fishery pattern, though the gain would be marginal.

BET-2.3 South Atlantic stock

For the south Atlantic stock, the production model fitted to updated catch and effort data produced MSY estimates of 21,400-49,200 MT, depending on the parameters of the model used (Figure 10). The bigeye fishery has been recently operating around the estimated MSY level. The observed catch and effort in 1980 were above the lower limit of the range of estimated MSY. A further increase in effort from the present level would not likely be accompanied by a sustainable increase in yield, if the fishery is in fact operating near MSY.

BET-3 Effects of regulations

The Commission adopted a 3.2 kg minimum size regulation for bigeye tuna in 1979, which went into effect in September, 1980. The regulation is expected to result in an increase in overall yield-per-recruit and to resolve the problem of undersized yellowfin tuna being reported as bigeye tuna.

The estimated catch of bigeye tuna under 3.2 kg in 1980 was 18 percent by number for Dakar-based baitboats, 81 percent for Tema-based baitboats and 54 percent for purse seiners operating in the eastern tropical Atlantic. In 1981, available size composition sampling done on Atlantic tuna transshipments from the eastern Atlantic to Puerto Rico, U.S.A., indicated that bigeye tuna less than 3.2 kg were about 90 percent by number for the purse seine catch and 30 percent by number for the baitboat catch. These percentages, however, were noted as being biased because of sorting of fish before transshipment.

The ICCAT recommendation on an 3.2 kg size limit for bigeye tuna, adopted at the Commission meeting in 1979, includes a provision that the regulatory measures be

subject to general review for the purpose of possible extension at the Commission Meeting immediately prior to December 31, 1983—that is, at the next Commission Meeting. Although some countries enacted regulations to implement the recommendation immediately, French and United States regulations did not go into effect until March, 1981, and there is some question at this time as to when some other principal countries in the surface fishery enacted appropriate regulations. Under these conditions, it appears unlikely that sufficient data for evaluation of the effects of the regulations will be available for the 1983 meeting. In addition, any analysis of the effects of regulations will be plagued by the high variability in reported catches from one year to the next. This variability may mask any benefits that might be expected from regulations.

BET-4 Recommendations

BET-4.1 Statistics

The Committee recommended that:

- i) The amount of bigeye tuna included in the FISM tropical tuna catch and Tema-based tuna catches be more accurately estimated.
- ii) Size sampling at transshipment sites in Puerto Rico be continued.

BET-4.2 Research

The Committee recommended that:

- i) Data on bigeye tuna collected during the International Skipjack Year Program be examined.
- ii) Updated tagging file be analyzed to elucidate the stock structure.
- iii) An index of abundance that incorporates information from the bigeye tuna surface fisheries be developed.
- iv) Age-structure stock analysis, such as cohort and yield-per-recruit analyses, be continued.
- v) Research on alternative management strategies be carried out to evaluate the effects of catches of small bigeye tuna on the improvement of the yield-per-recruit.

BET-4.3 Management

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

SKJ-SKIPJACK

SKJ-1 Description of fisheries

Major skipjack tuna fisheries are concentrated in the east Atlantic (east of 30°W) although there are fisheries in the west Atlantic. This is in fact a multi-species fishery, taking other tuna species. Catches of the principal fleets from 1967 to 1981 are shown in Table 6, and have been plotted on Figure 11. Estimates for 1982 have been added to this figure.

Skipjack catches for the total Atlantic increased steadily between 1960 and 1974 and fluctuated between 60,000 and 120,000 MT until 1980. In 1981 the total skipjack catch in the Atlantic was estimated at 140,300 MT, which is the all-time high in the history of the fishery, both for the east (122,000 MT) and for the west (18,000 MT).

The 1981 east Atlantic catch was 87 percent of total catches and has risen 15 percent compared to 1980 for all the fleets: a slight increase for the baitboats (up 6 percent to a total of 43,400 MT), a stronger rise for the purse seiners (up 23 percent to a total of 76,000 MT). This increase was for all sectors, mainly for the zones off Senegal, Liberia, around Annobon-Sao Tomé and off Angola.

In the west Atlantic the catches tripled between 1979 and 1981, from 6,000 to 18,000 MT, due mainly to the development of the Brazilian baitboat fishery.

The estimates for 1982 predict a catch of 121,000 MT, a decrease of 12 percent with respect to 1981; even so, this is one of the highest catches ever recorded. The 1982 decrease is derived from the east Atlantic where both the purse seine and the baitboat catches were down 12-14 percent. In the west, catches were about the same in 1982 as 1981, around 18,000 MT.

Adequate measures of fishing effort are not available; it is, however, possible to follow the general trend in the eastern Atlantic of the carrying capacity of the tropical tuna fleet. After a rapid and constant increase, the carrying capacity of the purse seine fleet seems to have stabilized in 1981 and 1982. The carrying capacity of the baitboats—much smaller—has remained stable since 1975 with a slight decrease over the past years (Table 2 and Figure 2).

SKJ-2 State of stocks

The numerous data collected during the International Skipjack Year Program (ISYP) are being processed. A regional working group met in Dakar in June, 1982, to start the first analyses which were then presented to SCRS and the Sub-Committee on Skipjack (Document SCRS/82/96).

The 1980 SCRS Report discussed the reasons why the CPUE's for the FIS, U.S. fleets (Figures 12 and 13) and the Japanese baitboats appeared to be inadequate indices. A detailed analysis of the fishing activity of the FIS and Spanish purse seiners made during the Skipjack Year was presented (SCRS/82/96). It attempts to separate the skipjack effort from the total effort of the fleets. It points out that part of the effort in certain times and places—Liberia area in October-December, for example—is directed primarily at skipjack concentrations. The work has not yet been finished, and we do not

yet have a credible index for measuring the abundance of skipjack. Under these conditions, it would be misleading to construct a production model for skipjack stocks, and the Committee is not prepared to make any evaluation of the stocks on the basis of the data on catch and fishing effort.

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). However, the Committee noted that the fishery pattern has changed greatly: an increase of nearly 40 percent in average catches during the period 1977-1981 compared with the 1971-1976 period, an offshore expansion of fishing area, and capture of larger skipjack tuna. Since the exploitation pattern has changed so much, these analyses should be re-done.

In conclusion, the Committee's opinion is that catches are still below potential levels. The rationale for this conclusion has been explained in the documents of the ISYP (Report of the Sub-Committee on Skipjack, Las Palmas, July 1979--SCRS/79/24).

The present results of tagging still do not permit us to determine whether the eastern and western stocks are independent or not.

SKJ-3 Effects of current regulations

There are no ICCAT recommendations for regulatory measures on the skipjack tuna fishery 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.

Alternative management strategies for yellowfin and bigeye, such as the seasonal closure of parts of the Gulf of Guinea, may have significant effects on the skipjack fishery. The Committee concluded last year that with this sort of regulation and with the fishing patterns considered in the analysis, potential gains expected for yellowfin and bigeye tuna catches would probably not compensate for the resultant reduction in skipjack tuna catches if the skipjack are limited to the Gulf of Guinea. In fact, the first results from tagging show that the skipjack in the Gulf of Guinea appear to migrate in large numbers towards the west from July to March and are heavily fished by purse seiners in the following months. Any future consideration of new management measures for yellowfin and bigeye should take this new information into account.

SKJ-4 Recommendations

SKJ-4.1 Statistics

In the context of the ISYP, the Sub-Committee on Skipjack had noted the specific needs for improvement of skipjack tuna statistics. Great efforts were made during the Program to comply with the recommendations made by the Sub-Committee and all but one of the recommendations made last year have been completed.

Catch statistics are relatively good for Task I. However, more effort could be made

to improve the Task II statistics and biological sampling of some fisheries.

SKJ-4.2 Research

The ISYP was developed specifically to improve the scientific information on the species so that the Committee might have better data for analyses at its disposal. The first results of the Program are interesting and have begun to provide answers to certain questions.

The dissemination of all data collected during the ISYP should be assured so that all information can be included in the analyses for the 1983 Skipjack Conference.

SKJ-4.3 Management

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

ALB-ALBACORE

ALB-1 Description of fisheries

It is assumed that the Atlantic albacore population is made up primarily of northern and southern stocks, separated at 50°N. The standard statistics are based on this separation. There may be occasional exchanges between the two stocks, as well as between the south Atlantic and the Indian Ocean populations.

Total surface and longline catches for the northern stock reached a maximum of about 60,000 MT in the 1960's, they then fluctuated around 50,000 MT until 1979; they were about 31,000 MT in 1981 (Table 7, Figure 14). The total catches from the southern stock, almost all by longline, have fluctuated between 20,000 and 35,000 MT since 1964 (Table 7, Figure 15). The catch for 1981 was about 22,000 MT. The increase in surface catches in the south Atlantic in 1980 and 1981, from 1,400 to 3,300 MT, is worth noting. When the whole Atlantic is considered, the catches have been decreasing since 1979 (Table 7).

The longline fishing effort on the northern stock has been decreasing since 1977 (Figure 16), as has the effort in the surface fishery since 1967 (Figure 17). In the latter case, the reduction in effort has been due principally to the decrease in effort by the trollers. The longline fishing effort on the southern stock seems to have stabilized (Figure 18).

Overall, one may say that there has been a decrease both in catch and in effort for the northern stock, along with a stabilization of catch and effort on the southern stock.

ALB-2 State of stocks

ALB-2.1 Northern stock

The catch-per-unit-effort (CPUE) for the longliners, taken as an index of abundance, indicates that the adult portion of the stock has been relatively stable since 1975 (Figure 19). The CPUE in weight of the surface fisheries suggests that there has been an overall increase in the abundance of juveniles, i.e., age 2 to 5, during the last ten years. However, the surface CPUE shows larger variations than does the CPUE of the longliners. The 1981 values seem to have been close to the average (Figures 20 and 21).

Calculation of the effective longline effort as well as the Committee's work last year have permitted the calculation of a new production model (Figure 22). For values of $m = 1$ and $m = 2$, the MSY varies from about 55,000 to about 65,000 MT, with a standardized effort of 160,000-180,000 fishing days. The 1981 values, 31,000 MT and 72,000 days, are about 50 percent of the optimal values (Figure 20). This MSY range is about the same as reported last year.

Previous analyses have indicated that the yield-per-recruit has increased, due apparently to the reductions in effort and in catches of juveniles. Previous estimates gave a yield-per-recruit of 3.3 kg from 1969 to 1973, and 4.1 kg from 1974 to 1978.

Recruitment varies on the order of 1 to 4 times, and has shown increasing variability throughout the available time series (Figure 23). Peak recruitment values remain about the same; however, lower recruitment values are decreasing with time. The stock-recruitment relationship, recalculated this year on the basis of new data, is not substantially different from those calculated in 1980 and 1981 (Figure 24). The parent stock is clearly reduced to 27 percent of its initial values in the 1950's.

The northern Atlantic albacore stock is currently moderately exploited, following a period of heavier exploitation. The amount of exploitation appears to be diminishing. Catch and effort figures for 1981 and provisional catch data for 1982 confirm the continuation of the decrease. An increase in effort may produce an increase in catches, although it must be noted that the stock is in a phase of reduced recruitment.

ALB-2.2 Southern stock

The catch-per-unit-effort of the longline fishery decreased sharply after 1960, slowed its decline from 1968 to 1975, and has been stable since 1975 (Figure 25). A new production model was calculated, based on revised catch and effective effort data for 1957-81. The MSY varies from 25,000 to 29,000 MT for $m = 0$ to $m = 1$, with a required effective effort of 40 to 50 million hooks (Figure 26). The present catches, about 22,000 MT, are lower than the estimated MSY, and the present effort level is 1.8 times higher than the effort predicted for MSY. These conclusions are different from those reached last year—MSY of 25,000 MT with a current effort near the optimum. They are the results of revised estimated effective effort in the production model analysis. Of course, different results would be obtained if there were significant changes in the fisheries—for example, a major increase in the surface fishery. Nevertheless, the fishery appears to have stabilized at present catch and effort levels; slight increases in effort could cause slight decreases in catches after equilibrium would be attained.

As there have been few changes in the fishery, previous estimates of yield-per-recruit should remain valid, and an increase at size at first capture would only result in minimal effects on the yield-per-recruit. On the other hand, a major development of the surface fishery on juveniles could cause a change in the yield-per-recruit.

There have been no recent studies on recruitment or on stock-recruitment. However, if the adult stock is reduced to the levels indicated by the longline CPUE, it is likely that parent stocks are reduced and recruitment should be variable.

It would seem that on the basis of present data we may say that the southern stock is being exploited at a level above that which would give MSY, and that an increase in effort would lead to a decrease in equilibrium catch. The possible development of a surface fishery could modify the MSY estimate, and the development of a fishery on juveniles could change the present estimated yield-per-recruit.

ALB-3 Effects of current regulations

There are presently no regulations on the Atlantic albacore fisheries.

ALB-4 Recommendations

ALB-4.1 Statistics

The previous recommendations of the Committee on the longline statistics have been followed.

The Committee recommended that the surface fisheries on the southern stock, both baitboat and purse seine, be closely monitored, since their potential effect on the stock would be considerable if they continue developing.

ALB-4.2 Research

- i) The Committee's previous recommendations on a new production model for the northern stock have been followed; however, further examination of effort standardization should be done.
- ii) Previous recommendations on age and sex determination in the adult albacore fishery are still valid. It would be useful to have more information on differences in the ecology of males and females and on the possible differences of availability by sex to the longline fishery.
- iii) Better spawning potential and recruitment information is needed for the northern stock, and the production model for this stock should be brought up to date.
- iv) A more precise index of abundance for the adult stock in the longline fishery on the northern stock should be evaluated.
- v) An index of recruitment for the southern stock is needed. Data from the South African fleet might serve this purpose.

- vi) Due to the fact that catches of albacore are significant in the Mediterranean, it is necessary to study the relation of these fish to Atlantic fish, as well as to obtain information on age, growth, recruitment and other biological characteristics, such as biometrics.
- vii) Comparisons between the Japanese and Taiwanese CPUE series should be made for the south Atlantic Ocean.
- viii) Studies between varying oceanographic conditions and abundance and availability changes need to be made.

ALB-4.3 Management

The northern stock seems to be in good condition. Recruitment is variable and presently at a low level; adult stock is low. The Committee has no specific recommendations on this stock, other than to continue to monitor the fisheries.

The southern stock seems to be exploited beyond the MSY level, although catch and effort have stabilized in recent years. The Committee has no specific recommendations for management at this time. However, it noted that the fisheries should be closely monitored and if the level of adult abundance declines further, specific action might be necessary to reduce fishing mortality and allow the adult stock to rebuild.

BFT-BLUEFIN

BFT-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 that interchange of fish between eastern and western areas occurs, but the existence of two temporally and spatially separate spawning areas is certain. Mark-recapture data show a small and variable interchange but the magnitude or frequency of interchange is not yet known.

Assessments were made with the hypothesis of separate eastern and western stocks and the hypothesis of a single Atlantic-wide stock. Atlantic fisheries were separated according to the equal-distance line in ICCAT Report 1980-81 (see Addendum 1 to Appendix 5 to Annex 5 to the 1981 Proceedings). In Table 8, reported bluefin catches are summarized for the east and west Atlantic and the Mediterranean Sea.

BFT-2 State of stocks

SCRS determined that last year's assessment on which the 1981 SCRS recommen-

dations were based should not be used this year because of changes in the historical data base reported during 1981-82, and because the stock-recruitment relation used is now considered to be erroneous. There are now improvements in methods of estimation of medium and large fish, and alternate methods of indexing spawning potential. Spawner-recruit relations and the surplus production concept do not impact estimates of the present state of the stock but do impact projections of future stock abundance. This year two new analyses were presented. They present two different opinions listed separately below.

BFT-2.1 West Atlantic stock

This analysis is invalid if significant interchange between east and west occurs. Major conclusions drawn by each opinion are as follows:

Opinion 1: The abundance of juvenile and adult fish decreased steadily since 1960. Juvenile levels are 15 percent of the 1960 level and adults 31 percent (Figure 27). Recruitment levels are 21 percent of the 1960 level, hence adult abundance will further decline. If recruitment remains at the 1975-80 level, the abundance of the adult stock will continue to decline at any fishing rate.

Opinion 2: Adult stock abundance increased drastically from 1974-77, then decreased somewhat, but levels are still much higher than those before 1975. Some decrease in recruitment and juvenile stock size has occurred since 1975 with 1975-80 recruitment levels being lower than in all previous years (Figure 28). The spawning biomass and potential will increase until 1983, and a decreasing trend will occur thereafter. Annual removals at the 1981 level will not drive the stock size and spawning potential below past average levels.

Assumptions as to ageing fish, natural mortality rate, the geographic boundary of the stock and the model of population dynamics are the same for both opinions. Listed below are the assumptions that are different between the two analyses and the impact if the assumptions are not correct:

1. Catch data. There is little difference in 1960-79 data. Opinion 1 used revised 1980 U.S.A. data and Opinion 2 did not. Consequently, estimates of the 1977, 1978, 1979 and 1980 cohort abundance levels are somewhat inflated in Opinion 2.

2. Starting F. "Starting F" is the level of exploitation for the most recent year of observed catches. The results of both analyses are sensitive to those levels. Opinion 1 assumed age-specific Japanese longline catchability constant for ages 2-8. This assumption does not seem to hold, thus it contains errors in stock size estimates which are random (variable) in direction and magnitude. Age-specific availability to the Japanese longline (includes catchability) is assumed constant, 1975-1980 for age 9-15 fish; the assumption was not tested but it seems to hold for ages 11-15. Estimates of stock size for ages 9 and 10 thus contain error that is random (variable) in direction and magnitude. Opinion 1 assumed catchability of the Japanese longline to be constant, 1975-1979 for ages 16-30. The assumption seems to hold, hence estimates of those stock size trends are probably accurate so that estimates for all ages from 11 to 30 are probably accurate.

Opinion 2 did not use 1980 data to calculate starting F; the effect of not using

that data is not known. Opinion 2 assumes the population was in steady state, hence the rate of age-specific total mortality 1964-79 was constant. The assumption was not tested but age-specific catch has varied greatly, thus so has mortality, hence the assumption does not seem to hold; mortality is underestimated and the stock size overestimated. Opinion 2 implicitly assumes catchability constant for the Japanese longline for ages 20-30 for 1960-80. The assumption seems to hold from 1975-79 hence estimates of those trends are likely to be accurate.

3. Sensitivity tests. Opinion 1 is based on many sensitivity tests; Opinion 2 is not. Conclusions made by Opinion 1 are based on the abundance trends common to many estimations.

4. Projections. Opinion 1 used several stock-recruitment relationships to make projections. The method used this year was different from last year's but SCRS still believes that the new method is inaccurate; even so, 1983 stock growth (surplus production) may not contain significant bias although projections for 1984-92 may contain a bias, perhaps of significant magnitude. These projection results were based on many sensitivity analyses.

In making projections, Opinion 2 did not assume that a relationship exists between adult stock abundance of the potential number of eggs and recruitment. Recruitment was assumed to be constant over time. These projection results of allowable catch were based on several sensitivity analyses.

BFT-2.2 East Atlantic stock

This analysis is invalid if significant interchange occurs between east and west. The two opinions below should be weighed according to the discussion of assumptions previously given, except that both opinions are based on essentially the same catch data. Under both opinions, abundance levels of juveniles dropped to about 50 percent of 1960 levels in the late 1960's. Opinion 1 shows recruitment was relatively constant at this level since 1969 (Figure 29). Opinion 2 shows recruitment increased since then to levels similar to 1960 (Figure 30). Under Opinion 1, large declining trends in adult abundance to 18 percent of the 1960 level occurred while Opinion 2 is that adult abundance declined to about one-half of the 1960 level. Opinion 2 is that at present levels of mortality the stock will remain stable; Opinion 1 is that reductions in fishing mortality are required to achieve stability at present levels.

Both the data base and the assumptions used are very questionable. Significant changes in historical catch statistics were reported to ICCAT since last year's assessment. All assessment results on the hypothesized eastern Atlantic stock are therefore very uncertain. The SCRS believes this uncertainty is too great to allow conclusions as to the status of the stock.

BFT-2.3 Total Atlantic stock

The presence or absence of significant interchange will not affect the results of this analysis; however, the analysis does not provide guidance as to conditions in separate areas.

The assumptions made and the impact of each is, as discussed above, for the separate areas. Significant changes in historical catches have once again been reported to ICCAT during this year. It is, therefore, likely that such changes will be made in the future, hence assessment results are very uncertain.

Opinion 1 is that juvenile abundance decreased at least 50 percent since 1960 (Figure 31). Opinion 2 indicates no decrease (Figure 32). Opinion 1 is that over a 50 percent decrease in adult abundance occurred since 1960; Opinion 2 is that a decrease did occur but that it has increased since to levels similar to 1960.

Opinion 2 indicates that the stock will remain stable at recent (1976-1980) levels of mortality; Opinion 1 indicates that reductions in fishing mortality are required to achieve stability at present levels. The variability in the data does not allow the SCRS to choose between these analyses. The SCRS believes the uncertainty is too great to allow conclusions as to the status of the stock.

BFT-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 1976. Current analyses under the total stock assumption indicate that fishing mortality has remained relatively constant since 1976 on juveniles and adults. If two stocks exist, current estimates indicate fishing mortality in the east Atlantic remained constant, 1976-78, and that in the west fishing mortality on juvenile fish has remained relatively constant since 1976. These analyses indicate F on adult fish has remained constant since implementation of the regulation.

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 such fish as estimated from available size frequency data apparently decreased significantly after the regulation. However, evidence exists that these catches, particularly of age 0 fish in the Mediterranean Sea, may be severely underestimated.

A regulation limited 1982 and 1983 west Atlantic catches to 1,160 MT and eliminated a directed fishery on the spawning stock in the Gulf of Mexico. The effect of that regulation cannot be appraised until data from 1982 become available. The SCRS believes that the present allocation of catches to the individual fisheries in the west does not allow adequate indexing of stock abundance using currently developed indices.

BFT-4 Recommendations

BFT-4.1 Statistics

- i) The 1980 recommendation concerning the informal exchange of data among 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.
- iv) Estimated catches of age 0 fish in the Mediterranean Sea are believed to be unreliable. The SCRS recommends the collection of statistics to correct the deficiency.
- v) Studies indicate that the sex ratio differs substantially from 1.0 and these ratios are size-specific for adult fish. Since the impact upon the results of stock assessments is unknown, studies should be initiated in all fisheries to determine the sex ratio of catches from season to season and area to area.

BFT-4.2 Research

- i) The tagging of small fish in the Atlantic was very successful from 1978 through 1981. Tagging studies should be continued, to verify growth estimates and monitor exchange and exploitation rates. The use of natural marks, including parasites, also offers a method of estimating exchange rates and such studies should be continued.
- ii) Aspects of the reproductive biology of 130-200 cm fish, including time, magnitude and location of spawning are not well described and emphasis should be placed on such investigations.
- iii) Several data analysis problems were identified at the SCRS this year. The SCRS recommends an *ad hoc* committee be formed to address the problems described and recommends an intersessional meeting be held possibly in Japan in April or May, 1983, to discuss and resolve these problems. Problems that are to be addressed are: (1) the application of size samples to catches in order to develop the best possible estimates of the length distribution of the total catch; (2) estimating age distributions from size samples; (3) consideration of sex ratio in the analyses; and (4) derivation of techniques more applicable to bluefin fisheries assessments. It is suggested that scientists familiar with these analyses problems be invited.
- iv) Exchange rate models are seemingly superior to those assuming completely separate stocks or a total stock, hence research should proceed in that direction.
- v) SCRS should carry out studies to develop sampling schemes that would provide continuously reliable indices of stock abundance in the west Atlantic.

BFT-4.3 Management

West Atlantic stock

The principal analyses presented this year agree that, for the west, there has been some decline in abundance, that recruitment may have decreased in recent years, and that

there is little relation between recruitment and spawning potential. Also, in the west, there exists concern that 1982 catches are insufficient to monitor the stock, but the weight of evidence suggests that catch levels for monitoring should be conservative.

Risk is involved in the face of uncertainty as to an appropriate catch level in considering the present stock condition. The SCRS is unable to determine whether a 6,000 MT catch will cause a decline or whether a decline will occur regardless of any catch. It was not possible to find agreement within this range.

East Atlantic stock

Information as to the status of stocks in the east is much less reliable, but the evidence suggests that the present regulations limiting fishing mortality and the catching of fish less than 6.4 kg should be maintained.

Total Atlantic stock

If the stock is to be managed as if it were a single Atlantic-wide stock, then information on the status of the stock is not reliable. However, the evidence suggests that declines have occurred, thus the regulation limiting fishing mortality and the catching of fish less than 6.4 kg should be maintained.

BIL-BILLFISHES

BIL-1 Description of fisheries

Several kinds of billfishes are distributed over the tropical and temperate waters of the Atlantic Ocean. Blue marlin, white marlin, sailfish and longbill spearfish are caught by many fisheries both directed and incidental throughout their ranges. Black marlin are also present in the Atlantic Ocean, but they are very few and even negligible. Major catches of billfishes are incidentally made by the tuna longline fishery of several countries. Secondary catches are those by directed sports fisheries of the U.S.A. and Senegal. Also there are developing industrial and artisanal fisheries of sailfish especially in Ghana, as well as catches incidental to the tropical tuna purse seine fisheries. The catch statistics of these fisheries are given in Table 9. Of these billfishes, the most important in terms of landings is blue marlin, ranking next to it is white marlin. Sailfish are often treated as sailfish/spearfish group, since the major sailfish statistics are mixed with spearfish statistics. The catch statistics of blue marlin and white marlin by countries are given in Tables 10 to 13. These tables represent the best estimates of catch based on the ICCAT billfish data base revised in 1981.

BIL-2 State of stocks

The Committee drew attention to the decline of catches over the past ten years (Tables 9-13). CPUE trends were plotted for the blue and white marlins and these also

reflect a declining trend since the early 1960's (Figures 34 and 36). In interpreting CPUE data, the Committee used two hypotheses on stock structure for analysis. These two hypotheses are: (1) a total Atlantic stock hypothesis; and (2) a two-stock hypothesis based on limited biological and fishing evidence. Under the second hypothesis, it is assumed that there are separate north and south Atlantic stocks of blue and white marlins and separate east and west stocks of sailfish/spearfish. Since these hypotheses have been used by the Committee in past years, they were employed again this year. Also, in the past, some higher order analyses (specifically, production models) have been applied to evaluate these fisheries. This year, in addition to the production models, another analytical model to evaluate fishing mortality was applied to blue and white marlin size data.

Though considerable effort was expended in revising and compiling the catch data base during 1981 by the ICCAT Secretariat and member-nation scientists, stock assessment work on billfishes is still plagued with deficiencies in the basic data and biological parameters that are needed for definitive stock assessment analysis. A major concern 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 of the Japanese data. However, because of the broad spatial and temporal distribution of the fishery and the historical continuity of the Japanese longline data, they are still the best available data for effort standardization. The Committee recognized that estimates of effective catch-per-unit-effort based on this standardized effort are imprecise for recent years and that caution must be exercised in using this series to index billfish abundance. For this reason, the production model results are not overly stressed in this year's recommendations.

BIL-2.1 Blue marlin

Landings from the total Atlantic (Table 10) and North Atlantic (Table 11) show a continual decline over the period 1975-79 with an increase in 1980, reflective of the doubling in the Japanese longline catch. There was a corresponding decline in Japanese effective fishing effort (Figure 33) from 1975 through 1978 followed by an increase for 1979-80. CPUE increased slightly during 1977-80, but only to a level still below the 1965-75 average (Figure 34). Production model results (Figures 37 and 38) indicate that some overexploitation may have occurred during the early to mid-1970's, but fishing effort in recent years (1978-80) appears to be below the level associated with maximum sustainable yield. As concluded in last year's report, the Committee remains unsure of the exact status of blue marlin but given the low CPUE levels of recent years and the production model results, concern is expressed about any increase of effort on the stock(s). The Committee believes that fisheries taking blue marlin, either directed or undirected, i.e., sport or commercial fisheries, should be closely monitored. If the downward trends in catch rates continue with the present or increased level of effort, then consideration should be given to methods of reducing fishing mortality on this species.

According to the production model analyses (Figures 37 and 38), the total Atlantic and North Atlantic data show some increase in index of abundance during 1978-80 over the earlier 1970's, which may indicate some recovery of the blue marlin stock(s). The analysis of average size trends in relation to fishing effort results is given in Figure 41. This preliminary analysis indicates the average length of blue marlin varied in a logical

manner. In 1978-80, fishing mortality declined and average length has responded by increasing. The fishery appears to be stabilizing at relatively low levels of fishing mortality after enduring higher levels of fishing mortality in the early and mid 1970's.

BIL-2.2 White marlin

Landings from the total Atlantic (Table 12) and North Atlantic (Table 13) show a downward trend over the period 1971-80. There has been a continuing decline in Japanese effective effort (Figure 35) over the period 1971-79, with an increase occurring in 1980. CPUE (Figure 36) in the total Atlantic decreased sharply from the high in 1961 through 1964, increasing through 1967 and has fluctuated with a basically decreasing trend to present (1980). Production models do not appear to fit the white marlin data adequately and little useful management information can be derived from the method (Figures 39 and 40). As concluded in last year's report, the Committee remains 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(s). The Committee believes that fisheries taking white marlin, either directed or undirected, i.e., sport or commercial fisheries, should be closely monitored. Should the downward trend in catch rates continue with the present or increased level of effort, then consideration should be given to methods of reducing fishing mortality on this species.

The results of analysis of average size trends of white marlin in relation to fishing effort are given in Figure 42. Average length has not shown any relationship with fishing effort, indicating that fishing mortality has not varied greatly over the range of these data.

BIL-2.3 Sailfish

Little is known about sailfish because the major sailfish catch statistics are mixed with spearfish statistics. The annual sailfish/spearfish landings are given in Table 9. A report was presented this year, which attempted to separate both species from the Japanese historical mixed catch, based on the data from the past research cruises. Changes in the hook rate (not effective CPUE) of sailfish as well as spearfish from 1956 to 1980 were shown for various areas of the Atlantic Ocean (Figures 43 and 44). The hook rate of sailfish from the Japanese longline fishery appears to be generally stable over the period from the early 1960's to mid-1970's, with large quarterly catch rate changes. After the mid-1970's some decreasing trends in the hook rate are observed throughout the areas. The Committee was able to evaluate sailfish catch rates as a result of the separation done during the past year, but at the same time, recognized the large amount of uncertainty involved in apportioning the historical mixed catch data.

There is no other means to evaluate the sailfish stock(s) at this time. Close monitoring is recommended because of the uncertainty of the status of the stock(s) and the reported increases in artisanal and industrial fisheries along west Africa.

BIL-3 Effects of current regulations*BIL-3.1 Blue marlin*

No regulations are currently in force for blue marlin.

BIL-3.2 White marlin

No regulations are in force for white marlin.

BIL-3.3 Sailfish/spearfish

No regulations are in force for sailfish/spearfish.

BIL-4 Recommendations*BIL-4.1 Statistics*

The Committee acknowledged the efforts of the Japanese scientists during the past year to separate the historical sailfish/spearfish catches. It is hoped that these efforts will encourage all nations to report the catches of these species separately in the future.

- i) Catch and effort statistics from all countries should be reported by 5° area and by month for each of these billfish species whenever possible. Currently only Japan reports its catch and effort statistics in this manner. Should reporting by 5° area prove impractical in the near future, then statistics for each species should be reported by ICCAT billfish area and by month. These data should include numerical catch-by-month as well as catches by weight for each species.
- ii) Catch statistics for sailfish and spearfish, in particular, should be reported separately by all countries in order to facilitate stock assessment work on both of the species.
- iii) Length frequency data by sex for all species should be collected on a regular basis for all fisheries.
- iv) There should be continued close monitoring of the sailfish fishery off Senegal and development of monitoring in Ghana due to the development of commercial fisheries on this species during apparent spawning aggregations.

BIL-4.2 Research

The lack of basic data 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:

- a) 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.

- b) 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, e.g. standardization of effort from the Taiwanese longline fleet.
- c) Investigation of data not associated with effort (e.g. average size) be conducted for longline as well as recreational fisheries to develop alternative indices of abundance.
- d) Now that growth parameters have been estimated for sailfish and the catches can be separated from spearfish with some degree of certainty, an attempt should be made to evaluate the status of stocks of sailfish.
- e) Stock identification studies should be initiated to resolve the stock structure problems for both marlins and sailfish.

BIL-4.3 Management

No management recommendations are made at this time, except to stress the need to closely monitor the billfish fisheries, particularly the CPUE and catch for blue marlin and white marlin, which have shown downward trends in recent years, but with fluctuations. Should the downward trends in catch rates continue with the present or increased level of effort, it may be necessary to impose some form of regulation in the future.

SWO-SWORDFISH

SWO-1 Description of fisheries

Swordfish are taken primarily in directed fisheries using longline, harpoon and sport gear and as incidental catches on longline and other gears directed towards tuna species. Countries participating in the fisheries are listed in Table 14. Total Atlantic catches declined from 14,600 MT in 1970 to 7,100 MT in 1971 when fishing was reduced as a result of imposition of mercury content restrictions by some of the major consumers of swordfish. Reported catches rose only slightly between 1971 and 1977 but then increased to 13,100 MT in 1978, a level comparable to that of the pre-restriction period, when these countries relaxed the restrictions. The total catch of swordfish in the Atlantic and Mediterranean in 1981 shows a decrease to 14,200 MT, down 25 percent from the previous three-year average of 19,000 MT. There appears to have been a decrease in Atlantic catches from 1980 to 1981 from 15,700 MT to 10,200 MT, while in the Mediterranean the apparent decrease was from 4,700 MT to 4,000 MT (Table 14).

SWO-2 State of stocks

No new information was presented that enabled the Committee to choose any specific hypothesis of stock structure in the Atlantic Ocean and the Mediterranean Sea.

CPUE data from the Spanish Atlantic longline fishery has been relatively stable over the entire period of available data, 1973-81 (Figure 45). The CPUE for the Brazilian longline fleet has shown considerable fluctuation over the period 1971-81 (Figure 46) with no trend evident. It should be noted that the fishery began directing at swordfish in 1980.

The adjusted CPUE in the Japanese longline fishery in the total Atlantic (Figure 47) has been relatively stable over the past decade. However, this index in the north-west Atlantic area (north of 5°N, west of 40°W) has exhibited a steady decrease in recent years, 1977-1980 (Figure 48). Though this may indicate a decline in the abundance of swordfish in the northwest Atlantic area, it is cautioned that since the fishery was not targeted at swordfish and since Japan's share of the total Atlantic catch (northwest Atlantic share is unknown) has been very small throughout the history of the fishery, the trend may not reflect a real change in the stock.

No new data were reported pertaining to production model or yield-per-recruit analyses. Therefore, the reservations expressed in the 1980 SCRS Report concerning the accuracy and applicability of the analyses presented at that time remain the same.

The lack of adequate data precludes any firm conclusions regarding the status of the stock(s) or stock structure.

SWO-3 Effects of current regulations

No ICCAT regulations are currently in effect for swordfish.

SWO-4 Recommendations

SWO-4.1 Statistics

As noted last year, significant advances were made in improving swordfish catch statistics during the 1981 Intersessional Billfish Workshop. Yet, the lack of detailed catch, effort and biological 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 is impractical, then statistics should at least be reported by ICCAT billfish area by month. Of the principal countries landing swordfish, particularly lacking 5° area statistics are Canada, Italy, Spain and the U.S.A.
- ii) Due to areal variation in sex ratio and great differences in growth rate by sex, any stock assessment model will need to consider the sexes separately. There-

fore, it is necessary to have length frequency data by sex collected on a regular basis.

- iii) Due to known under-reporting of swordfish catches by Canada and the U.S.A. since the imposition of mercury content restrictions in 1971, attempts should be made to estimate the magnitude of the catches that were not recorded and may not yet be recorded under existing conditions.

SWO-4.2 Research

As noted in last year's SCRS Report, 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) In order to facilitate collection of length/frequency data by sex, the possibility of using a laboratory or clinical test to determine sex from tissue samples of dressed fish be investigated.
- iii) In order to help determine stock structure, biochemical and parasite studies, or other analytical techniques, be initiated through cooperative sampling from each major fishing area. Further tagging programs should be emphasized, to include, but not be limited to, tagging swordfish both in the Mediterranean and the eastern Atlantic.
- iv) Since the swordfish by-catch in directed tuna longline fisheries varies according to target species, a standardized effort unit is necessary for swordfish CPUE comparisons using these data. Further research on estimating effective effort in the longline fisheries should be undertaken.

SWO-4.3 Management

No management measures were recommended at this time.

SBF-SOUTHERN BLUEFIN TUNA

SBF-1 Description of fisheries

Southern bluefin tuna is believed to comprise a single stock in the southern hemisphere, the spawning ground of which is located in the northeastern waters of the south Indian Ocean. Three fisheries have been harvesting the stock: Australian surface (bait-boat and purse seine) fisheries which catch young fish in the nearshore waters south off

Australia; Japanese longline fishery which catches mainly adults which are circumpolarly distributed in the Atlantic, Indian and Pacific Oceans; and the New Zealand coastal hand-line fishery which recently started catching adults west off South Island.

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 fairly stable effort for southern bluefin in all oceans (90-110 million hooks per year during 1970-80). The New Zealand fishery started in 1980 and the catch is still small (900 fish in 1980 and 2,300 in 1981).

In the Atlantic, the catch of the species varied widely in a range of 600-6,200 MT during 1970-1981 (Table 15). The catch fluctuation in recent years is a reflection of the shifts of effort between the oceans, corresponding to changeable distribution of the species within the so-called "Off-Cape fishing ground" which extends from the mid-south Atlantic to the southwestern Indian Ocean as far as 50°E Long.

SBF-2 State of stocks

With regard to the status of the stock, recent analysis indicates that it has been heavily exploited and a further increase in fishing effort will not be accompanied by any further increase in the total catch. It is noted that there is some concern among scientists about recruitment of young fish in the future because the parent stock has been decreasing. The Committee noted that close monitoring of recruitment is needed. It was also informed that a meeting for comprehensive assessment of the condition of the stock is scheduled to be held by scientists from concerned countries in the very near future.

SBF-3 Effects of current regulations

It was noted that no regulatory measures to conserve the stock on an international basis are currently in effect. However, the Japanese longline fishermen have voluntarily taken measures to prevent a further decline in the average age-at-first-capture by longliners since 1971 by setting closed areas and seasons in order to reduce the catch of smaller fish.

SBF-4 Recommendations

The Committee made no special recommendation for management of southern bluefin tuna.

The Committee recommended that the Secretariat secure reports reviewed at or produced by the scheduled assessment meeting for review by the Committee.

SMT-SMALL TUNAS

SMT-1 Description of fisheries

The recorded catches of small tunas in recent years have been about 100,000 tons annually. While it is believed that catches of small tunas are even larger, many of them are made as by-catches of fisheries for large tunas and are discarded at sea or not included in landing statistics.

The small tunas are also caught in directed fisheries, many of them artisanal. In West Africa there are fisheries conducted with drift gill nets, hand lines, beach seines, etc., that take significant amounts of frigate tuna and Atlantic little tuna. Significant catches of Atlantic bonito are taken in the Mediterranean by seine and line as well as by trap fisheries. Blackfin tuna are taken by directed fisheries in the western Atlantic, as are *Scomberomorus* species and wahoo. There are also directed recreational fisheries for some of these species in the western Atlantic.

The Atlantic bonito catches in the Mediterranean have been reasonably well reported, but statistics on catches from other areas have not been satisfactory. The Committee noted with pleasure that Cuba is making new efforts to improve catch statistics and to separate blackfin catches from skipjack.

The best current information on catches of these species is given in Table 15.

SMT-2 State of stocks

There is not sufficient information available for quantitative analyses of the status of any of the small tuna stocks. Without complete catch statistics and indices of abundance it is not possible to draw firm conclusions about the status of the stocks. On an Atlantic-wide basis, and using only available catch statistics, there is no sign of broad-scale depletion of the stocks. Mediterranean catches of Atlantic bonito have been increasing overall since about 1975, although they are still below the level of the mid-1960's.

Since the small tunas are frequently taken as by-catch along with large tunas, it is prudent to keep track of developments in fisheries for the latter to make sure that they are not having adverse effects on the stocks of small tunas.

SMT-3 Effects of current regulations

There are no ICCAT recommendations for regulation of fisheries on these species currently in effect on small tunas, nor is the Committee aware of national regulations. It is possible that minimum size regulations on yellowfin and bigeye tunas could have indirect effects on some small tunas since they are sometimes caught in mixed schools.

SMT-4 Recommendations

SMT-4.1 Statistics

- i) All catch statistics for small tunas are in need of improvement, particularly those referring to artisanal catches and those concerning discards from industrial fisheries primarily for other species.
- ii) Although there has been some improvement in the separation of species in the catch statistics, still more attention must be paid to this question.
- iii) Fishing effort data are needed, even if the effort is not directed at the small tunas.
- iv) Biological data such as length frequencies are needed.
- v) Development of new fisheries should be closely monitored.

SMT-4.2 Research

- i) Collection of information on spawning through larval surveys should be continued, especially in areas where there are important fisheries.
- ii) Studies aimed at distinguishing between different stocks, such as biochemical work and tagging, should be continued.
- iii) Studies on biological parameters should be carried out.
- iv) Studies of distribution of species and of ecological relations through means such as the examination of predator stomach contents should be continued.

SMT-4.3 Management

The Committee has no recommendations for management of fisheries for small tunas at this time.

MTR-MULTI-SPECIES INTERACTIONS – TROPICAL SPECIES

The SCRS has recognized that multi-species interaction considerations fall into two broad categories. One has to do with the biological requirements of species coexisting or competing in the same habitat. The second involves fisheries that exploit this co-occurrence of species with various fishing gears and fishing procedures.

This year, the Committee discussed general biological information for tropical tunas (yellowfin, skipjack and bigeye tunas) and reviewed information on multi-species interactions in Documents SCRS/82/32, 48 and 62. Documents SCRS/82/32 and 62 pro-

vided information on the vertical distribution of tropical tunas in the eastern Atlantic. The results show that, particularly for large individuals in the Gulf of Guinea, bigeye tuna are generally found in deeper waters than yellowfin tuna (SCRS/82/32) and both yellowfin and skipjack tuna appear to occur more frequently in the upper 100 m of the eastern tropical Atlantic (SCRS/82/62). From evidence provided to the Committee in previous years, it was noted that large bigeye tuna are found in surface waters such as around the Canary Islands, Madeira Island, and Azores, where special oceanographic conditions provide a favorable environment. SCRS/82/49 reviewed published information on predation of juvenile skipjack tuna by adult tunas and billfishes. It noted that predation by adult tunas and billfishes is an important source of natural mortality of juvenile skipjack tuna. The Committee concluded that the biological relationship of tuna species in tropical waters is complex because the juveniles and sub-adults share the same in-shore habitat in tropical waters and tend to form mixed-species schools. As the fish increase in size, they move offshore and occupy both tropical and temperate waters, and tend to form single-species schools. The Committee also concluded that a clear understanding of the fundamental biological basis of the multi-species interaction will involve better understanding of the biological processes such as predator/prey relationships, competition among coexisting species, and population dynamics of principal species sharing the habitat, which is currently lacking.

The Committee also reviewed several documents that provided information on various fisheries that are exploiting multi-species. The broadly effective but directed nature of the longline fishery is well known and has been reviewed by the SCRS in previous years. This year, the Committee concentrated on reviewing information from the eastern tropical Atlantic surface fishery, particularly because this fishery continues to be plagued by high catches of undersized (less than 3.2 kg) yellowfin and bigeye tunas and is one in which exploitation of mixed-species schools plays an important part in fishing strategy of the fleets. Estimates provided to the Committee were 3-4 million undersized yellowfin tuna and 0.4-0.6 million undersized bigeye tuna caught annually in 1979 and 1980 (SCRS/82/15). The dependence of the major fleets on a multi-species catch is described in SCRS/82/53, 55, 77, 96 and in last year's report. Document SCRS/82/53 received special attention from the Committee because it provided information that showed catches from mixed-species schools being, on the average, higher than from pure-species schools. The Committee noted that the Working Group on Juvenile Tropical Tunas has developed a work plan for an in-depth study of the problem of high catches of undersized tunas despite the ICCAT minimum size recommendation and will be investigating alternative management measures for reducing the catch of undersized fish.

MTE-MULTI-SPECIES INTERACTIONS – TEMPERATE SPECIES

As emphasized in the past, multi-species interactions associated with any particular fishery or gear fall broadly into two categories: (1) those factors affecting fishery data (catch, effort), and (2) those factors affecting the actual biological or dynamics parameters of one or more interacting species.

The 1981 SCRS Report elaborated examples of multi-species interactions which

fall into the two broad categories above. There are several specific multi-species interaction problems which currently affect stocks and their assessments.

In the area of those interactions affecting data on catch and effort is the estimation of effective longline effort on billfish and swordfish taken incidental to tuna fishing. Similarly, the estimation of effective or directed fishing effort on bluefin tuna both by longline fisheries in the west Atlantic and some surface fisheries in the Bay of Biscay present difficulties.

Among those interactions which have the immediate potential to affect the biological or dynamics parameters of a species is the catch of bluefin tuna which may be taken incidentally in the western Atlantic bigeye longline fishery.

Effects of regulations

Regulations on each species have the potential to affect the fisheries of one or more species occurring together in any catch. Statistics and dynamics parameters of interacting species' fisheries will be directly affected in response to any changes in fishing induced by regulations. For example, limitations on mortality for western Atlantic bluefin tuna which result in limiting longline, sport or surface effort may also reduce the catch of albacore, skipjack and bigeye tunas or billfishes, and even the viability of some of these fisheries.

Research recommendation

A key to addressing many of the multi-species interaction problems is a combination of detailed fishery data and investigations into the availability of species whose habitats are overlapped by a single-gear type in any particular time-area stratum. These data coupled with extensions of current analytical methods should help to resolve some of these problems.

Item 7. REVIEW OF THE REPORT OF THE WORKING GROUP ON JUVENILE TROPICAL TUNAS AND ITS WORKING PLAN

The Report of the Working Group on Juvenile Tropical Tunas was presented by the Group's Convener, Mr. J. B. Amon Kothias (Ivory Coast). The Report and its future plans were reviewed by the SCRS, adopted with all the recommendations and is attached herewith as Appendix 6. The SCRS requested that the Commission give particular attention to the important recommendations concerning bigeye regulations in the reports (Item 4.c of Appendix 6).

Item 8. REVIEW OF THE REPORT OF THE WORKING GROUP ON JUVENILE BLUEFIN TUNA

The Committee noted that this Group had not met during 1982. The bluefin sci-

entists found that some other items of research, such as examination of catches by length, age determination, etc. are of most immediate concern. However, the problem of finding an effective index of juvenile bluefin remains unsolved. The SCRS decided that the Group should not yet be dissolved, at least until the priorities in bluefin tuna studies can be evaluated once again at the next SCRS meeting.

Item 9. REVIEW OF THE REPORT OF THE SUB-COMMITTEE ON SKIPJACK

The Report of the Sub-Committee was presented by the Convener, Dr. G. T. Sakagawa (U.S.A.). The Sub-Committee adopted the Report, reiterated its recommendations, and asked that the Commission pay particular attention to the recommendations on the revised 1983 Special Skipjack Budget. The Report of the Sub-Committee is attached herewith as Appendix 5.

Item 10. REPORT OF THE SUB-COMMITTEE ON STATISTICS AND REVIEW OF ATLANTIC TUNA STATISTICS AND DATA MANAGEMENT SYSTEM

The Report of the Sub-Committee on Statistics was presented by the Group's Convener, Mr. Z. Suzuki (Japan). The SCRS approved the report, confirmed that all the points under SCRS Agenda sub-items a through g are covered by the Report and reiterated all the recommendations contained in the report. The Report is attached herewith as Appendix 4.

Item 11. REVIEW OF SCRS RESEARCH PROGRAMS AND CONSIDERATION OF FUTURE PLANS

11.1 Meeting organization and reporting procedures

Discussions centered on the method and strategy of holding an SCRS meeting which could provide effective and purely scientific advice to the Commission on a timely basis while at the same time giving the commissioners time to study the implications of the advice.

Also the official status of the informal rapporteurs' meetings prior to the formal SCRS sessions was questioned. One of the ways to formalize the species rapporteurs' meetings is to hold the official opening of the SCRS meeting on the first day (on the Monday) or to formally appoint sub-groups (or committees) to review the research programs and state of the stocks.

Noting that such changes would involve total basic changes in SCRS policy and organization, the SCRS asked Dr. N. Bartoo (U.S.A.) to recall the Ad Hoc Working Group on SCRS Meeting Organization and to invite all countries interested in this matter to participate. The terms of reference of the Group are to review the problems and evaluate various alternative plans, including their advantages and disadvantages, and the impact of the alternatives on the overall efficiency of the SCRS. The Group was asked to begin its work during this session and continue through correspondence during the

intersessional period. A document should be presented at the 1983 SCRS meeting for consideration by the Committee.

The Secretariat was requested to distribute, starting in 1983, titles and summaries of SCRS papers (when these have been sent to the Secretariat in advance) not only to the species rapporteurs but to all the document correspondents of the member countries of the Commission.

11.2 ICCAT Symposium

The Convener of the Working Group on Ecobiological Aspects of Tunas, Mr. A. González-Garcés (Spain) gave a summary of the Symposium on "Criteria to Define Stock Units", which was held during the SCRS session. The report of the Symposium is attached as Appendix 9. Despite the great difficulties encountered in organizing the Symposium through correspondence with various scientists, it was very successful and the Convener was commended for all his efforts.

The SCRS discussed, at length, plans for 1983. It was agreed that instead of holding another symposium, half to one full day should be set aside during the 1983 meeting to allow open discussions of any problems or follow up as a result of the 1983 Skipjack Conference. This matter was referred to the SCRS Officer's Meeting scheduled at the time of the Skipjack Conference. The Officers will be able to decide whether or not such discussions are necessary, and if so, how the session should be organized.

11.3 Tagging accounting policy

Dr. A. Fonteneau (France) reported on the results of a study by the Ad Hoc Working Group on Tagging Accounting. The report is attached as Appendix 8. After reviewing the results, the SCRS adopted the report and reiterated the recommendations made in it.

11.4 Bluefin stock identification

A new technique utilizing X-ray spectrometry to detect chemical differences in the bones was reported last year as a means to determine the origin of bluefin. The 1981 SCRS recommended that ICCAT scientists cooperate in the east Atlantic sampling program to facilitate Dr. J. R. Calaprice (IATTC), who developed the technique. Following this recommendation, various scientists assisted in bluefin sampling and the Secretariat coordinated the sampling in the east Atlantic.

Preliminary results of the technique were reported at the Symposium on the "Criteria to Define Stock Units" this year and the method seems useful. In analyzing 2- and 3-year old fish, differences correlated with the geographic location were found in the X-ray spectra from the portion of the vertebrae formed during the first winter

of life. Examination of the spectra along transects of analysis from the center to the outside of the vertebra suggest that it may be possible to recognize fish which have crossed the ocean and also to indicate the age at which this occurred.

Complete, elaborate sampling to monitor annual exchange rates between areas requires 100 to 200 samples each from 90 strata with a combination of size, time, age, gear, area, etc. However, as a pilot study, present requirements seem more conservative:

- 100-200 giants from Mediterranean spawning fish
- 100 giants from Gulf of Mexico spawning fish
- 100 juveniles from the Adriatic
- 100 age 2-4 fish from the Gulf of Lion

The cost for such sampling may be on the order of \$5,000.

Recommendations for future work include the following:

- i) Irradiate additional samples to narrow confidence intervals.
- ii) Include Gulf of Mexico samples to evaluate the rate of mixing on that spawning ground.
- iii) Include different size fish in the samples to evaluate year-classes and age-specific migration rates.
- iv) Evaluate accuracy of technique by irradiating vertebrae from tagged fish that underwent transatlantic migrations.
- v) The Secretariat supports continued research in this area and accelerated cooperation from concerned nations is requested.
- vi) Funds allocated to the Secretariat's Coordination of Research may be utilized for the purpose of coordinating this sampling, if so required and if it does not hinder other assignments, after consultation with the SCRS and possibly the STACFAD Chairman.

11.5 Training courses

The SCRS noted that this subject was addressed by the Sub-Committee on Statistics (Appendix 4). The Committee confirmed that the matter of training courses was sufficiently discussed by the Sub-Committee.

11.6 Intersessional meetings

The SCRS recognized that there are several intersessional meetings scheduled for 1983:

- i) The Skipjack Conference is scheduled in June, 1983, in Tenerife.
- ii) The Working Group on Juvenile Tropical Tunas is proposing a short meeting

at the same time and place in 1983 as the Skipjack Conference and a major meeting in 1984.

- iii) The SCRS is proposing to hold an *ad hoc* bluefin committee meeting in April or May, 1983, possibly in Japan, to review the data base of catch by size, and other items.
- iv) The Officer's Meeting, generally scheduled during the intersessional period, will probably be held at the same time and place as the Skipjack Conference. The officers did not meet in mid-1982 as no ICCAT intersessional meetings were held, which usually justify the officers' travelling.

While recognizing that this intersessional meeting schedule is a crowded one and will represent a lot of work, the Committee recommended that the Commission approve these meetings since they are all essential to the success of the Commission's scientific research.

Item 12. COOPERATION WITH OTHER ORGANIZATIONS

The close working relationship which ICCAT maintains with various international organizations is reviewed in the Administrative Report (COM/82/9) and the Report of the Sub-Committee on Statistics (Appendix 4 to this Report).

The SCRS noted that the FAO (WECAF/CECAF) is preparing individual species synopses and has asked ICCAT's assistance. It was suggested that ICCAT scientists cooperate on a personal and laboratory basis; the Committee fully endorses this endeavor. ICCAT will also cooperate and the SCRS can probably review the draft.

The Convener of the Sub-Committee on Skipjack noted that the 1983 Skipjack Conference should be well publicized, and specific invitations should be issued to international organizations (i.e. CECAF, IPFC, IOFC, IATTC, SPC, etc.) so that they may take part in the Conference.

Item 13. REVIEW OF SCIENTIFIC PUBLICATIONS

The Committee noted that the Statistical Bulletin, Data Record, Historical Statistical Bulletin and the Statistical Series were reviewed in detail by the Sub-Committee on Statistics (Appendix 4).

With regard to the papers submitted to the 1982 ICCAT Symposium, it was suggested that the Secretariat follow its usual procedure for the Collective Volume, i.e. contact the authors and ask if they wish to have their papers included in the series. Those papers which the authors wish to include in the volume should be included in the Collective Volume, but separate from the regular SCRS documents.

Item 14. RECOMMENDATIONS

The recommendations which resulted from the species groups' discussions are listed in Appendix 7 (Table of Assignments).

Item 15. DATE AND PLACE OF THE NEXT MEETING

The Committee decided that the 1983 SCRS meeting would be held at the same place as the Commission meeting, starting on Monday of the week preceding the 1983 Commission meeting.

The SCRS wishes to express its sincere appreciation for the invitation to hold the 1982 meeting here and for the excellent facilities provided by the Portuguese and Madeira regional authorities. Holding the meeting outside Madrid provided a very pleasant working atmosphere.

Item 16. OTHER MATTERS

A suggestion was made to include on the 1983 Agenda an item concerning the possibility of purchasing a high efficiency, large capacity micro-computer, which would greatly facilitate scientific analytical work and could also be used as a word processor.

Item 17. 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 18. ADJOURNMENT

The meeting was adjourned.

Table 1. Atlantic yellowfin tuna catch (1,000 MT)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982*
TOTAL	93.8	75.4	73.3	94.0	94.6	106.6	124.5	125.4	127.8	133.3	126.2**	119.9	140.0	125.7
East Atlantic	81.5	60.7	57.7	78.6	79.7	92.2	108.1	111.8	114.5	118.3	112.3**	107.1	123.1	111.4
– Surface	61.0	43.9	44.4	60.6	60.5	75.3	94.5	99.0	98.9	107.1	105.5	94.6	115.2	100.7
Baitboat	15.9	9.4	10.4	12.8	14.3	19.4	9.3	12.8	11.0	8.7	12.6	7.0	5.8	5.3
Angola . . . . .	.4	.3	.5	.6	.6	.8	.1	1.0	1.9	2.0	.8	.5	.7	.7
FIS	14.3	7.5	7.6	7.5	5.5	6.3	2.9	3.7	3.4	2.8	2.1	2.1	2.8	2.1
Ghana	0.	0.	0.	.0	.1	.3	.7	.8	.6	.3	.3	.3	.3	.3
Japan	1.0	.8	2.0	3.5	6.5	7.1	1.1	4.9	2.6	1.4	1.0	.7	.3	.3
Korea-Panama	0.	0.	0.	.4	.8	2.8	3.5	2.0	2.1	1.7	4.1	2.1	.9	1.1
Spain . . . . .	.3	.7	.4	.7	.8	2.0	1.0	.2	.3	.2	.1	.1	.1	.1
Others	0.	0.	0.	0.	0.	.0	.0	.0	.1	.2	4.2**	1.2	.7	.7
Purse seine	45.1	33.9	32.6	47.8	44.9	53.4	83.4	86.2	87.6	97.6	91.7	87.1	108.7	94.1
FISMP	15.2	17.2	19.2	24.6	26.7	32.9	45.1	50.5	47.9	53.7	48.9	49.9	51.7	41.9
Japan	4.7	1.1	2.0	2.5	1.2	.8	.1	0.	0.	0.	0.	0.	0.	.8
Spain	5.5	6.4	7.2	8.6	13.2	13.7	23.8	33.1	33.2	35.1	39.2	34.2	50.8	44.0
U.S.A.	18.8	9.0	3.8	12.0	3.0	5.6	14.0	1.7	6.4	8.1	2.9	1.6	1.5	2.0
Others . . . . .	.9	.2	.4	.2	.8	.4	.4	.8	.2	.6	.7	1.4	4.7	6.0
Other gears . . . . .	.0	.5	1.4	.0	1.2	2.5	1.9	.0	.3	.8	1.2	.4	.7	.7
– Longline	20.4	16.8	13.2	18.0	19.2	16.9	13.6	12.8	15.6	11.3	6.8	12.5	7.9	10.7
China (Taiwan)	7.0	3.9	3.4	3.5	1.5	1.0	1.3	.6	.2	.2	.2	.1	.4	.2
Cuba . . . . .	.9	1.1	1.4	3.2	4.5	3.0	1.7	1.8	2.9	1.9	2.6	4.9	3.5	4.5
Japan	6.4	2.5	1.6	2.3	1.3	.7	1.7	.3	.1	.3	.3	1.7	1.2	
Korea-Panama	4.2	9.3	6.9	7.8	11.9	12.2	8.8	8.5	10.7	8.4	3.1	5.6	3.6	2.8
Others	1.9	0.	0.	1.1	.0	0.	0.	1.6	1.8	.5	.6	.2	.3	

Table 1 (continued)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982*
West Atlantic	12.3	14.7	15.7	15.3	14.9	14.5	16.5	13.7	13.3	15.0	13.9	12.9	16.9	
– Surface	0.	0.	0.	3.4	2.3	1.6	2.0	.7	1.4	4.7	4.1	5.5	4.8	7.5
– Longline	10.4	12.8	13.9	11.6	12.4	12.6	14.2	12.6	11.3	9.5	9.0	6.6	11.2	6.0
China (Taiwan) . .	3.8	3.2	1.0	1.2	1.2	1.3	1.1	1.1	.1	.2	.8	.5	.4	.3
Cuba . . . . .	.6	.5	.3	.4	0.	.4	.6	1.2	.9	.7	.2	.7	2.0	.4
Japan	3.6	4.3	9.1	4.2	2.5	2.8	2.4	3.1	1.4	1.6	1.7	1.1	3.0	1.2
Korea-Panama . . .	1.8	4.0	3.0	3.3	6.5	6.5	8.9	5.9	7.1	5.0	4.4	2.7	3.6	2.8
Others . . . . .	.6	.8	.5	2.6	2.2	1.5	1.1	1.3	1.7	2.0	1.9	1.5	2.3	1.2
– Unclassified gears . .	2.0	1.9	1.8	.3	.3	.3	.3	.4	.6	.8	.9	.8	.9	.8
Unclassified region . .	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.	
– Longline	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.	

*Preliminary.

**3.0 from Indian Ocean stocks.

Table 2. Estimated carrying capacity (1,000 MT) of yellowfin and skipjack surface fisheries of the eastern Atlantic Ocean.

	1969 ¹	1970 ¹	1971 ¹	1972 ¹	1973 ¹	1974 ¹	1975 ¹	1976	1977	1978	1979	1980	1981	1982 ⁵
Carrying capacity														
BB – Ivory Coast-Senegal. . .	3.6	3.4	2.8	2.7	2.1	2.0	1.8	1.0	0.9	1.0	0.7	0.7	0.6	0.7
BB – Tema-based ³	0.9	0.9	1.2	2.6	4.0	5.4	3.6	5.4	5.4	5.4	3.6	4.5	4.3	4.0
BB – Others ⁴										1.0	1.0	1.0	1.0	1.0
Total BB.	4.5	4.3	4.0	5.3	6.1	7.4	5.4	6.4	6.3	7.4	5.3	6.2	5.9	5.7
PS – FIS.	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	16.8
PS – Spain	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	28.3
PS – U.S.A. ²	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	1.3
PS – Others ⁶												10.2	10.0	8.2
Total PS.	10.4	13.9	14.6	22.7	22.8	29.1	41.6	36.4	41.6	53.7	49.8	58.7	58.1	54.6
Total BB and PS	14.9	18.2	18.6	28.0	28.9	36.5	47.0	42.8	47.9	61.1	55.1	64.9	64.0	60.3

1. Estimates for 1969-75 from P. Miyake (SCRS/77/13) (except FIS).
2. U.S.A. estimate weighted by the number of months on the spot.
3. Includes Japan, Korea, Panama and Ghana.
4. Angola, Cape Verde, Canary Islands.
5. Provisional estimates.
6. Ghana, Congo, U.S.S.R., Cuba, Morocco, Portugal, Venezuela, Gran Cayman.

NOTE: The carrying capacity was calculated by summing the individual capacities of the vessels, weighted by their annual time of operation.

Table 3. Total number (in 1,000 fish) of yellowfin caught by purse seine, baitboat and longline in 1979-1980

	<i>1979</i>			<i>1980</i>		
	<i>Total</i>	<i>Number Undersized</i>	<i>Percent Undersized</i>	<i>Total</i>	<i>Number Undersized</i>	<i>Percent Undersized</i>
Yellowfin - East						
PS	4843	1988	41.0	6163	2991	48.5
BB	2665	1283	48.1	1777	1024	57.6
LL	112	0	0	231	2	0.9
TOTAL	7620	3271	42.9	8171	4017	49.2

Source: SCRS/82/15

Table 5. Maximum sustainable yield (Y-max) and corresponding effort (f-opt) estimated by production model analysis for the Atlantic bigeye tuna fishery, 1961-1980

	<i>m</i>	<i>Degree of fit index</i>	<i>f-opt (10⁶ hooks)</i>	<i>Y-max. (10³ MT)</i>	<i>1980 catch (10³ MT)</i>
Whole Atlantic	0	0.558		111.2	56.1
	1.001	0.552	441	58.7	
	2	0.546	306	52.9	
North Atlantic	0	0.369		70.9	28.4
	1.001	0.367	282	36.8	
	2	0.366	194	32.9	
South Atlantic	0	0.623		49.2	27.7
	1.001	0.632	192	24.8	
	2	0.636	125	21.4	

Table 6. Atlantic skipjack catch (1,000 MT)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982*
<i>TOTAL</i>	29.9	50.6	79.5	76.6	78.5	118.8	62.0	77.2	118.1	107.9	91.1	115.5	145.6	121.1
<i>— Surface — East Atlantic</i>	28.1	47.9	76.8	74.8	75.1	114.4	57.4	73.1	114.6	100.7	84.6	102.3	122.0	102.7
Purse seine	14.8	31.1	50.2	50.7	51.3	76.5	37.6	35.2	63.9	59.4	38.7	60.7	77.4	65.6
FIS	2.8	8.8	14.2	14.8	8.4	24.0	11.5	16.3	30.9	24.8	17.5	24.1	33.4	29.5
Japan . . . . .	.7	3.5	6.2	3.4	1.5	.9	.1	0.	0.	0.	0.	0.	0.	1.0
Spain	6.4	6.5	12.2	20.2	18.7	31.6	18.1	16.8	27.0	24.9	18.5	28.8	34.0	30.0
U.S.A.	4.7	11.8	16.2	12.2	21.2	20.0	7.4	1.8	5.9	6.8	2.1	2.6	2.8	.3
Ghana	0.	0.	0.	0.	.2	0.	.2	.1	0.	0.	0.	.3	2.6	2.2
Portugal	0.	0.	0.	0.	0.	0.	0.	0.	0.	.2	.1	.2	.1	.1
Others . . . . .	.1	.6	1.4	.2	1.2	.1	.3	.2	.1	2.7	.5	4.7	4.3	2.5
Baitboat	13.2	16.7	26.5	23.9	23.7	37.7	15.3	28.3	42.6	40.3	44.6	37.8	42.4	36.0
Angola	1.8	.9	1.9	1.5	1.3	3.4	.6	1.5	3.8	3.2	3.6	3.5	2.3	2.3
FIS	3.7	4.4	5.8	3.8	3.3	4.5	1.8	2.2	2.7	3.3	3.3	3.1	2.5	3.0
Ghana	0.	0.	0.	0.	.1	.7	1.3	2.1	3.5	2.6	3.9	4.5	5.5	4.0
Japan	4.9	7.5	11.7	10.1	13.0	18.7	3.7	15.0	16.8	14.6	14.7	12.3	15.4	10.0
Korea - Panama	0.	0.	0.	.7	1.1	3.1	6.3	4.4	7.6	11.1	13.8	8.5	8.2	7.4
Spain . . . . .	.8	1.8	2.7	4.1	2.6	5.4	.8	.6	.7	.6	1.3	2.2	4.2	3.0
Portugal	1.7	1.0	4.2	3.7	2.2	1.9	.6	2.1	4.4	4.4	3.0	1.7	2.7	4.6
Cape Verde	0.	0.	0.	0.	0.	0.	0.	.3	.9	.5	1.0	2.1	1.6	1.7
Others . . . . .	.1	1.1	.1	.0	.1	.1	.3	.0	2.2	0.	0.	.0	.1	.0
Other gears . . . . .	.1	.0	.1	.2	.1	.1	4.5	9.6	8.1	.9	1.4	3.8	2.3	1.1

– Surface – West Atlantic. . . .	1.9	2.4	2.2	1.4	2.7	3.3	3.4	3.7	3.2	6.6	5.8	12.8	23.0	18.4
Purse seine. . . . .	.1	0.	0.	1.2	.3	.1	.4	.7	.6	3.5	1.5	2.9	4.7	2.0
U.S.A. . . . .	.1	0.	0.	.1	0.	0.	.2	.5	.3	1.6	.7	1.0	2.6	.7
Others.	0.	0.	0.	1.0	.3	.1	.2	.2	.3	1.8	.8	1.9	2.1	1.3
Baitboat	1.3	1.8	1.6	0.	1.9	3.0	2.8	2.8	2.4	2.8	4.0	9.6	18.3	16.4
Brazil	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.4	6.3	13.9	15.0
Cuba.	1.3	1.8	1.6	0.	1.5	1.8	2.3	2.8	2.4	1.8	2.0	2.3	1.1	1.1
Others.	0.	0.	0.	0.	.4	1.2	.5	0.	0.	1.0	.5	1.0	3.3	.3
Other gears . . . . .	.5	.6	.6	.2	.5	.3	.2	.2	.2	.3	.3	.3	0.	0.
– Surface – Uncl. region	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LL - Trawl – All Atl. . . .	.0	.0	.1	.1	.1	.2	.2	.0	.1	.1	.0	.0	.1	0.
– Unclassified gears. . . . .	.0	.3	.4	.4	.6	.9	1.0	.4	.2	.6	.6	.5	.5	0.

*Preliminary.

Table 7. Atlantic albacore catch (1,000 MT)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982*
TOTAL	76.5	70.4	83.1	83.4	75.7	72.5	59.6	77.3	75.1	72.2	72.6	60.9	59.2	56.2
North Atlantic	47.3	46.2	57.6	49.4	47.0	52.3	41.4	57.3	52.9	48.5	49.7	38.2	34.1	
– Surface	32.5	30.1	39.7	34.7	28.8	37.6	28.7	34.3	32.0	34.3	38.1	28.7	24.3	27.0
Baitboat	14.6	14.4	15.7	8.2	10.1	16.7	19.2	20.4	15.6	11.7	15.9	16.2	13.4	14.0
France	1.7	1.7	1.5	.5	1.1	.6	.7	1.1	.6	.4	.2	.4	.4	
Spain	12.4	12.5	13.9	7.3	8.2	14.9	17.6	18.7	14.9	11.3	15.6	15.7	12.6	
Others . . . . .	.5	.2	.3	.4	.9	1.2	.9	.6	.1	.1	.1	.1	.4	
Troll	17.9	15.7	24.0	26.5	18.7	21.0	9.5	13.9	16.5	22.6	22.1	12.6	10.8	13.0
France	7.7	4.5	7.7	8.7	5.8	7.9	5.0	5.7	6.2	8.4	7.8	3.1	2.5	3.0
Spain	10.2	11.3	16.3	17.8	12.9	13.1	4.5	8.2	10.3	14.1	14.2	9.5	8.3	10.0
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.	.1	.0	.1	
– Longline	14.8	16.1	17.9	14.7	18.1	14.6	12.7	23.0	20.9	14.2	11.6	9.5	9.8	
China (Taiwan).	2.4	4.7	2.9	4.4	9.5	9.5	8.1	14.8	13.7	9.3	7.0	7.1	6.6	
Japan	4.7	5.9	6.5	1.3	1.5	2.1	1.3	1.3	.8	.5	1.2	1.0	1.7	
Korea-Panama	6.8	5.0	7.7	8.2	7.2	3.0	3.1	6.6	6.1	3.8	3.4	1.0	1.1	
Others . . . . .	.9	.5	.8	.8	0.	0.	.2	.2	.2	.5	.0	.4	.3	

South Atlantic	28.5	23.7	25.0	33.3	28.2	19.7	17.5	19.2	21.3	23.0	22.3	22.1	23.6	
– Surface	0.	0.	0.	.1	.1	.1	.2	.0	.3	.2	.5	1.5	3.3	.1
– Longline	28.5	23.7	25.0	33.2	28.1	19.6	17.4	19.2	21.0	22.8	21.8	20.6	20.3	
China (Taiwan).	12.5	12.2	17.5	25.0	22.2	16.7	13.4	14.6	16.1	20.5	20.3	18.7	18.2	
Japan	6.3	5.9	3.2	2.1	.3	.1	.3	.1	.1	.1	.1	.3	.6	
Korea-Panama .	9.2	5.0	3.8	5.8	5.6	2.6	3.5	4.1	4.1	1.7	1.0	.9	.8	
Others . . . . .	.4	.5	.5	.3	.1	.2	.2	.3	.6	.5	.4	.7	.8	
Mediterranean. . . . .	.7	.6	.5	.7	.5	.5	.5	.6	.6	.6	.5	.5	1.5	
Unclassified region. . .	0.	0.	0.	0.	.0	0.	.0	.1	.2	.1	.0	.0	.0	
–Surface	0.	0.	0.	0.	.0	0.	.0	0.	.0	.1	.0	.0	.0	
–Longline	0.	0.	0.	0.	0.	0.	0.	.1	.2	.0	0.	0.	0.	29.1
Unclassified gears . . .	0.	0.	0.	.0	0.	.0	.1	.1	.1	.1	.1	.0	.0	

*Projected.

Table 8. Bluefin tuna catches (hundreds of MT)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981*
E. Atl.	57 56	43 43	57 57	46 46	58 59	99 97	58 52	70 70	83 53	64 38	47 40	31
Small fish	26 26	22 22	34 34	27 27	22 22	43 43	13 13	23 23	23 23	16 16	13 16	10
Large fish	31 30	21 21	23 23	19 19	37 37	56 54	45 39	47 47	60 30	48 22	34 24	21
Med.	49 45	66 62	53 50	57 53	124 121	111 111	161 164	119 117	78 87	98 77	80 86	90
Small fish	18 13	37 32	29 24	34 27	57 51	45 40	99 94	59 55	52 52	63 36	40 41	55
Large fish	31 32	29 30	24 26	23 26	70 70	66 71	62 70	60 62	26 35	35 41	40 45	35
W. Atl.	58 57	71 69	40 36	38 38	33 33	52 50	56 58	66 67	56 57	60 62	52 58	60
Small fish	38 36	37 34	20 17	16 15	12 12	23 22	14 14	14 14	12 12	12 11	6 7	14
Large fish	20 21	34 35	20 19	22 23	21 21	29 28	42 44	52 53	44 45	48 51	46 51	46
Total	164 158	180 174	150 143	141 137	215 213	262 258	275 274	255 254	217 197	222 178	179 183	181
Small fish	82 75	96 88	83 75	77 69	91 85	111 105	126 121	96 96	87 87	91 64	59 63	79
Large fish	82 82	84 86	67 68	64 68	124 128	151 153	149 153	159 162	130 110	131 114	120 120	120

*These data are preliminary and are expected to change.

NOTE: The figures in bold type refer to those reported this year; the others are from last year.

Table 9. Atlantic billfish catch (1,000 MT)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
TOTAL	7.4	7.7	8.3	7.2	6.6	5.9	5.8	5.5	4.9	4.9	5.6	4.9	4.0
Argentina	0.	0.	.0	.1	.1	0.	0.	.0	.0	0.	0.	0.	0.
Barbados	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.1	.1
Brazil . . . . .	.1	.1	.1	.2	.1	.1	.1	.3	.3	.2	.2	.2	.2
Brazil-Japan	0.	0.	0.	0.	0.	0.	0	0.	.2	.2	.1	.0	.0
Brazil-Korea	0.	0.	0.	0.	0.	0.	0.	0.	.1	0.	0.	0.	0.
China (Taiwan)	2.5	2.0	2.0	2.4	1.8	1.3	.9	1.2	.4	.6	.4	.6	.6
Cuba . . . . .	.3	.3	.3	.2	.5	1.2	1.4	.7	.6	.5	.8	.8	.6
France	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.2
Ghana	0.	0.	0.	0.	.0	.0	.0	.0	.6	1.6	2.2	1.2	.4
Grenada	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	.0	.0
Japan	2.3	2.3	2.8	1.1	.8	.8	1.2	.9	.3	.1	.2	.5	.7
Korea	1.2	1.8	1.8	1.8	1.4	1.2	.9	1.0	1.0	.4	.2	.2	.3
Dutch Antilles	0.	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1
Panama	0.	0.	0.	.1	.6	.2	.1	.3	.3	.1	.0	0.	0.
Senegal . . . . .	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.1	.3	.5
South Africa	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.
USA . . . . .	.5	.5	.5	.5	.6	.6	.6	.6	.7	.7	.7	.7	0.
Uruguay	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0
USSR . . . . .	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.1	0.	.0
Venezuela . . . . .	.4	.5	.6	.5	.4	.3	.3	.2	.2	.3	.4	.2	.2
Species breakdown													
Blue marlin	3.1	2.9	3.2	2.4	3.2	2.8	3.0	2.2	2.1	1.4	1.3	1.5	1.3
Black marlin	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	.0
White marlin	2.2	2.1	2.2	2.3	1.8	1.7	1.6	1.8	1.0	.9	1.0	.9	.9
Sailfish	2.1	2.8	2.8	2.5	1.6	1.3	1.2	1.5	1.9	2.6	3.2	2.4	1.6
Uncl. billfishes	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	.1	.2

Source: SCRS/82/70

Table 10. Blue marlin landings (MT), effective fishing intensity (1,000 hooks per 5° area) for Japanese fleet (FJPN), and entire fleet (FTOT), index of abundance (UJPN), and ratio of Japanese catch to total catch (% JPN) in the total Atlantic Ocean, 1957-1980.

<i>Year</i>	<i>Japan</i>	<i>USA</i>	<i>USSR (Taiwan)</i>	<i>China (Taiwan)</i>	<i>Cuba</i>	<i>Korea</i>	<i>Vene- zuela</i>	<i>Argen- tina</i>	<i>Brazil</i>	<i>Panama</i>	<i>Brazil- Korea</i>	<i>Brazil- Japan</i>	<i>Gre- nada</i>	<i>Total</i>	<i>FJPN</i>	<i>FTOT</i>	<i>UJPN</i>	<i>%JPN</i>
1957	764													764	27.0	27.	28.30	1.00
1958	772													772	58.6	59.	13.17	1.00
1959	841													841	132.0	132.	6.37	1.00
1960	2712	103												2815	167.3	174.	16.21	0.96
1961	3768	116					152		41					4077	163.7	177.	23.02	0.92
1962	7044	115		20			99		24					7302	503.1	522.	14.00	0.96
1963	8600	128		48	145		101		12					9034	654.7	688.	13.14	0.95
1964	7590	161	1	13	154	2	74		12					8007	866.7	914.	8.76	0.95
1965	5751	163	4	4	176	7	36		12					6153	709.2	759.	8.11	0.93
1966	3370	149	6	69	118	93	35		12					3852	416.2	476.	8.10	0.87
1967	1073	197	16	291	444	145	62		6					2234	192.6	401.	5.57	0.48
1968	946	168	15	722	280	186	96		15					2428	156.3	401.	6.05	0.39
1969	960	207	16	1364	165	312	43		18					3085	194.5	625.	4.94	0.31
1970	1005	204	14	929	149	488	30		39					2858	194.2	552.	5.18	0.35
1971	1395	179	17	762	166	479	178		21					3197	383.2	878.	3.64	0.44
1972	420	191	43	928	89	466	188		26	22				2373	135.1	763.	3.11	0.18
1973	346	209	62	692	298	989	124		8	452				3180	90.9	835.	3.81	0.11
1974	284	234	9	552	686	834	83		16	134				2832	74.7	745.	3.80	0.10
1975	608	241	18	527	789	658	82		12	95				3030	194.2	968.	3.13	0.20
1976	264	265	1	409	409	566	78		33	154	10			2189	111.3	923.	2.37	0.12
1977	135	295	10	171	320	663	79		52	190	29	113	?	2057	57.9	882.	2.33	0.07
1978	114	295	5	258	210	325	93		14	74	0	24	?	1412	28.5	353.	4.00	0.08
1979	336	295	44	190	336	145	132		25	13	0	3		1347	39.1	321.	4.19	0.12
1980	336	295	0	289	336	137	79		12	0	0	8		1492	79.3	352.	4.24	0.23

Source: SCRS/82/70.

Table 11. Blue marlin landings (MT), effective fishing intensity (1,000 hooks per 5° area) for Japanese fleet (FJPN), and entire fleet (FTOT), index of abundance (UJPN), and ratio of Japanese catch to total catch (% JPN) in the North Atlantic Ocean, 1957-1980.

Year	Japan	USA	USSR	China (Taiwan)	Cuba	Korea	Vene- zuela	Argen- tina	Brazil	Panama	Brazil- Korea	Brazil- Japan	Gre- nada	Total	FJPN	FTOT	UJPN	%JPN
1957	91													91	5.1	5.	17.84	1.00
1958	240													240	48.0	48.	5.00	1.00
1959	231													231	76.9	77.	3.00	1.00
1960	581	103												684	78.9	93.	7.36	0.85
1961	379	116					152							647	42.8	73.	8.86	0.59
1962	3223	115		9			99							3146	310.9	332.	10.37	0.94
1963	4759	128		27	123		101							5133	539.9	583.	8.81	0.93
1964	4434	161		8	128	1	74							4806	825.0	894.	5.37	0.92
1965	3330	163	1	2	144	4	36							3680	639.9	707.	5.20	0.90
1966	1677	149	1	34	91	46	35							2033	331.5	402.	5.06	0.82
1967	485	197	3	131	223	66	62							1167	139.1	335.	3.49	0.42
1968	474	168	3	337	167	93	96							1338	133.9	378.	3.54	0.35
1969	658	207	3	348	122	214	43							1595	203.3	493.	3.24	0.41
1970	758	204	2	369	108	368	30							1839	231.9	563.	3.27	0.41
1971	1223	179	3	158	149	221	178							2111	537.5	923.	2.28	0.58
1972	335	191	7	300	67	215	188			10				1313	177.7	696.	1.89	0.26
1973	229	209	10	155	223	457	124			208				1615	108.7	767.	2.11	0.14
1974	267	234	1	183	516	385	83			62				1731	110.6	717.	2.41	0.15
1975	551	241	3	105	594	304	82			44				1924	280.3	979.	1.97	0.29
1976	260	265	0	169	250	174	78			47				1243	169.1	803.	1.54	0.21
1977	118	295	1	64	220	307	79			87				1171	82.5	819.	1.43	0.10
1978	99	295	1	81	97	185	93			42				893	33.9	351.	2.54	0.11
1979	98	295	7	51	156	67	132			6				812	39.8	330.	2.46	0.12
1980	223	295	0	160	156	45	79			0				958	70.3	302.	3.17	0.23

Source: SCRS/82/70.

Table 12. White marlin landings (MT), effective fishing intensity (1,000 hooks per 5⁰ area) for Japanese fleet (FJPN) and entire fleet (FTOT), index of abundance (UJPN), and ratio of Japanese catch to total catch (°/o JPN) in the total Atlantic Ocean, 1957-1980.

Year	Japan	USA	USSR	China (Taiwan)	Cuba	Korea	Vene- zuela	Argen- tina	Brazil- Brazil	Panama	Brazil- Korea	Brazil- Japan	Gre- nada	Total	FJPN	FTOT	UJPN	°/oJPN
1957	160													160	9.2	9.	17.39	1.00
1958	161													161	30.3	30.	5.31	1.00
1959	112													112	115.4	115.	0.97	1.00
1960	253	60												313	111.8	138.	2.26	0.81
1961	692	60					11		60					823	93.8	112.	7.38	0.84
1962	1915	74		6			30		34					2059	392.1	422.	4.88	0.93
1963	2418	64		14	44		55		17					2612	394.6	426.	6.13	0.93
1964	3495	70		6	62	3	78		17					3731	963.3	1028.	3.63	0.94
1965	4631	76	2	4	102	8	63		17					4903	652.4	691.	7.10	0.94
1966	3002	76	2	61	141	109	93		17					3501	461.8	539.	6.50	0.86
1967	668	81	7	181	194	169	104	3	9					1416	189.6	402.	3.52	0.47
1968	1088	87	7	385	118	209	107	14	21					2036	214.6	402.	5.07	0.53
1969	843	76	7	568	65	381	268	0	24					2332	158.2	419.	5.33	0.38
1970	703	104	4	566	69	570	15	0	54					2085	223.6	663.	3.14	0.34
1971	980	95	7	438	49	560	82	20	15					2246	242.9	557.	4.03	0.44
1972	440	99	16	713	40	515	258	100	94	26				2331	132.1	700.	3.33	0.19
1973	355	104	24	532	133	271	170	57	10	123				1779	84.5	423.	4.20	0.10
1974	390	108	3	527	304	229	114	0	36	36				1747	74.3	333.	5.25	0.22
1975	418	107	7	349	100	180	113	0	31	26				1570	142.7	536.	2.93	0.27
1976	543	109	0	519	106	284	107	2	56	76	8			1810	110.8	369.	4.90	0.30
1977	106	109	3	163	124	182	108	2	15	51	19	76	?	958	57.1	516.	1.86	0.11
1978	129	109	2	276	170	38	127	0	22	9	0	120	?	1002	38.8	301.	3.32	0.13
1979	110	109	16	217	273	40	181	0	21	3	0	93		1063	35.3	341.	3.12	0.10
1980	125	109	0	250	273	37	110	0	35	0	0	21	0	960	77.5	595.	1.61	0.13

Source: SCRS/82/70.

Table 13. White marlin landings (MT), effective fishing intensity (1,000 hooks per 5⁰ area) for Japanese fleet (FJPN) and entire fleet (FTOT), index of abundance (UJPN), and ratio of Japanese catch to total catch (% JPN) in the North Atlantic Ocean, 1957-1980.

Year	Japan	USA	USSR	China (Taiwan)	Cuba	Korea	Vene- zuela	Argen- tina	Brazil	Panama	Brazil- Korea	Brazil- Japan	Gre- nada	Total	FJPN	FTOT	UJPN	%JPN
1957	25													25	3.3	3.	7.58	1.00
1958	62													62	41.0	41.	1.51	1.00
1959	16													16	95.4	95.	0.17	1.00
1960	25	60												85	45.8	156.	0.55	0.29
1961	30	60					11							101	22.8	77.	1.32	0.30
1962	271	74		1			30							376	173.1	240	1.57	0.72
1963	754	64		4	35		55							912	357.2	432.	2.11	0.83
1964	1493	70		3	45	1	78							1690	884.7	1001.	1.69	0.88
1965	1913	76		2	69	1	63							2124	527.5	586.	3.63	0.90
1966	1417	76		32	118	51	93							1787	419.9	530.	3.37	0.79
1967	174	81	1	47	127	44	104							578	131.3	436.	1.33	0.30
1968	273	87	1	58	103	52	107							681	122.4	305.	2.23	0.40
1969	451	76	1	132	58	204	268							1190	144.2	380.	3.13	0.39
1970	419	104	0	97	61	310	15							1036	212.8	526.	1.97	0.40
1971	915	95	1	178	45	219	82							1535	399.9	671.	2.29	0.60
1972	339	99	1	244	34	213	258			10				1198	100.4	638.	1.88	0.28
1973	328	104	2	120	112	106	170			48				990	133.8	404.	2.45	0.33
1974	381	108	0	248	256	90	114			14				1211	127.4	405.	2.99	0.31
1975	404	107	1	84	294	71	113			10				1084	236.1	633.	1.71	0.37
1976	540	109	0	142	68	64	107			17				1047	191.6	371.	2.82	0.52
1977	80	109	0	44	67	71	108			20				499	92.8	579.	0.86	0.16
1978	115	109	0	79	43	33	127			8				514	61.2	274	1.88	0.22
1979	95	109	1	62	68	16	181			1				533	53.2	298.	1.79	0.18
1980	118	109	0	105	68	12	110			0				522	120.7	534.	0.98	0.23

Source: SCRS/82/70.

Table 14. Atlantic and Mediterranean swordfish catch (1,000 MT)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
<i>TOTAL</i>	16.9	17.7	11.8	12.6	13.2	13.4	13.6	13.0	13.4	18.5	18.0	19.9	15.2
<i>Atlantic</i>	13.4	14.6	7.1	7.1	8.8	8.8	9.7	8.8	8.5	13.1	12.8	15.2	11.2
Argentina . . . . .	.5	.4	.1	.1	.0	.0	.0	.1	.1	.0	0.	0.	0.
Brazil . . . . .	.2	.2	.1	.1	.1	.3	.3	.4	.3	.1	.2	1.1	.4
Brazil-Japan	0.	0.	0.	0.	0.	0.	0.	0.	.0	.1	.1	.3	.2
Brazil-Korea	0.	0.	0.	0.	0.	0.	0.	.0	.0	0.	0.	0.	0.
Bulgaria	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.	0.	0.	0.
Canada	4.3	4.8	0.	0.	0.	0.	.0	.0	.1	2.3	3.0	1.9	.6
China (Taiwan) . . . . .	.9	1.2	.8	.7	1.1	.8	.9	.9	.7	.6	1.3	.6	.5
Cuba . . . . .	.3	.3	.2	.1	.5	1.1	.5	.6	.7	.6	.4	.6	.4
France	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.0	0.
Ghana . . . . .	.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	.1	.0
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	2.3	3.2	1.6	1.8	1.0	1.4	1.5	.8	.8	.9	1.0	2.1	2.2
Korea . . . . .	.4	.4	.4	.4	1.0	.7	.5	1.1	1.2	1.3	.6	.7	.4
Martinique . . . . .	.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	.1	.1
Norway . . . . .	.6	.4	.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Panama	0.	0.	0.	.0	.4	.1	.1	.3	.1	.2	.1	0.	0.
Poland	0.	0.	0.	0.	.1	0.	0.	0.	0.	.0	0.	.0	0.
Portugal . . . . .	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0
Rumania	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	3.5	3.2	3.4	3.2	3.8	2.9	3.7	2.8	3.3	3.6	2.6	3.8	4.0
U.S.A. . . . .	.2	.3	.0	.2	.4	1.1	1.7	1.4	.9	3.0	3.4	3.5	2.1

Table 15. Atlantic catch of southern bluefin by gear

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
<i>Total Atlantic</i>	4,348	2,120	4,345	2,687	2,666	637	745	3,168	4,680	6,203	2,151	
LL	4,348	2,120	4,345	2,687	2,664	637	745	3,168	4,680	6,203	2,138	1,600
BB	0	0	0	0	1	0	0	0	0	0	13	
SPORT	0	0	0	0	1	0	0	0	0	0	0	
UNCL	0	0	0	0	0	0	0	0	0	0	0	

LL (all oceans)	40,683	38,214	39,679	31,374	34,028	24,119	33,967	29,595	23,029	27,711	29,522	29,500
SURF (all oceans)	8,400	6,700	10,000	13,100	9,199	9,021	9,319	9,838	11,740	10,740	10,929	13,435
TOTAL (all oceans)	49,083	44,914	49,679	44,474	43,227	33,140	43,086	39,433	34,769	38,451	40,451	42,935

Table 16. Atlantic small tuna catch (1,000 MT)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Blackfin tuna (<i>T. atlanticus</i>)													
Total. . . . .	.8	1.9	1.8	1.8	.8	1.0	.7	.9	1.2	.7	.9	.3	.9
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic. . . . .	.8	1.9	1.8	1.8	.8	1.0	.7	.9	1.2	.7	.9	.3	.9
Atlantic little tuna (<i>E. alletteratus</i>)													
Total.	3.5	8.5	5.3	2.9	2.3	5.2	4.1	3.9	6.1	16.6	12.0	17.5	13.1
Mediterranean. . .	1.0	.9	.5	.7	.8	.9	1.0	1.5	1.5	1.5	1.3	1.0	.1
Atlantic.	2.6	7.6	4.8	2.2	1.5	4.2	3.1	2.3	4.7	15.2	10.8	16.5	13.0
Atlantic bonito (<i>S. sarda</i>)													
Total.	61.7	29.5	44.3	24.5	12.1	20.9	15.3	15.7	20.6	17.0	18.2	31.8	39.3
Mediterranean. . .	55.6	21.6	28.7	16.0	6.2	7.7	6.1	6.5	8.7	9.2	12.8	20.2	30.7
Atlantic.	6.1	7.9	15.6	8.5	6.0	13.2	9.2	9.3	11.9	7.8	5.4	11.6	8.6
Frigate tuna (<i>A. thazard</i>)													
Total.	16.2	12.7	11.2	13.4	10.1	13.9	10.2	9.4	19.2	7.2	7.7	14.4	7.6
Mediterranean. . .	2.8	3.5	4.1	3.3	3.5	4.3	2.4	2.9	2.6	3.0	1.4	3.5	1.7
Atlantic.	13.4	9.2	7.1	10.2	6.7	9.6	7.9	6.5	16.6	4.2	6.3	10.9	5.9
King mackerel (<i>S. cavalla</i>)													
Total.	9.5	8.8	7.7	11.1	14.2	12.2	10.3	10.2	10.8	10.0	10.1	10.5	11.3
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	9.5	8.8	7.7	11.1	14.2	12.2	10.3	10.2	10.8	10.0	10.1	10.5	11.3
Spotted Spanish mackerel (<i>S. maculatus</i>)													
Total.	7.3	9.1	9.1	11.4	13.4	9.3	10.6	11.2	11.0	9.8	7.8	11.6	7.7
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	7.3	9.1	9.1	11.4	13.4	9.3	10.6	11.2	11.0	9.8	7.8	11.6	7.7

Table 16. (cont.)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
<i>Cero (S. regalis)</i>													
Total. . . . .	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	0.	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	0.	0.
<i>West African Spanish mackerel (S. tritor)</i>													
Total.	2.7	3.7	1.3	2.1	1.6	4.7	.8	1.9	2.6	6.8	4.2	4.9	.5
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	2.7	3.7	1.3	2.1	1.6	4.7	.8	1.9	2.6	6.8	4.2	4.9	.5
<i>King mackerel unknown (S. spp)</i>													
Total.	3.4	4.2	1.0	.9	1.1	.9	1.4	1.0	1.0	1.0	.9	.3	.3
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	3.4	4.2	1.0	.9	1.1	.9	1.4	1.0	1.0	1.0	.9	.3	.3
<i>Wahoo (A. solandri)</i>													
Total.	1.1	1.2	1.6	1.8	2.4	1.8	1.6	1.8	1.7	2.0	2.7	2.6	3.2
Mediterranean. . .	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Atlantic.	1.1	1.2	1.6	1.8	2.4	1.8	1.6	1.8	1.7	2.0	2.7	2.6	3.2
Others													
Total.	9.3	12.2	10.2	15.0	6.7	7.5	12.3	10.1	12.1	9.2	9.2	15.2	15.5
Mediterranean. . .	1.2	.6	.2	.2	.3	.2	.6	.4	.5	.4	.2	.0	1.5
Atlantic.	8.1	11.6	10.0	14.8	6.4	7.3	11.8	9.7	11.6	8.8	9.0	15.2	14.1
GRAND TOTAL. . . .													
Total.	115.5	91.9	93.6	85.0	64.8	77.6	67.4	66.1	86.4	80.3	73.7	109.0	99.5
Mediterranean. . .	60.6	26.6	33.6	20.2	10.8	13.2	10.0	11.4	13.3	14.2	15.7	24.7	34.0
Atlantic.	55.0	65.3	60.1	64.9	54.1	64.4	57.4	54.7	73.1	66.1	58.0	84.2	65.5

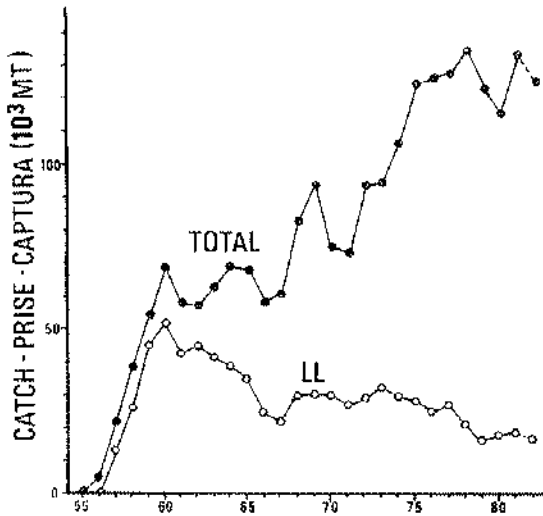


Fig. 1. Catch of yellowfin tuna in the Atlantic Ocean by longline and all gears combined, 1955-1982.

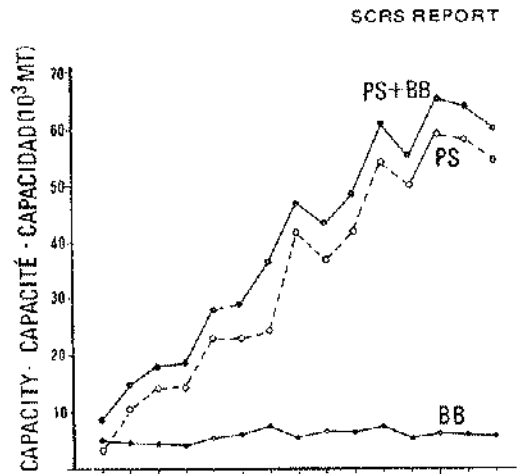


Fig. 2. Carrying capacities of the surface fleet for yellowfin and skipjack tuna. (1982 figures are preliminary.)

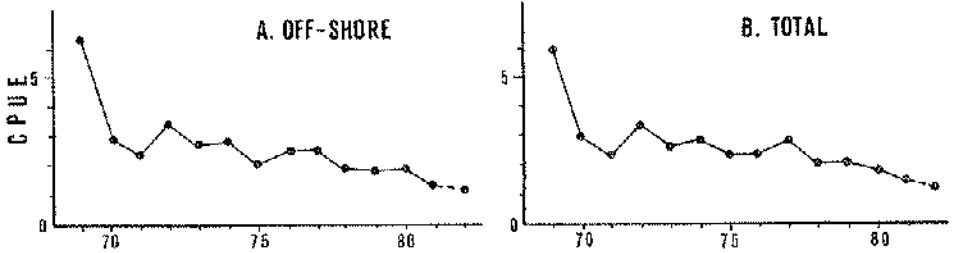


Fig. 3. Yellowfin abundance index. FISM purse seine CPUE by 10 and 15 days for: (A) east Atlantic offshore and (B) total east Atlantic (SCR.S/82/84). The 1982 value is preliminary.

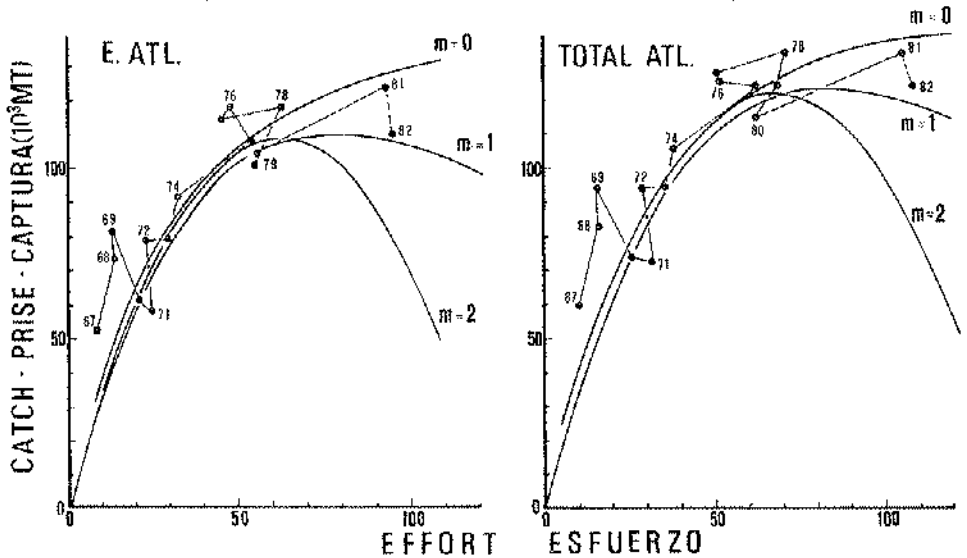


Fig. 4. Production model curves fitted for yellowfin catch and effort (10^3 days fishing). 1982 values are provisional.

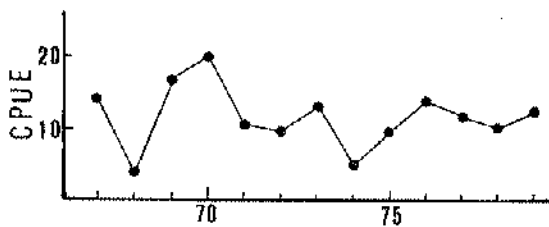


Fig. 5. Estimation of yellowfin recruitment in the east Atlantic calculated from the CPUE of the FISM fleet (adapted from SCRS/82/83).

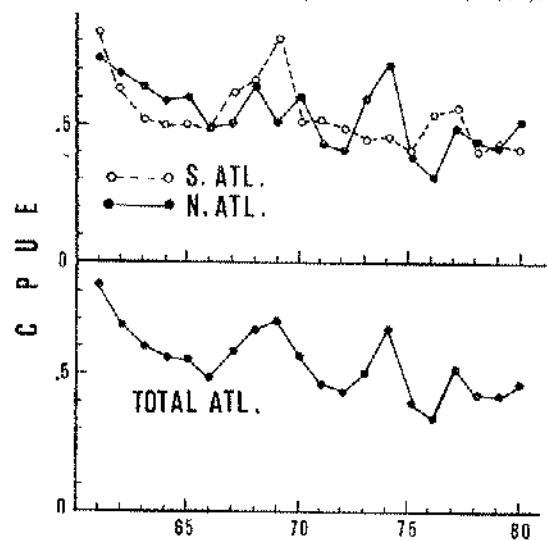


Fig. 7. Annual changes in bigeye hook rates (no. of fish/100 hooks) in the whole Atlantic, and in the north and south Atlantic, 1961-80.

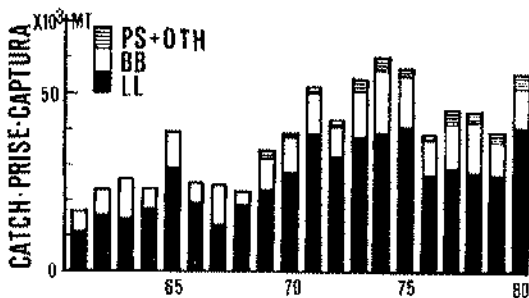


Fig. 6. Yearly bigeye catch by gear in the Atlantic, 1961-80.

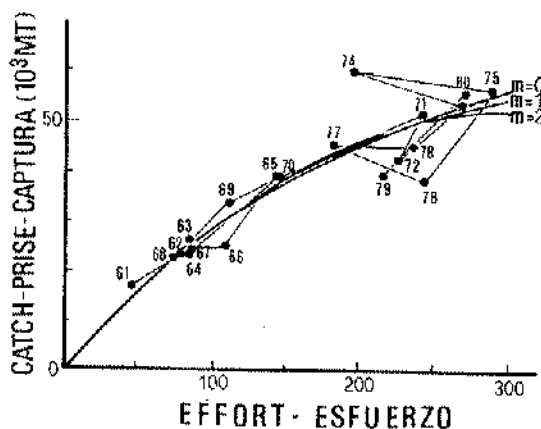


Fig. 8. Production model analysis for bigeye tuna, whole Atlantic, 1961-80. (Effective effort is in 10^6 hooks.)

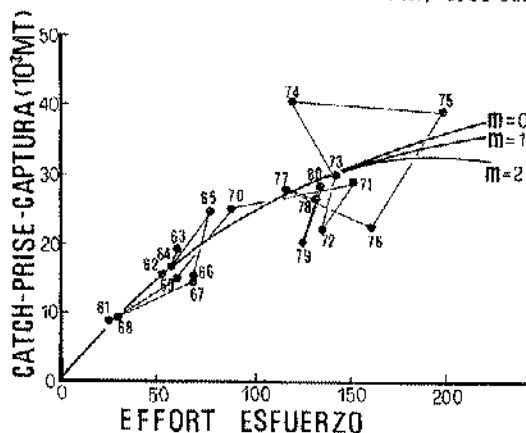


Fig. 9. Production model analysis for bigeye tuna, north Atlantic, 1961-80. (Effective effort is in 10^6 hooks.)

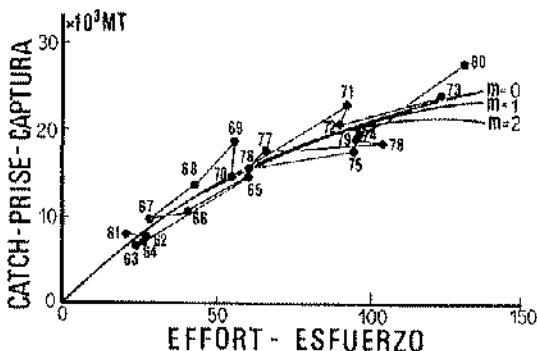


Fig. 10. Production model analysis for bigeye tuna, south Atlantic, 1961-80. (Effective effort is in 10^6 hooks.)

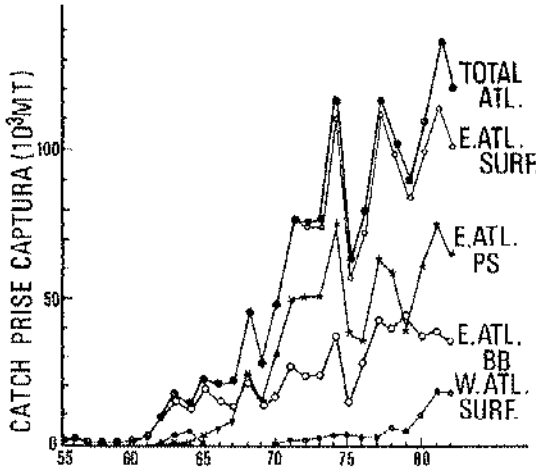


Fig. 11. Skipjack catches in the east and west Atlantic (baitboats, purse seiners, total). The figures for 1982 are provisional.

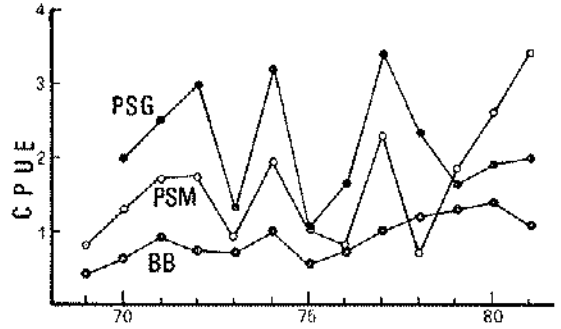


Fig. 12. Standardized average skipjack CPUE (MT/day) for FIS, by gear, 1969-81.

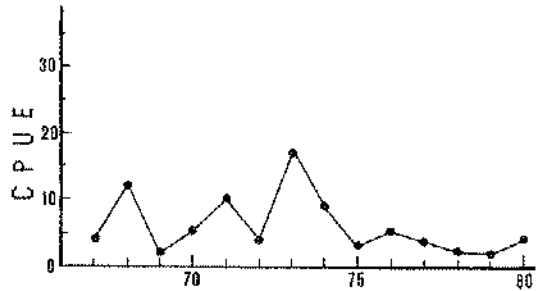


Fig. 13. Skipjack CPUE (MT/days fishing) for U.S. purse seiners in the east tropical Atlantic, 1967-80.

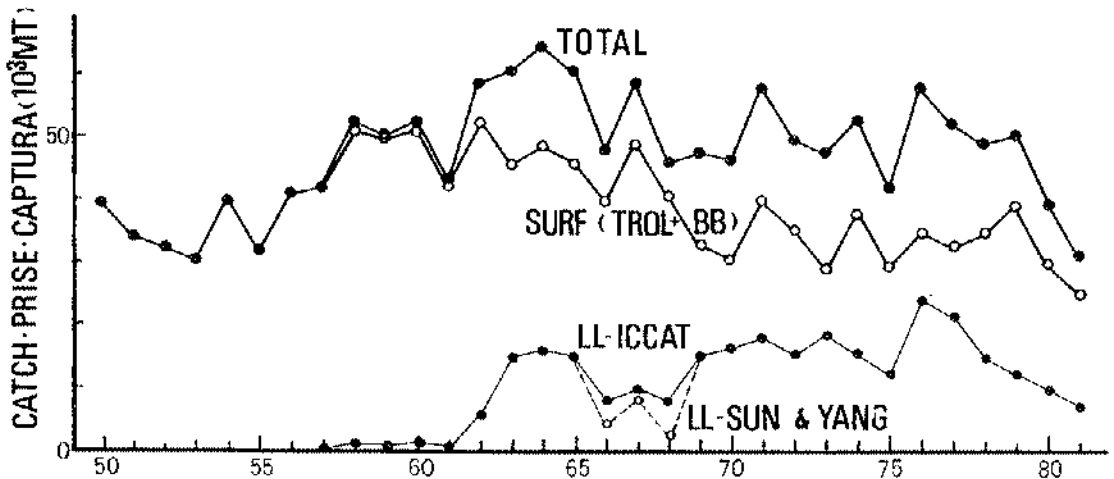


Fig. 14. Annual albacore catch by fishery in the North Atlantic.

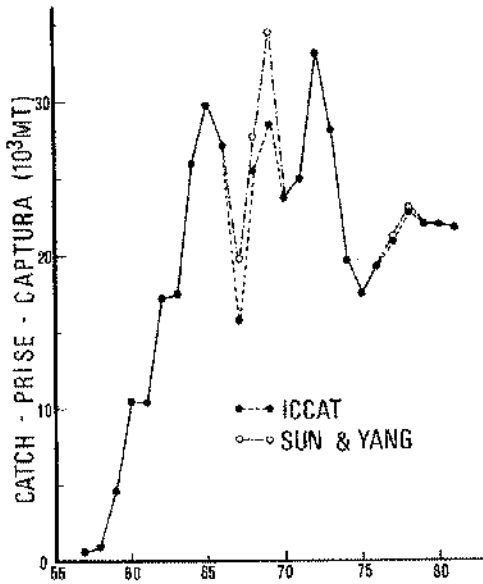


Fig. 15. Annual catches of the albacore south stock.

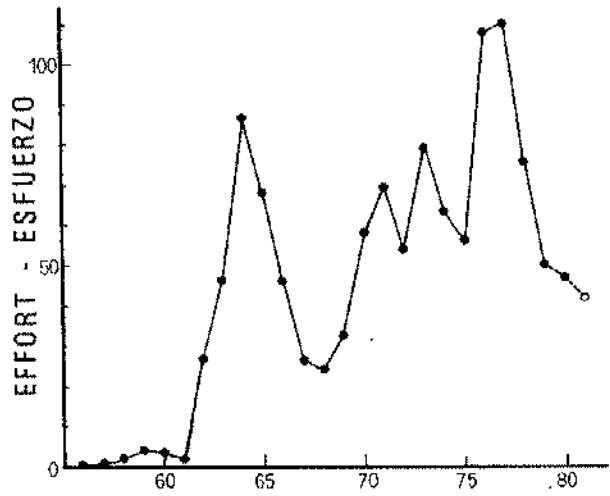


Fig. 16. Total longline effective effort (10^6 hooks) for the albacore north stock.

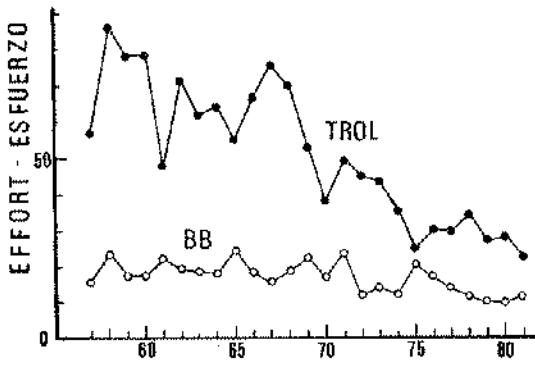


Fig. 17. Effective effort of the surface fishery (baitboat and troll) for the albacore north stock.

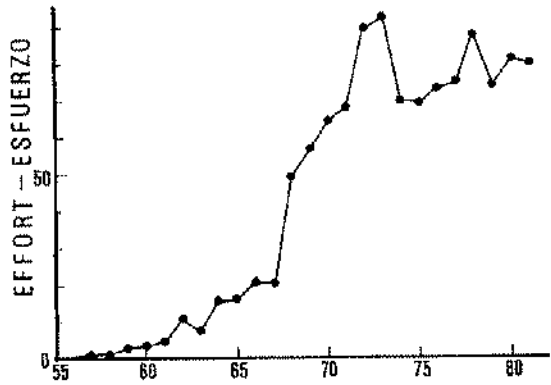


Fig. 18. Total effective longline effort (10^6 hooks) for the albacore south stock.

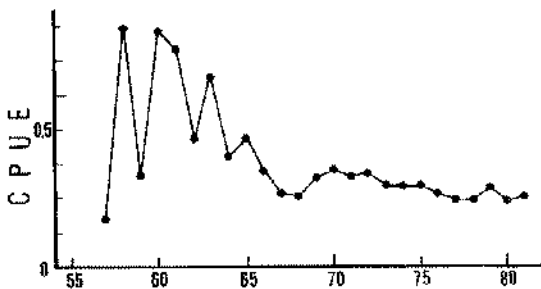


Fig. 19. Longline CPUE (MT/1000 hooks) for the albacore north stock.

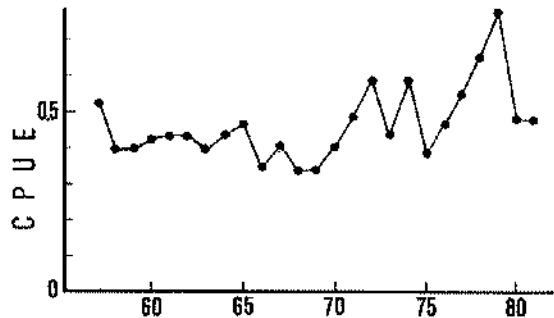


Fig. 20. Troller CPUE (MT/fishing day) for the albacore north stock.

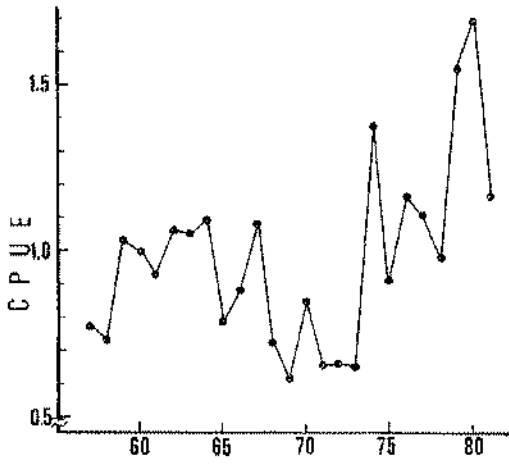


Fig. 21. Baitboat CPUE (MT/fishing day) for the albacore north stock.

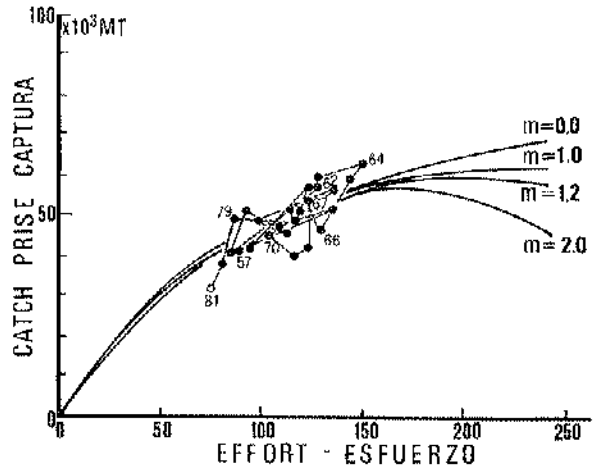


Fig. 22. Production model fitted to the catch and standardized effort (10^3 trawling days) for the albacore north stock.

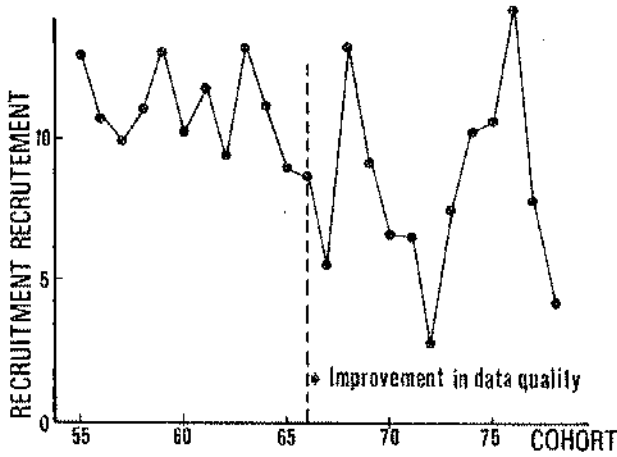


Fig. 23. Recruitment of age 2 albacore (10^6 fish) based on juvenile cohort analysis - north Atlantic. Data quality improved in 1966 and thereafter.

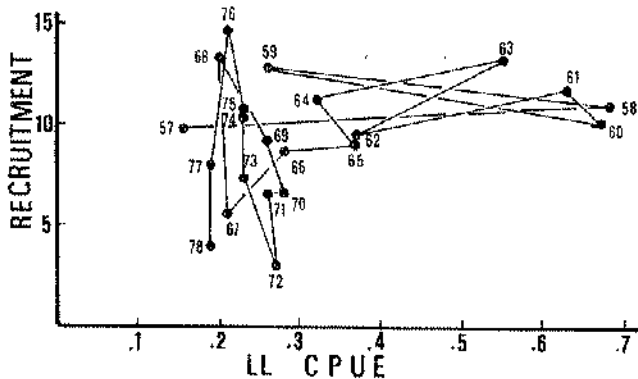


Fig. 24. Recruitment (10^6 age 2 fish) vs. parent stock (long-line CPUE in MT/1000 hooks) for the albacore north stock.

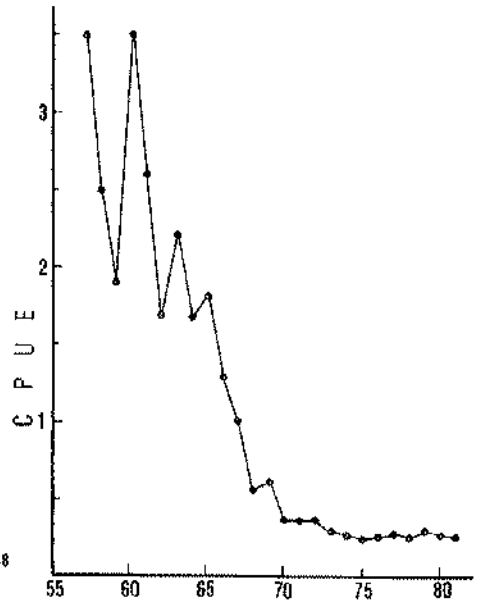


Fig. 25. Longline CPUE (MT/1000 hooks) for the albacore south stock.

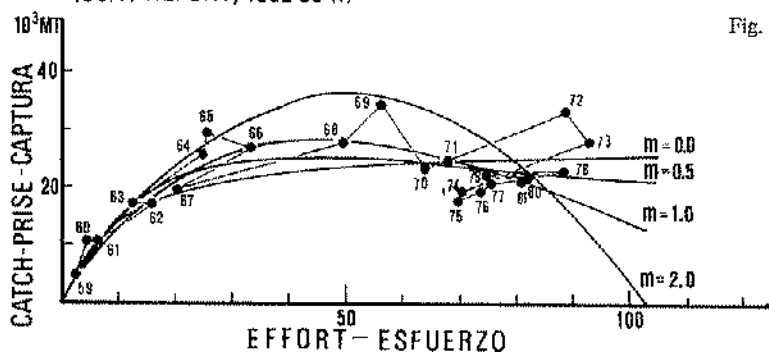


Fig. 26. Production model fitted to catch (10^3 MT) and standardized effort (10^6 hooks) for the albacore south stock.

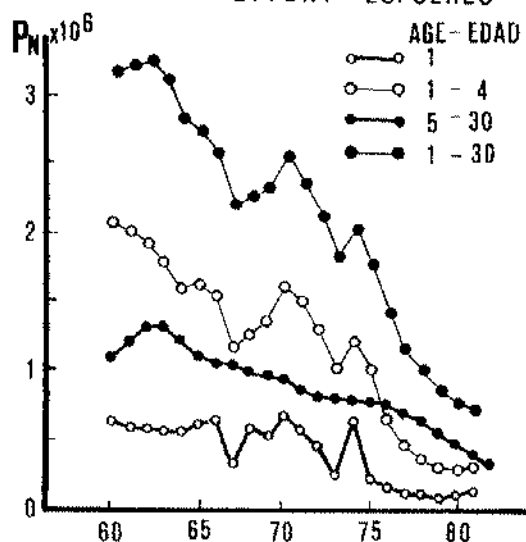


Fig. 27. Estimated stock size (10^6 fish) of west Atlantic bluefin - opinion 1.

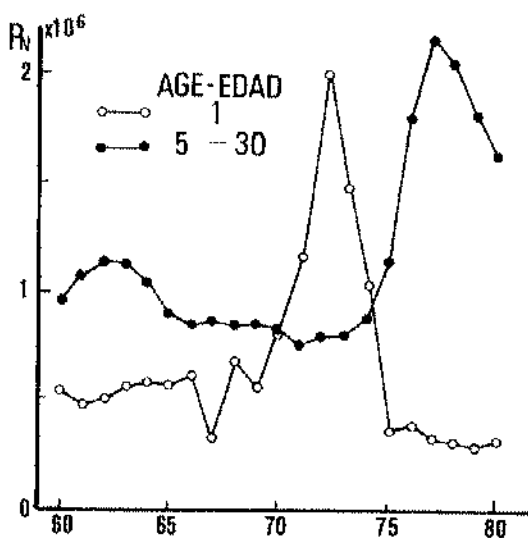


Fig. 28. Estimated stock size (10^6 fish) of west Atlantic bluefin - opinion 2.

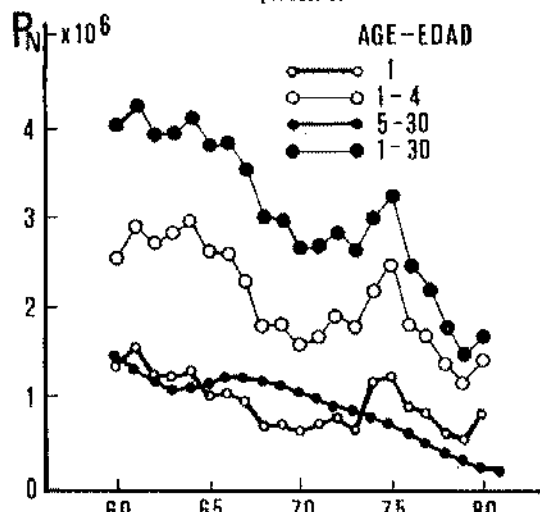


Fig. 29. Estimated stock size (10^6 fish) of east Atlantic bluefin - opinion 1.

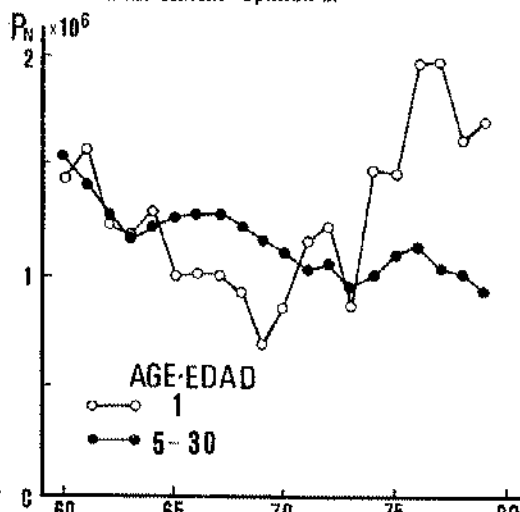


Fig. 30. Estimated stock size (10^6 fish) of east Atlantic bluefin - opinion 2.

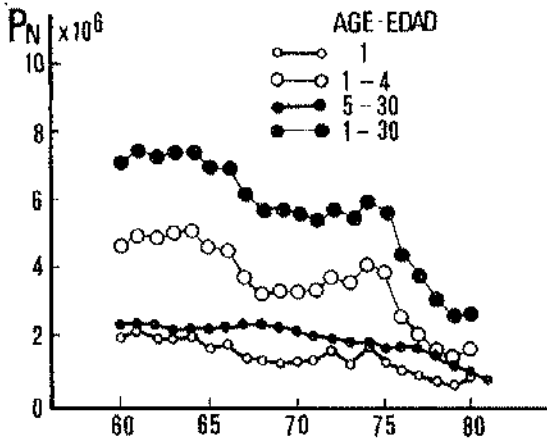


Fig. 31. Estimated stock size (10^6 fish) for total Atlantic bluefin - opinion 1.

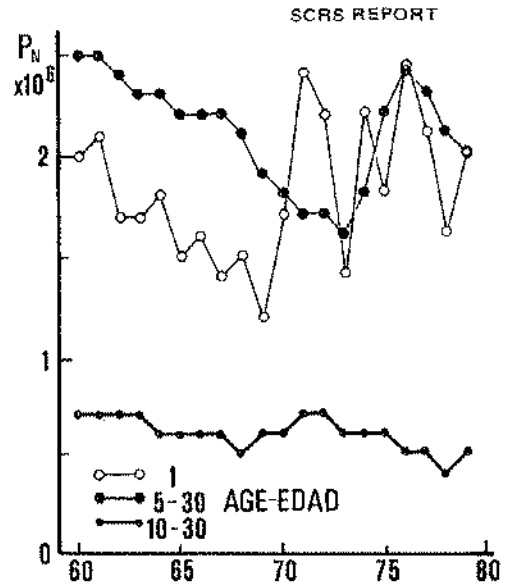


Fig. 32. Estimated stock size (10^6 fish) for total Atlantic bluefin - opinion 2.

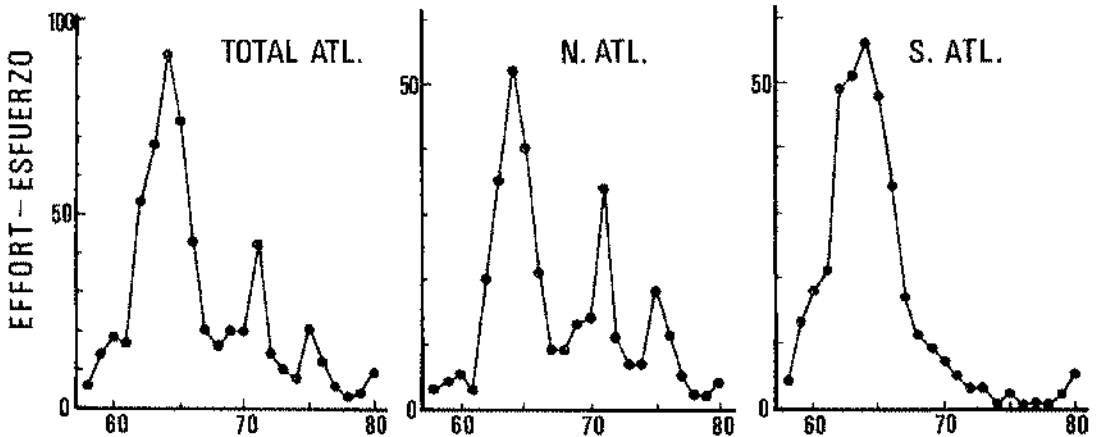


Fig. 33. Effective effort (10^6 hooks) for blue marlin in the Atlantic Ocean, 1958-80. All data are from the Japanese longline fishery (SCRS/82/70).

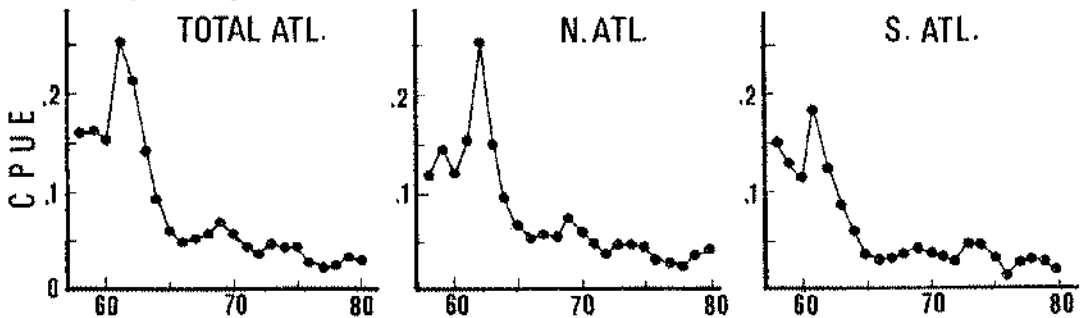


Fig. 34. Catch-per-unit of effective effort (no. fish/100 effective hooks) for blue marlin in the Atlantic Ocean, 1958-80. All data are from the Japanese longline fishery (SCRS/82/70).

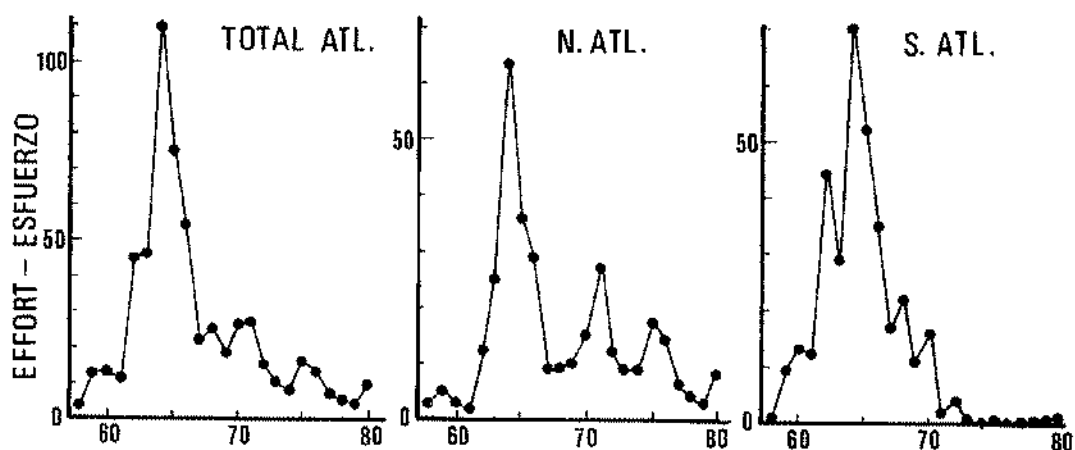


Fig. 35. Effective effort (10^6 hooks) for white marlin in the Atlantic Ocean, 1958-80. All data are from the Japanese longline fishery (SCRS/82/70).

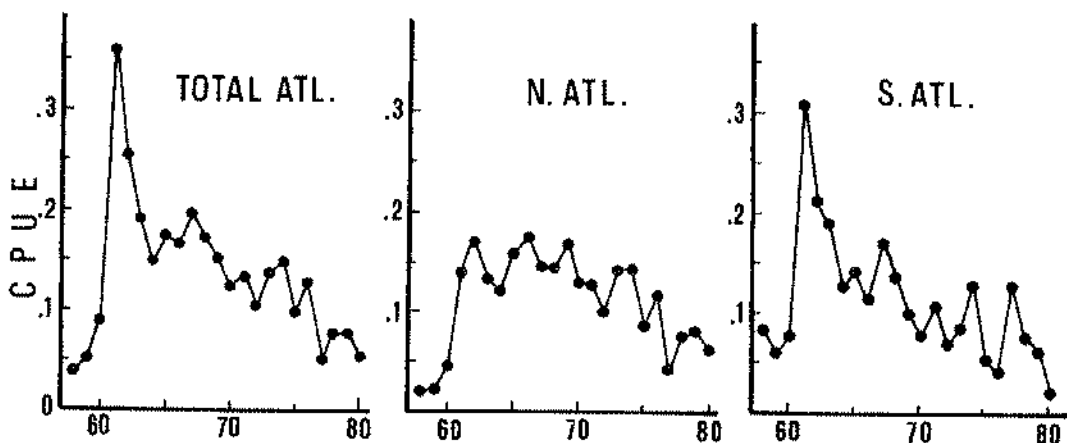


Fig. 36. Catch-per-unit of effective effort (no. fish/100 effective hooks) for white marlin in the Atlantic, 1958-80. All data are from the Japanese longline fishery (SCRS/82/70).

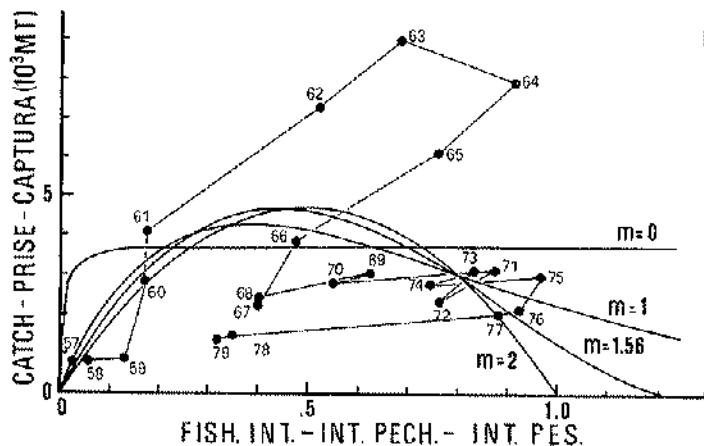


Fig. 37. Equilibrium yield curves and observed data for total Atlantic blue marlin under the assumption of five significant year-classes in the catch. Effective fishing intensity is a weighted average in 10^6 hooks per 50° area.

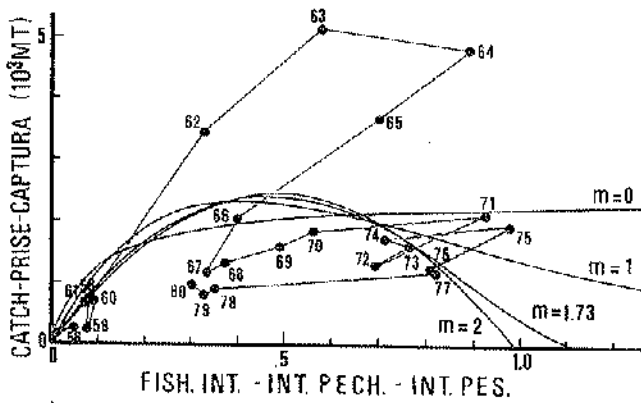


Fig. 38. Equilibrium yield curves and observed data for north Atlantic blue marlin under the assumption of five significant year-classes in the catch. Effective fishing intensity is a weighted average in 10^6 hooks per 5° area.

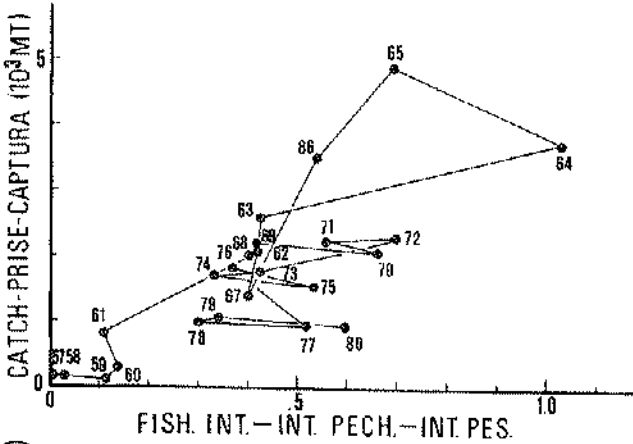


Fig. 39. Observed data for white marlin in the total Atlantic Ocean. (Fishing intensity is in 10^6 hooks per 5° area.) (SCRS/82/70).

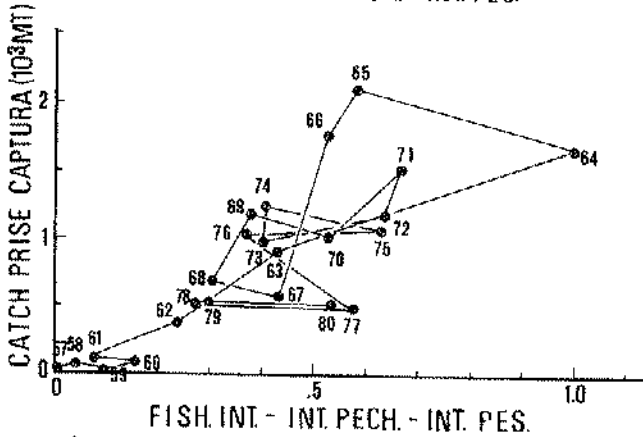


Fig. 40. Observed data for white marlin in the north Atlantic Ocean. (Fishing intensity is in 10^6 hooks per 5° area.) (SCRS/82/70).

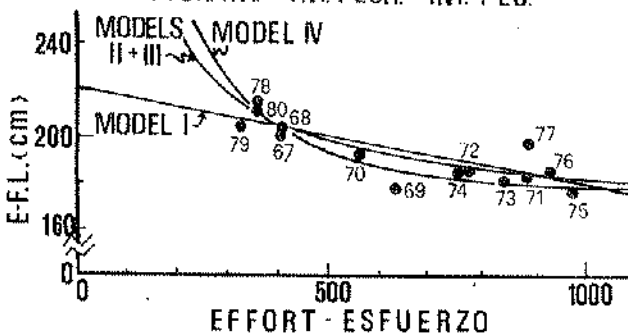


Fig. 41. Average eye-fork length from Japanese longline landings vs. total Japanese longline effort for blue marlin, 1967-80. (SCRS/82/67).

ICCAT REPORT, 1982-83 (1)

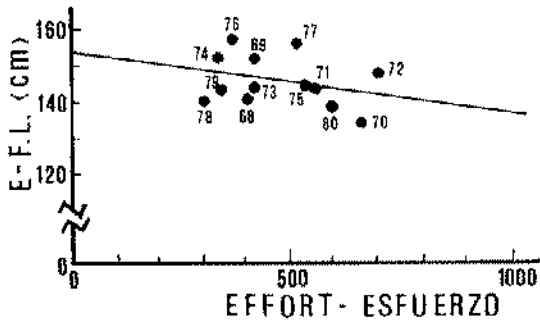


Fig. 42. Average eye-fork length from Japanese long-line landings vs. total Japanese longline effort for white marlin, 1968-80. Linear fit to the data is given (SCRS/82/67).

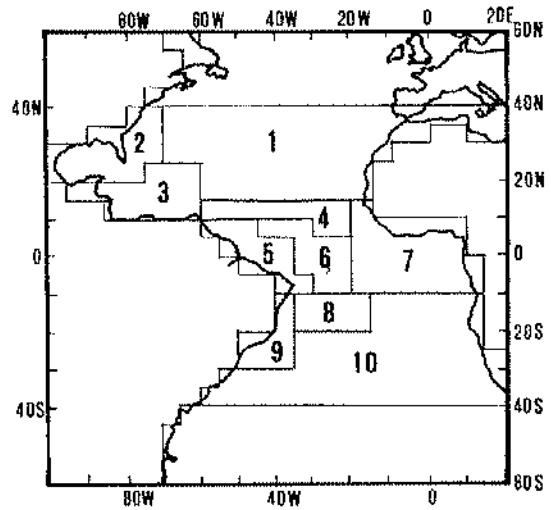


Fig. 43. Ten arbitrarily subdivided areas used for sailfish/spearfish analyses (SCRS/82/45).

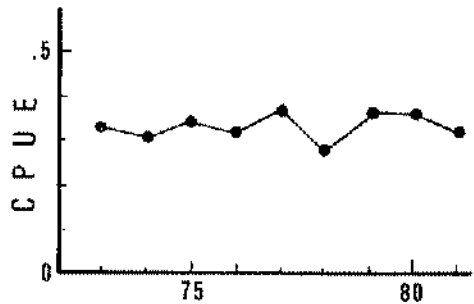
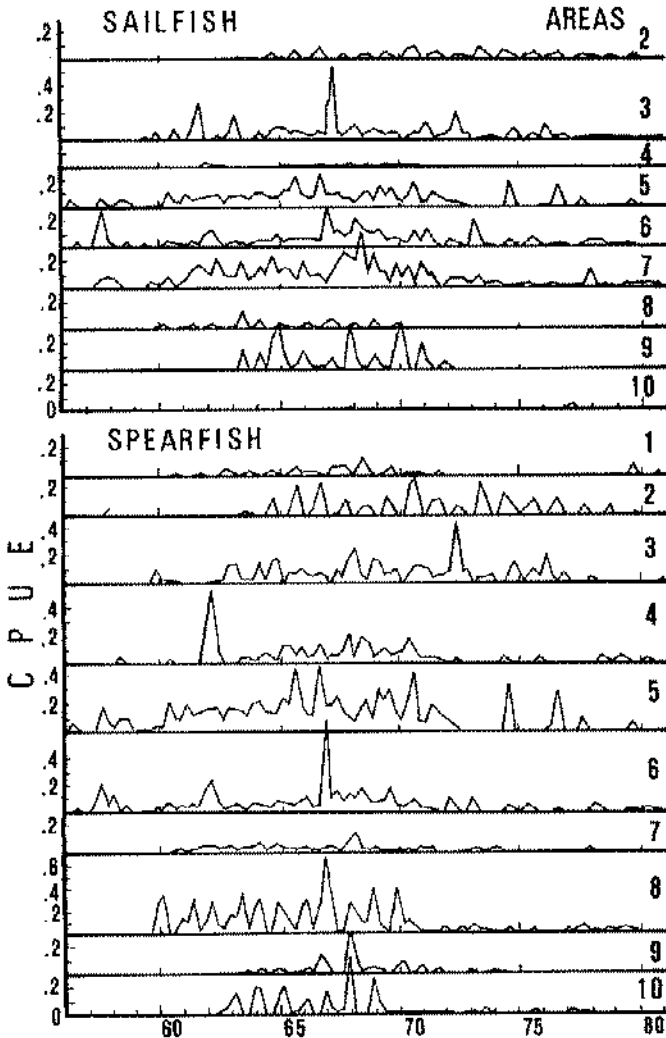


Fig. 45. CPUE of the Spanish swordfish fishery in the Atlantic, 1973-81. CPUE is expressed in MT/100 hooks (SCRS/82/45).

Fig. 44. CPUE (no. fish/100 hooks) of sailfish and spearfish estimated from lumped catch records (SCRS/82/45).

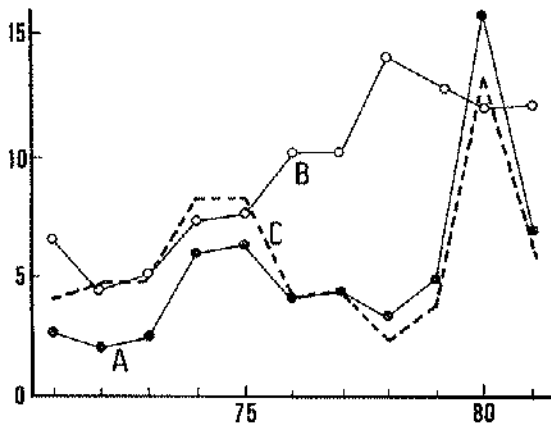


Fig. 46. Annual swordfish (A) catch (10^3 fish), (B) fishing effort (10^5 hooks) and (C) catch-per-effort (no. fish/1000 hooks) for the Brazilian long-line fishery (SCRS/82/36).

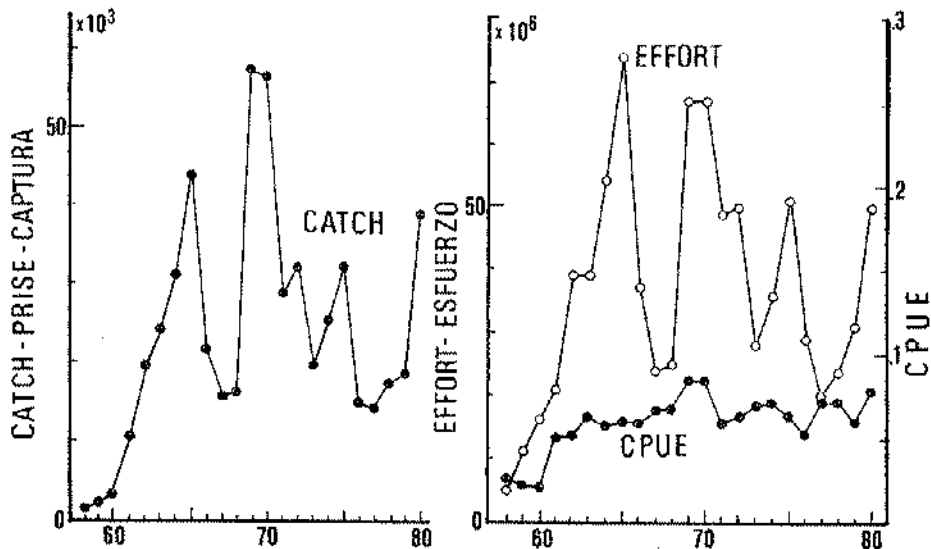


Fig. 47. Total Atlantic Ocean swordfish catch (10^3 fish), effective effort (10^6 hooks), and CPUE (no. fish/100 effective hooks) by the Japanese longline fleet, 1958-80 (SCRS/82/68).

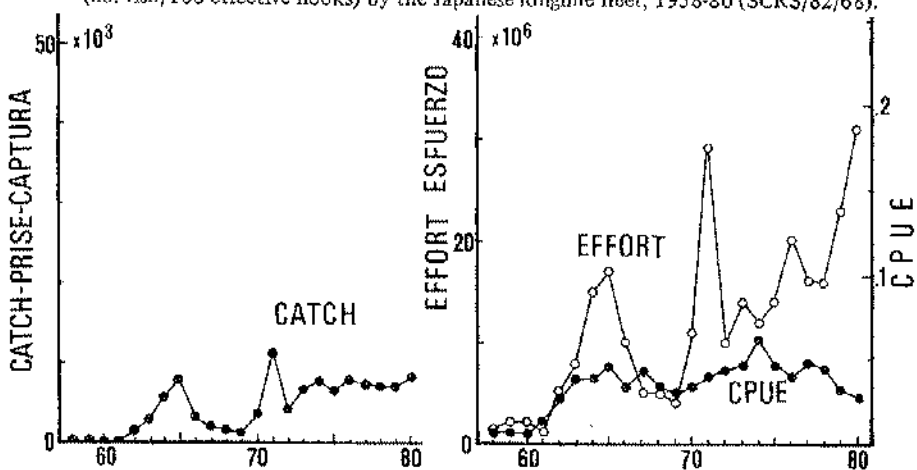


Fig. 48. Northwest Atlantic swordfish catch (10^3 fish), effective effort (10^6 hooks), and CPUE (no. fish/100 effective hooks) by the Japanese longline fleet, 1958-80 (SCRS/82/68).

**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 these subjects:
 - a. Yellowfin, bigeye, skipjack
 - b. Albacore
 - c. Bluefin
 - d. Billfishes, swordfish and southern bluefin
 - e. Small tunas
 - f. Multi-species (Tropical, Temperate)
7. Review of the Report of the Working Group on Juvenile Tropical Tunas and its working plan
8. Review of the Report of the Working Group on Juvenile Bluefin Tuna
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:
 - a. National statistics and Secretariat reporting
 - b. Unconventional fleet statistics
 - c. Procedures adopted for collecting, reporting and estimating tuna statistics
 - d. Biostatistical studies
 - e. Updating of juvenile tropical tuna statistics
 - f. Skipjack Program data
 - g. Others
11. Review of SCRS research programs and consideration of future plans:
 - a. Meeting organization and reporting procedures
 - b. ICCAT Symposium
 - c. Tagging accounting policy
 - d. Bluefin stock identification program
 - e. Training course
 - f. Intersessional meetings
 - g. Other matters

SCRS AGENDA

12. Cooperation with other organizations
13. Review of scientific publications
14. Recommendations
15. Date and place of next meeting
16. Other matters
17. Adoption of Report
18. Adjournment

List of Documents

- SCRS/82/ 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 1982 SCRS Meeting.
6 Document Policy.
7 Collective Volume XVII (1), 1981 SCRS, Tropical Species.
8 Collective Volume XVII (2), 1981 SCRS, Temperate Species & Symposium.
9 Collective Volume XVII (3), 1981 SCRS Report "A".
10 Data Record, Vol. 19.
11 Data Record, Vol. 20.
12 (Number not used).
13 Report of the Eleventh Session of the Coordinating Working Party on Atlantic Fishery Statistics (Luxembourg, July 21-28, 1982).
14 Survey on the procedures used in estimating and compiling tuna statistics – P. M. Miyake.
15 Estimation of undersized tropical tuna catches in the Atlantic for 1979 and 1980 – P. M. Miyake, V. Nordström.
16 ICCAT Tag Accounting Policy – P. M. Miyake, P. E. K. Symons.
17 1981 SCRS Report.
18 Record of the Meeting on the Western Atlantic Bluefin Management Measures (Miami, February 8-12, 1982).
19 1982 SCRS Report "A" (working document).
20 1982 SCRS Report "B" (summary presented to the Commission).
21 Statistical Bulletin, Vol. 12.
22 Historical Statistical Bulletin, Vol. 1 (1950-59).
23 Historical Statistical Bulletin, Vol. 2 (1960-69).
24 Secretariat Report on Research and Statistics.
25 Report of the International Skipjack Year Program.
26 ICCAT Training Programs.
27 A preliminary critical examination of the ICCAT data base – J. P. Wise.

- 28 The ICCAT 3.2 kg size limitations--Development and preliminary evaluation -- J. P. Wise.
- 29 Sampling of hard parts of bluefin tuna in the eastern Atlantic -- P. M. Miyake.
- 30 Dates and conditions of the spawning of the skipjack, *Katsuwonus pelamis* (L.), based on the distribution of their larvae in the tropical Atlantic -- G. P. Rudomiotkina.
- 31 Areas, periods and conditions of bigeye tuna, *Thunnus obesus* (Lowe), spawning in the tropical part of the Atlantic Ocean -- G. P. Rudomiotkina.
- 32 Peculiarities of vertical distribution and migration of tunas in the Gulf of Guinea -- V. V. Ovchinnikov.
- 33 The dynamics of maturation and sex ratio of bigeye tuna (*Thunnus obesus*, Lowe) in the Atlantic Ocean -- V. Z. Gaikov.
- 34 Análisis de la pesquería de atunes rojos (*Thunnus thynnus*) jóvenes del Atlántico Este y comentarios acerca de la estructura del stock -- J. L. Cort, J. C. Rey.
- 35 Etude des perspectives d'évolution du stock est de thon rouge (Est Atlantique et Méditerranée) et de sa pêche -- H. Farrugio.
- 36 Analysis on *Xiphias gladius* L. caught off south and southeast of Brazil (1971-1981) -- C. A. Arfelli, A. F. de Amorim.
- 37 Japanese tuna fishery and research in the Atlantic, 1981-1982 -- S. Kume.
- 38* Activities carried out by Japan for the International Skipjack Year Program -- S. Kume, S. Kikawa.
- 39 Estimation of recruitment of 1973 cohort of bluefin tuna in the west Atlantic, using tagging results -- N. Miyabe.
- 40 Estimation of allowable catch of bluefin tuna in the Atlantic Ocean -- S. Kume, Z. Suzuki.
- 41 Evaluation of stock status on Atlantic bigeye tuna, by production model analysis -- S. Kume.
- 42 Critical review and improvement of cohort analyses on bluefin tuna in the western Atlantic -- Z. Suzuki, K. Hisada.
- 43 CPUE trends of Atlantic bluefin tuna based on age specific effective fishing effort estimated from Japanese longline fishery, 1971-1980 -- Z. Suzuki.
- 44 A note on appearance of medium sized bluefin in the catches of Japanese longline boats operated in the northwest Atlantic -- Z. Suzuki, K. Hisada.
- 45 Trends in the Japanese sailfish/spearfish catches in the Atlantic Ocean as apportioned into separate species -- S. Kikawa, M. Honma.

- 46 Catch and overall fishing intensity of the Atlantic billfishes, 1956-1980 — S. Kikawa, M. Honma.
- 47 A note on the juvenile blackfin tuna, *Thunnus atlanticus*, and frigate tuna, *Auxis* spp., from the stomach contents of longline-caught tunas and billfishes in the western North Atlantic Ocean — Y. Nishikawa, S. Kikawa.
- 48 Datos históricos de áreas de crecimiento de listado (*Katsuwonus pelamis*) obtenidos por medio de examen de contenido estomacal de predadores (informe preliminar) — L. A. Zavala-Camin.
- 49 Composición por edades del rabil en las capturas de la flota tropical española (1978-1981) — P. Pallarés, J. M. García Mamolar, A. M. Fernández.
- 50 Estimación de la proporción rabil-patudo en las capturas de la flota tropical española (1979-1981) — P. Pallarés, J. M. García Mamolar, A. M. Fernández.
- 51 Production model analysis of the Atlantic yellowfin tuna (*Thunnus albacares*) fishery — D. Au.
- 52 Production model analysis of the south Atlantic albacore stock and effects of data accuracy — N. W. Bartoo, A. L. Coan.
- 53 An examination of single set data for the U.S. tropical tuna purse seine fleet — A. L. Coan, G. T. Sakagawa.
- 54 Size and species compositions of Atlantic tunas from imports landed in Puerto Rico during 1981 — T. C. Foster.
- 55 A review of the tropical tuna fishery of the Atlantic Ocean, 1975-1980 — S. Herrick.
- 56 A check of traditional parameters based on fishing effort in the surface fishery of juvenile albacore in the northern Atlantic — A. G. Garcés, J. A. Pereiro.
- 57 Année internationale listao: données d'environnement pour la période juin, juillet et août 1981 dans le golfe de Guinée — B. Piton, C. Roy.
- 58 Informe sobre la investigación y pesca española de túnidos en 1981 y 1982 — A. G. Garcés.
- 59 Análisis de la pesquería española de pez espada, *Xiphias gladius*, entre los años 1973 a 1981 — A. G. Garcés, J. C. Rey.
- 60 Données préliminaires sur la croissance, les migrations et la mortalité du listao (*Katsuwonus pelamis*) en Atlantique est, obtenues à partir du marquage — F. X. Bard, S. Kume, L. Antoine.
- 61 L'étude des histogrammes de longueur (FISM) du listao atlantique au moyen de l'analyse factorielle des correspondances (1969-1978) — J. Mendoza.

- 62 Résultats préliminaires de l'étude des données historiques concernant l'hydrologie et la pêcherie thonière de surface de l'Atlantique est -- J. Mendoza, C. Roy, M. Jezequel.
- 63 Considérations sur l'état du stock de germon (*Thunnus alalunga*) de l'Atlantique Nord, d'après les données des flottilles franco-espagnoles -- L. Antoine, A. G. Garcés.
- 64 Captures d'espadons, *Xiphias gladius*, dans le golfe de Gascogne -- G. Delmas.
- 65 Le germon dans l'Atlantique Nord, stock homogène ou hétérogène? Conséquences -- H. Aloncle, F. Delaporte.
- 66 An assessment of Atlantic bluefin tuna resources -- J. E. Powers, R. J. Conser, M. L. Parrack.
- 67 The relationship between average size and fishing effort for blue and white marlin in the Atlantic Ocean -- J. E. Powers.
- 68 Swordfish indices of abundance from the Japanese longline fishery data for various areas of the Atlantic Ocean -- M. I. Farber, R. J. Conser.
- 69 Estimation of starting F values for large fish in the cohort analysis of western Atlantic bluefin tuna -- P. L. Phares, M. E. Crow.
- 70 An update on the status of stocks of blue marlin and white marlin in the Atlantic Ocean -- M. I. Farber, R. J. Conser.
- 71 Estimation of effort vectors pertaining to western Atlantic bluefin tuna fisheries and analysis of their effects on the assessment of western Atlantic bluefin tuna stocks -- S. L. Brunenmeister.
- 72 An assessment of Atlantic bluefin tuna resources: some technical problems with virtual population analysis -- F. J. Hester.
- 73 Tuna fisheries and research in Madeira -- D. Carvalho, L. Gouveia, J. Ornelas, R. Gomes.
- 74 Document withdrawn.
- 75 Document withdrawn.
- 76 Exploration d'une zone nouvelle de pêche du germon à la ligne de traîne -- F. Delaporte, C. Renevot.
- 77 Pêche et recherche thonières aux Açores -- J. Pereira.
- 78* Activités réalisées aux Açores dans le cadre du Programme listao (Rapport préliminaire) -- J. Pereira.
- 79* Rapport de la Côte d'Ivoire sur les activités scientifiques lors de l'Année internationale listao -- F. X. Bard, J. B. Amon Kothias.
- 80 Management of the population of bigeye tuna (*Thunnus obesus*) of the Atlantic -- M. A. de Azevedo.
- 81 Marquage de thonine (*Euthynnus alletteratus*) au Sénégal en 1981 et 1982 -- T. Diouf.

- 82 Rapport sur la pêche et la recherche thonière au Sénégal en 1981-82 – P. Cayré.
- 83 Analyse de l'état des stocks d'albacore de l'Atlantique au 30 septembre 1982 – A. Fonteneau, T. Diouf.
- 84 Statistiques de la pêcherie thonière FISM durant la période 1969 à 1981 – A. Fonteneau, P. Cayré.
- 85* Activités exécutées par le Sénégal pour le Programme l'année listao – P. Cayré.
- 86* Rapport sur les travaux réalisés au Cap Vert durant l'Année internationale listao – H. S. R. Vieira.
- 87 Canadian National Report, 1981-82 – P. C. F. Hurley, K. I. Metuzals, T. D. Iles.
- 88 Preliminary analysis of the Canadian Atlantic bluefin tuna fishery during 1982 – K. I. Metuzals, P. C. F. Hurley.
- 89 Captures de thon rouge au large des côtes françaises de Méditerranée en 1981 – B. Liorzou.
- 90 Rapport de recherche – France.
- 91 Overall fishing intensity and yield by the Atlantic longline fishery for albacore, 1967-1980 – C. L. Sun, R. T. Yang.
- 92 Review of United States fisheries and research activities on tunas and tuna-like fishes of the Atlantic Ocean for 1981-1982.
- 93* Activities carried out by the United States of America for the International Skipjack Year Program.
- 94* Actividades efectuadas por España para el programa del año listado.
- 95 Capturas por palangreros japoneses y brasileños en el Atlántico sur occidental – Algunas consideraciones sobre CPUE con arte multi-específica (Informe preliminar) – L. A. Zavala-Camin.
- 96* Rapport du groupe de travail regional sur le traitement des données de l'Année listao – R. Pianet.
- 97 Korean tuna fisheries and research activities in the Atlantic Ocean 1981-1982.
- 98 Comparative examination of size composition for skipjack and yellowfin sampled from Korean baitboats based in Tema, 1979-1982 – J. U. Lee.
- 99 Report on the Korean dart tagging experiments for ISYP during 1981-1982 – Y. Gong, J. U. Lee.
- 100 Informe nacional de las pesquerías cubanas de túnidos en aguas del Océano atlántico correspondientes a 1981, así como de las actividades de investigación durante el período 1981-1982 – B. García Moreno, A. Rodríguez Rodríguez.

SCRS DOCUMENT LIST

- 101* Actividades efectuadas por Cuba para el programa del "Año internacional del listado" – Centro de investigaciones pesqueras.
- 102 National Report of Brazil – R. Cavalcante Ribeiro.
- 103* Activities carried out by Ghana for the International Skipjack Year Program.

*ISYP progress reports. Not to be included in the "Collective Volume of Scientific Papers".

**Report of the Ad Hoc Group
to Review the Acceptance of Documents**

Mr. R. Letaconnoux (France) chaired the meeting of the Ad Hoc Group which consisted of the following members: I. Barrett (U.S.A.), T. Diouf (Senegal), A. González-Garcés (Spain), E. A. Kwei (Ghana) and P. Miyake (Secretariat).

The Group reviewed the SCRS documents which did not meet the criteria set by the Committee for the acceptance of documents.

SCRS/82/38, 78, 79, 85, 86, 93, 94, 96, 101 and 103 were progress reports on the International Skipjack Year Program, necessary for the Sub-Committee on Skipjack. Considering that these documents are still of a preliminary nature and are to be completed in a more formal format by the time of the Skipjack Conference in 1983, the Group recommended that they be accepted by the SCRS but that they not be included in the "Collective Volume of Scientific Papers."

The Group also recognized that analytical papers generated by the current International Skipjack Year Program and presented at the 1982 meeting might also be of a preliminary nature and the authors may still update and present more complete versions later to the Skipjack Conference. However, some of the results contained in these papers were used by the SCRS in its stock studies. Therefore, the Group recommended that the same procedure adopted by the Secretariat for the inclusion of papers in the "Collective Volume" series (i.e., the authors are asked whether they wish to include their papers) be applied for these documents.

Only a limited number of the following documents were received on time: SCRS/82/40, 49, 50, 89, 90 and 91. The Group noted that all of these aforementioned papers had been used by the rapporteurs in their deliberations. Fortunately the Secretariat had time to duplicate some of these documents in order to have a sufficient number of copies available. The Group recommended that these documents be accepted.

SCRS/82/74 and 75 were delivered too late to be considered by the rapporteurs. The SCRS recommended that these papers not be accepted.

*Appendix 4 to Annex 10***Report of the Sub-Committee on Statistics****1. Opening of the meeting**

The meeting was opened on November 8, 1982, by the Convener, Mr. Z. Suzuki (Japan). He noted that many improvements have been achieved through the collaboration of national statistical offices and scientists as well as efforts made by the Secretariat. However, he also indicated the need for even further improvements.

2. Adoption of Agenda and arrangements for the meeting

The Agenda (Addendum 1) was adopted without change and Dr. P. M. Miyake (Secretariat) was appointed rapporteur.

3. Examination of progress made by national offices*3.1 Improvements noted by the Sub-Committee*

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/82/24 – hereafter referred to as the Secretariat Statistics Report), together with its attached table, was also reviewed concerning progress made. The table of progress was updated and is attached herewith as Table 1.

The Sub-Committee recognized some improvements in the statistical system for Atlantic tunas. The following are included:

- a. FIS size data for 1978-1981 became available.
- b. Spanish tropical fleet catch and effort data for 1979-1981 and size data for 1979 and 1980 became available.
- c. Ghanaian (including foreign-flag fleets based at Tema) size data in detailed strata became available for 1979-1981.
- d. Sampling (size) was begun in Cape Verde, Brazil (baitboat) and the U.S.S.R.
- e. Statistics for the unconventional fleets have been improved for 1981.

The Sub-Committee noted that the International Skipjack Year Program encouraged many countries to begin biological sampling (item d above) or to improve sampling coverage, compilation and reporting of biological data (items a, b and c above). The Sub-Committee strongly recommended that efforts to maintain such a sampling system for tuna be continued even after the International Skipjack Year Program has ended.

3.2 Improvements needed in the future

While recognizing many improvements made by national offices and the Secretariat, the Sub-Committee also identified some problems which have not yet been solved, as well as some new problems for 1982. The fisheries with considerable tuna catch but which are not yet well sampled are the following:

- a. Morocco (Task I, Task II catch and effort data and Task II biological data).
- b. Venezuela local fleets (Task I, Task II catch and effort data and Task II biological data).
- c. Cuba (Task I for billfish, Task II catch and effort data for baitboat and for longline billfish, Task II biological data for longline).
- d. U.S.S.R. (Task II catch and effort data).
- e. Billfish size data by species from Taiwanese and Korean longliners.

3.3 Changes in reported statistics by national scientists

At its last meeting, the Sub-Committee strongly requested that all figures appearing in the Statistical Bulletin be checked by national scientists each year well in advance of the meeting. Also the recommendation was reiterated that all corrections in national data made 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 to the Secretariat.

The Assistant Executive Secretary reported that not many countries have followed these recommendations. Changes in Task I data are still made by some countries just a few days before the meeting starts, and the Secretariat has to go through all the scientific papers presented to the SCRS to find any hidden changes and any new statistics. He added that there were many serious changes and important new statistics that were not reported separately. At times it was very difficult to decide which set of data was to be adopted.

The SCRS Chairman also noted that he circulated a special letter in mid-summer to draw the attention of scientists to these problems. Not many responses were received to this letter from national scientists.

The Sub-Committee has found no solutions to this problem except to urge all scientists, especially the national statistical correspondents, to follow closely the recommendations mentioned above. The Sub-Committee asked the Secretariat to list all the important changes hidden in the papers which are not otherwise reported as well as all the last minute changes in statistics for the 1983 meeting and report them by country, including the name of the person who made the change.

4. Examination of the problems in the quality of statistics and promptness of reporting

The Sub-Committee recognized general improvements in tuna statistics and biological sampling. However, there are still many unsolved problems. General delays in reporting

Task I data were experienced in 1982. It was very difficult to publish Statistical Bulletin Vol. 12 (Preliminary) on time. At times field trips or vacations taken by key member scientists delay reporting. The Sub-Committee noted that having total catch figures for the most recent years is the first essential step for the current appraisal of stock conditions and strongly recommended that all the scientists make every effort to report Task I statistics before the deadline, even if the data are in preliminary form.

Statistics for non-ICCAT countries' recently industrialized fleets were improved, at least for 1980 and 1981. The Assistant Executive Secretary reported that this improvement was the result of cooperative efforts of scientists stationed at the landing ports and the Secretariat. The field scientists sent landing statistics as well as estimates of catches to the Secretariat, while the Secretariat also obtained considerable landing data from its port sampling program and contacts with the fishing industries concerned. It was confirmed that such collaboration is essential to provide reasonably accurate statistics for these fleets in the future.

Several problems have been discussed in the past, such as compatibility of two different sets of statistics on one fishery, etc., relating to the accuracy and adequacy of data. These will be discussed, however, in other sections of this report.

5. Examination of progress made by the Secretariat

5.1 *Reporting unconventional fleet statistics*

This subject was already covered under Section 3.

5.2 *Biostatistical assignments*

The ICCAT biostatistician reported on specific biostatistical assignments given to the Secretariat during the past year. He presented two documents, SCRS/82/27 and 28.

a) Port sampling

Document SCRS/82/27 reviewed the port sampling program, comparing data sets obtained by this program with that collected by national scientists. It was found that the correlation of CPUE values observed in the same time-area strata between these two sets of data was not strong. Size data are also quite different. Some of the size data obtained in the port sampling program do not seem to be valid. The analysis is not yet complete and must be continued. It is clear that improvements to the sampling program are essential.

The Assistant Executive Secretary noted that improvements to the program were planned for 1982. However, due to the increasing amount of assignments given to the Secretariat and because the port sampling data were being reviewed by the biostatistician, no substantial changes were made to the sampling program in 1982. If the Sub-Committee decides to continue the program, it is essential that the Secretariat take action as soon as possible. He also noted that continuation of the program would probably cost around \$20,000 - \$30,000. He also noted that past port sampling supplemented national

statistics in many aspects and filled in missing data. At the same time, port sampling provides much additional information, such as the base to divide the total national nominal catch (which is only reported for the total Atlantic) into smaller areas (east-west, south-north, etc.), and helps to sort out double reporting and to provide some catch data which were not reported by any country (e.g., Panamanian catches, Venezuelan catches, etc.). He further added that port sampling is one way in which the Secretariat can keep up to date on what is happening in tuna fisheries in the Atlantic as a whole.

The Sub-Committee reviewed all the studies, situations and comments made. It recognized that there has been considerable effort in organizing the present system and the results have been very useful in improving statistics. The work of the Secretariat on this program was commended by the Sub-Committee.

The Sub-Committee established the Ad Hoc Working Group on Data Base Problems comprised of French, Ghanaian, Korean, Japanese and Taiwanese scientists to evaluate the problem of two data sets. This refers not only to data discrepancies between port sampling and national statistics, but also to sampling at landing sites vs. fishermen's measurements. The Working Group is requested to study these problems by correspondence and report the results at the next meeting of the Sub-Committee. The Sub-Committee decided that the Secretariat should continue the port sampling program, until a decision can be made by the Committee based on such studies, and noted that once the program is terminated it would be very costly to start again. The sampling program will continue at a minimal level, while correcting all the detected deficiencies. This may require that members of the Secretariat staff visit different ports.

b) Problem of two sets of data

As reported in the section above (port sampling), the biostatistician reviewed two sets of data on the same fisheries in terms of catch and effort data and sampling results. This review included the comparison of longline data between ICCAT port sampling and national sampling and Ghana-based baitboat data between Ghanaian scientists' sampling and fishermen's sampling. SCRS/82/98 also compared size frequency data obtained by Ghanaian scientists and by Korean fishermen from the baitboat fishery. It was shown that significant differences in size frequencies were observed between these two sets of data.

The above results are still preliminary and only showed the complexities of the problem. The Sub-Committee expressed its keen interest and decided that the problem be further pursued by national scientists as well as by the ICCAT Secretariat as a part of the biostatistical review of the total Atlantic sampling system. Having such extensive data from two sources is actually advantageous to study the validity of sampling.

c) Tropical tuna sampling

SCRS/82/28 reviewed the problems of undersized yellowfin and bigeye. Past studies on this subject, SCRS' studies and the regulatory actions taken by the Commission are reviewed in this paper. The Sub-Committee recognized that the work should be carefully reviewed by the Working Group on Juvenile Tropical Tunas. However, it was recognized that the actual data in the data base should also be reviewed, comparing the validity of past estimates.

5.3 Data base

The Assistant Executive Secretary presented SCRS/82/24, reporting all the statistical work carried out by the Secretariat. He informed the Sub-Committee that the INFONET system was contracted again in 1982 for ICCAT data management. The Secretariat also purchased an "Apple II" unit as a new terminal to supplement the present seven-year-old Texas Instruments terminal. This additional terminal consists of:

- Apple II micro-computer with 48 RAM
- Screen
- Printer (233 characters)
- Two diskette (5 inch) units
- Numerical keyboard
- Software (Basic, Pascal, Fortran)

All updating and data processing carried out by the Secretariat were then briefly explained. The Sub-Committee expressed its satisfaction with the work done by the Secretariat in this aspect.

There was some discussion as to whether or not changes in the ICCAT data base format were needed. To be more specific, the addition of "type of bait" for the longline Task II catch and effort data base was questioned. It was suggested that U.S. and Japanese scientists study the possibility of adding this information to their analyses.

5.4 Publications and dissemination of data

a) Historical Statistical Bulletin

The Assistant Executive Secretary presented the Historical Statistical Bulletin, Nos. 1 and 2 (SCRS/82/22 and 23). He commented that considerable effort was made to gather all bits and pieces of information from all sources, even after the approval of the final draft by the species collaborators. Also "***" signs were added wherever catches were assumed but not reported.

As suggested by the Sub-Committee at its 1981 meeting, footnotes were added to all the figures explaining the data sources. Data covering two decades (1950-59 and 1960-69) were then published in two volumes in mid-1982.

The Sub-Committee reviewed the volumes and commended the species collaborators and the Secretariat for the excellent series completed.

b) Statistical Bulletin

Statistical Bulletin, Vol. 12 (Provisional) was reviewed. The Sub-Committee noted that the new volume has the following improvements:

- All the figures are footnoted for the sources of information.
- All the other footnotes are now with each table rather than combined at the beginning and end of the volume.

- Part V (detailed billfish table), which had been discontinued, was included again in the improved format.

The Sub-Committee approved all the above changes, noting that users of the Statistical Bulletin will benefit greatly from them.

c) Statistical Series

Statistical Series-12, which includes all ICCAT port sampling results, was not published in 1982. The Assistant Executive Secretary explained that this is because many data are expected from the Bermuda Government for 1981. As soon as they are received, the Series will be published. However, a preliminary run was made and circulated among the pertinent scientists in mid-summer.

d) Gear/country catch table

Following the recommendations made by the Sub-Committee in 1981, the Secretariat prepared TASKI base listings compiled by year, region, gear and country together with summary species tables, for easy reference to individual records. These tables were distributed to all the rapporteurs about a month prior to the SCRS meeting and again during the meeting, including all updated figures.

The Sub-Committee noted that the tables were helpful to the rapporteurs and recommended that this procedure be continued in the future.

e) Data Record

The Data Record publication was also reviewed. A change introduced in the latest issue (Vol. 20), i.e., to eliminate many zeros in the table, was appreciated and more improvements are expected.

6. Analyses of the procedures adopted for collecting, reporting and estimating tuna data

The Assistant Executive Secretary presented SCRS/82/14 which summarizes the responses to the questionnaires which solicited detailed information as to how the data are collected, assembled, processed, substituted, estimated and reported. It was noted that additional responses were received during the SCRS sessions (including FIS and U.S. bluefin).

The Assistant Executive Secretary noted that many surprises were found as a result of this survey. For example, some countries have been reporting gilled and gutted weight as nominal catches while indicating round weight. In the past, the Secretariat converted all the weight reported other than round live weight into round, whenever possible. There are still many uncertainties for some countries in this aspect.

Another surprise was that each country adopted different reading systems of size measurements. Some countries truncate millimeters when measuring, as decided at ICCAT, while other countries round the millimeters to the nearest centimeter, and others

round them up to the next centimeter. This would cause 1 to 2 cm. differences for the same size classes indicated.

A comparison of such discrepancies in major items is made in this document and the table is included here as Table 2.

The Sub-Committee recognized that while a compendium of the answers to the questionnaires will help in understanding the procedures adopted by each national office, it is not yet adequate, particularly for understanding data substitution and raising procedures. The Sub-Committee recognized that this problem has been addressed at many other meetings (e.g., the bluefin rapporteurs even recommended holding an inter-essional meeting just to review this problem).

SCRS/82/15 also pointed out a significant discrepancy caused by different substitution schemes applied to the same data set. Noting that such procedural differences may have very significant effects on conclusions drawn from that data set, the Sub-Committee decided to continue its work by correspondence. SCRS/82/14 will provide a good starting point for such a study.

The Sub-Committee also recommended that all the statistical treatment made on the data base (data substitution, extrapolation, etc.) be documented when any analyses based on the data base are presented to the SCRS. The most appropriate way would be as an appendix to the paper. In the "Collective Volume of Scientific Papers", these appendices may be excluded.

The problem of how to index the effort of artisanal fisheries on non-target species was brought up and some discussion ensued. Although part of the question is more closely related to research, it also concerns statistics. The CECAF representative, Mr. M. Ansa-Emmin, stated that this is a major problem for his Committee and recently a suggestion was made to use the number of trips as the index. The Sub-Committee recommended that effort data of any kind be collected and evaluated so that a better index for artisanal effort can be found.

7. Effective utilization of tropical tuna data from the International Skipjack Year Program

The Assistant Executive Secretary reported that an enormous amount of data equivalent to Task II catch and effort data and Task II biological data was generated by the International Skipjack Year Program. Some data were sent to the Secretariat in the form of original field records, while others were submitted in the Task II form. Since many countries are still compiling and analyzing these data, it is expected that much more data will become available in the near future.

Following the decision made by the SCRS, the Secretariat entered all these data into the ICCAT data base as any Task II data, and these have been published in the Data Record series in the same or slightly improved table form.

8. Updating juvenile tropical tuna statistics

The Assistant Executive Secretary presented SCRS/82/15. Following the recom-

mendations made by the Sub-Committee at its 1981 meeting, the Secretariat started working on this in early 1982. The data from FIS and Spanish purse seiners and Japanese longliners were processed by the respective national scientists, while the data from the remainder of the fleets were processed by the Secretariat. All the data were then assembled and summarized by the Secretariat. The procedures adopted by the Secretariat in estimating the catches by size were also documented in the same paper. The Working Group on Juvenile Tropical Tunas will carefully review the document.

9. Statistical training course

The ICCAT biostatistician presented COM-SCRS/82/26. According to the instructions given by the Commission, the Secretariat tried to identify the need and most efficient way of organizing localized training course(s) on statistics. Also the Secretariat looked into the possibility of obtaining financial support for the participants from various sources.

About ten countries responded that such a course would be desirable and about 20 potential trainees were suggested. The overwhelming preference is for training in a neighboring country in early 1983.

The Secretariat proposed a training course of about ten days' duration for the first part of February, 1983, to meet this need. The "Centre de Recherches Océanographiques" in Abidjan, Ivory Coast, has offered to make physical facilities available for such a course. An invitation has been issued to CEEAF members that are not ICCAT member countries to send trainees to this course.

France and the European Economic Community have mentioned that they might be interested in funding travel and per diem for at least some of the trainees. Such support should be officially requested by the countries concerned directly to the French Embassy and/or the EEC delegate in the respective countries.

The Secretariat also hopes that the training requested by Korea can be arranged on a cooperative basis with Japan and that training for Brazil and Cuba can be arranged in early 1983, perhaps in Miami, with facilities provided by the U.S.

The Sub-Committee reviewed plans for training courses and recommended that the SCRS carry out these plans.

It was reported that, upon request of Portugal, a ten-day course was organized at the Secretariat and a few Portuguese scientists attended this course at their own expense. The course was very successful.

10. Future plans to improve statistics, and recommendations to the SCRS

Part III of the Statistical Bulletin (list of boats by categories) is very incomplete and needs to be updated. At the same time, the rapporteurs for tropical species found that estimated nominal fleet capacity statistics are essential for their work. Therefore, the Secretariat was asked to circulate a special request to complete the boat table and provide the capacity statistics for past years, as well as to update this information periodically in the future. Capacity information should be adjusted by the seasonality of the fleet.

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 7 of the SCRS Report, refer to the Sub-Committee.

In addition, the Sub-Committee felt that a review of statistical procedures, particularly in data substitution and extrapolation, and critical review of sampling adequacy and possible bias in the results are items of top priority. Three inter-session meetings have been proposed for 1983: the Skipjack Conference, a bluefin data base review meeting, and a short meeting of the Working Group on Juvenile Tropical Tunas. In addition, this last group is proposing a major meeting in early 1984. The Sub-Committee recognized that all these meetings are closely related to the above-mentioned problems and a careful review of the data base will advance the study of the above subject.

11. Other matters

11.1 Albacore standardized effort

At the 1981 Sub-Committee meeting, Dr. R. T. Yang of Taiwan University agreed that his team would resume the longline effort standardization work for albacore by Honma's method. It was reported that a Japanese scientist visited Dr. Yang to assist his team as this work began. Their results were presented at this meeting. It was recommended that detailed analysis procedures be presented and made available for evaluation.

11.2 Coordinating Working Party (CWP)

The Assistant Executive Secretary represented ICCAT at the 11th Session of the CWP, held in Luxembourg, July 21 to 28, 1982. He noted that the report of the session is presented as SCRS/82/13. Discussions at the CWP meeting focused on where the catch should be assigned when more than two countries are involved in the fishing and landing, a problem commonly found in the tuna fishery. The Group recommended very strongly that the catch be assigned to the flag of the vessels which caught the fish. This is indeed practiced by ICCAT.

Another item of discussion was the misreporting of statistics, particularly when regulations are in force. It was recognized that ICCAT's system of reporting the scientists' best estimates in its Statistical Bulletin is a unique system among many regional agencies.

11.3 Cooperation with FAO in improvement of statistics

Noting that close contact has been maintained by the Secretariat with FAO and various FAO regional agencies in order to improve tuna statistics, the Sub-Committee recommended that even closer collaboration be attained with such organizations as WECAF, CECAF, GFCM, and IOFC-IPFC in improving tuna statistics and research in this field.

12. Adoption of report

The report was adopted.

13. Adjournment

The meeting was adjourned.

Table 1. Progress in the collection of 1981 Task I and Task II data (as of November 9, 1982)

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)
	1982	1981			1982	1981								1982	1981					
YFT, BET, SKJ Surface Fleet																				
BB																				
Angola	Jul 27**	Apr 22	X	X	Aug 20	Jun 30	5x5	mo	100	U	X	X	Aug 13	Aug 18	local	mo	U	2976/1480		
Brazil	May 7	Sep 9	X	X	Sep 1		1x1	mo	?	U	X	X	Sep 1	Sep 9	1x1	mo	U	3511/14429		
Brazil-based Spain-leased Cape Verde	Aug 31 May 31	Apr 23	X X	X X	May 31	Nov 6	5x5, ICCAT	mo	100	U	X	X	Jul 26, Sep 7 Apr	Nov 6	5x5 ICCAT	day, mo mo	U	1281/2240		
Cuba FIS	Oct 13 Apr 27**	Apr 21 Aug 10	X X	X	May 15	Oct 8	1x1	mo	100	R	X	X	Apr 5 Jul 12	Apr 29 Nov 2	ICCAT 5x5	qtr mo	U R	6097/1100 ?/7420	Reported by Ghana; FL and B.W.	
Gabon-based		Feb 27, Mar 30																		
Ghana	Aug 16	May 4	X	X	Apr, Jun	Sep 8	1x1	mo	60	U	X	X	Apr, Jun	Sep 23	1x1, ICCAT	mo	U	3081/5845	Task II for 1979-81; FL and B.W.	
Ghana-based (Japan-ICCAT, Korea-Panama)	Aug 16		X	X	Apr, Jun	Sep 8	1x1	mo	60	U	X	X	Apr, Jun	Sep 23	1x1, ICCAT	mo	U		Reported by Ghana; Task II for 1979- 81; FL and B.W.	
Japan	Jul 22**	Sep 10		X	Aug 31	Nov 2	1x1	mo	100	U	X	X								
Korea	Mar 8** Oct 27	May 22	X X	X X	Aug 30	Aug 26	1x1	mo	63.7	U	X	X	Aug 30	Aug 26	1x1	mo	U	557/9093		
Panama	(Secretariat)																		Final data with area breakdown.	

Morocco (local)		Aug 7																	
Portugal	Jul 22	Nov 6	X	X															
South Africa	Mar 1	Apr 24	X	X	Mar 1	Apr 24	1x1	mo	100	U	X	X							
Spain (1979-80)					Jan 29		1x1	mo	?	R	X	X	Mar-Apr Sep 29		ICCAT	mo	R	?	Raised to 75 per- cent coverage. Size: YFT & SKJ raised. BET actual.
Spain (1981)	Jul 7	Oct 2		X	Jul 15		1x1	mo	?	R	X	X			ICCAT	mo	U,R	?/90237	
U.S.A.	Jul 5	Sep 9	X	X	Jul 5	Sep 9	1x1	mo	100	U	X	X	Jul 5 Jan 7	Sep 9	1x1	mo	U	2311/7295	Revised size 1980 data.
U.S.S.R.	Aug 9	May21	X	X	Aug 9	Aug12	FAO/ 5x5	mo	100	U	X	X	Aug16	Sep 22	ICCAT	mo, qtr	U	685/1071	Task I taken from C/E.
U.S.S.R. (1979)													Jun 9	Sep 22	ICCAT	mo	U	349/76	
Venezuela																			
<i>Uncl & Others</i>																			
Angola	Jul 27**	Apr 22		X															
Brazil	May 7**	Sep 9		X															
Cape Verde	May31		X	X	May31		5x5	mo	100	U	X	X							
Ghana	Aug16	May 4		X															
Portugal (Madeira)	Feb 1	Apr 2	X	X	Feb 1	Apr 2	5x5	mo	100	R	X	X							
South Africa	Mar 1	Apr 24	X	X	Mar 1	Apr 24	1x1	mo	100	U	X	X							C/E includes BB. TRAW has no effort
U.S.A.	Jul 5	Sep 9		X															
U.S.S.R.	Aug 9	May21		X	Aug 9	Aug12	FAO/ 5x5	mo	100	U		X		Sep 22					Task I taken from C/E.
Venezuela																			
Albacore Surface Fleet																			
<i>BB</i>																			
France	Mar 22	Jul 24		X															
Portugal (Azores) (Madeira)	Sep 13 Apr 27, Jul 23, Oct 25	Jul 6	X	X	Sep 13 Apr 27, Jul 23, Oct 25	Jul 2	5x5 1x1	mo mo	100 100	U U	X X	X X	Oct 8		ICCAT	mo	U	1197/440	Size also for 1980. Data for Jan-Sept, 1982.
South Africa	Mar 1	Apr 24	X	X	Mar 1	Apr 24	1x1	mo	100	U	X	X		Apr 24					

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)
	1982	1981			1982	1981								1982	1981					
Spain (Can. Is.)	Jul 7	Oct 2		X	Oct 20		5x5	mo	100	U	X	X		Apr 22		Can. Is.	mo	U	1405/	1979-81 C/E & size data. Data also for 79-80.
(Biscay)	Jul 7	Oct 2		X										Nov 8		5x5	mo	R	?	
														Oct 15		ICCAT	mo	R	3384/1572	
<i>TROL</i>																				
France	Mar 22	Jul 24		X																Data also for 1979-80.
Spain (Biscay)	Jul 7	Oct 2		X										Oct 15		ICCAT	mo	R	9930/8261	
<i>Uncl & Others</i>																				
Brazil	May 7**	Sep 9		X																Estimate.
FISM	Apr 27**			X																
Italy	Apr 13			X																
Portugal (Madeira)	Feb 1	Apr 2	X	X	Feb 1	Apr 2	5x5	mo	100	R	X	X								
South Africa	Mar 1	Apr 24	X	X	Mar 1	Apr 24	1x1	mo	100	U	X	X								
Spain (trop.)	Jul 7			X																
U.S.A.	Jul 5	Sep 9	X	X	Jul 5		1x1	mo	?	?	X	X	Jul 5		1x1	mo	U		?	Task I taken from C/E.
U.S.S.R.	Aug 9	May 21		X	Aug 9	Aug 12	FAO/ 5x5	mo	100	U		X								

Bluefin Surface Fleet

BB

France (Biscay)
Portugal
(Azores)

Mar 22 Sep 14 X
Jul 2

Jul 2

Oct 8

ICCAT mo U 21/?

Spain (Can.Is.)

(Biscay)

Jul 7 Oct 2 X
Oct 20 X

Oct 20

5x5 mo 100 U X X

Apr 22
Nov 8

Can.Is. mo U 78/
5x5 mo R ?

Oct 13

Biscay yr R ?/860

PS

Canada
France (Med)
Italy
Morocco
Norway

Jul 29 X X
Aug 17** Sep 14 X X
Apr 13 Jun 22 X X
Aug 7
May 13 Sep 14 X X

Aug 13

Jul 29

Aug 13
Nov 2

5x5 mo U 729/105

U.S.A.

Jul 5 Sep 9 X X

Jul 5 Sep 9

5x5 mo, qtr 100 U X X

Jul 5

Sep 9

ICCAT mo R 31725/805

Yugoslavia

Sep 14

TRAP

Canada
Italy
Libya
Spain
Tunisia

Jul 29 May 12 X X
Apr 13 Jun 22 X X
Jul 7 X

Sep 22

Jul 29

Sep 22

5x5 mo U 93/41

Uncl & Others

Canada

Jul 29 May 12 X X

Jul 29 Sep 22

1x1 mo 31-100 R X X

Jul 29

Sep 22

5x5 mo U 641/279

Task I incl. with
BET; Size data also
for 1980.

1979-81 C/E & size
data.
Age composition for
1980-81.

Adriatic excluded.

Data also for 1980;
conv. rd. wgt.
Size: FL & B.W.
(kgs)-1980 substi-
tution for 1981 FL

B.W. frequency.

B.W. frequency.

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)
	1982	1981			1982	1981								1982	1981					
Canada	Jul 29	May 12	X	X		Sep 22														
China(Taiwan)	Jun 4, Jul 16	Oct 14		X	Sep 29	Oct 16	5x5	mo	var.	U,R	X	X	X	Oct 16, Dec 17						
					ICCAT		5x5	mo	?	U	X	X		ICCAT	5x5	mo	U	3849/2834	ICCAT port sam- pling; C/E conv. rd. wgt.	
Cuba	Oct 13	Apr 21	X	X	Aug 23	Oct 16	5x5	mo	100	U	X	X							0/6800	
Japan	Jul 22**	Jul 10	X		May 18		5x5	mo	100	R	X	X	Jul 21		5x5, 10x20, 5x10, ICCAT	qtr	U,R	?	C/E for 1980; Size for 1980 w/supple- mental actual 79 data & complete raised 79 data.	
Korea	Mar 8** Oct 27	May 22 May 22	X X	X X	Aug 30	Aug 26	5x5	mo	61.2	U	X	X	Aug 30	Aug 26	5x5	qtr	U	5644/19952	Final data with area breakdown.	
Korea+Panama					ICCAT		5x5	mo	?	U	X	X		ICCAT	5x5	mo	U	5641/4525	ICCAT port sam- pling; C/E conv. rd. wgt.	
Morocco		Aug 7																		
Panama	(Secretariat)				See Korea+Panama									See Korea+Panama						
South Africa	Mar 1	Apr 24	X	X	Mar 1	Apr 24	5x5	mo	100	U	X	X								
Spain	Jul 7	Oct 2		X		May 14							Oct 15	Apr- May	ICCAT	mo	R	10499/5133		
U.S.A.	Jul 5	Sep 9		X		Sep 9													Excluding BFT.	
U.S.S.R.	Aug 9	May 21	X	X	Aug 9	Aug 12	FAO/ 5x5	mo	100	U	X	X	Aug 16	Sep 22	ICCAT	mo	U	702/1970	Task I taken from C/E.	
						Nov 24**	5x5	mo	?	U	X	X	Jun 11		ICCAT	qtr	U	8766/2555	C/E for Jan-Sept, 1981; size for 79.	

Uruguay Venezuela	Aug 10**		X	X	Aug 10**		5x5	mo	100	U	X	X								
Various																				
Puerto Rico transshipments														Jul 5	Sep 9	gen.	qtr	U	?	Reported by USA.
(Reported by FAO)	Jul 26, Sep 27	Sep 14		X																

*R - Raised, U - Unraised.
**Preliminary.

Table 2. Comparison of various important characteristics of reported data

FISHERIES		TASK I			Weight in	TASK II			BIOLOGICAL	
		Landings	Catches	Coverage (%)		Coverage (%)	Raised	Catch in	Size in	Class
Angola		x		100	rd. wgt.	100	no	rd. wgt.	FL	Truncated decimals.
Brazil	LL	x	x	100	rd. or GG	100	no	rd. or dressed	FL	Rounded to the closest unit.
	BB	x		?	?	partial	no	rd. wgt.	FL	Rounded to the closest unit.
Canada	RR	x	x	100	rd. wgt.	partial	yes	rd. wgt.	BW	Rounded to the closest unit.
	TRAP	x		100	rd. wgt.	100	no	rd. wgt.	BW	Rounded to the closest unit.
	PS		x	100	rd. wgt.	100	no	rd. wgt.	FL	Truncated decimals.
	LL	x		partial	rd. wgt.	partial	yes	rd. wgt.	-----No data-----	
China(Taiwan)	LL	x		100	rd. wgt.	40-80	yes	no. of fish	FL or eye-fork	Rounded to the closest unit.
Cuba	BB	x		100	GG	100	no	GG	FL	Truncated decimals.
	LL		x	100	rd. wgt.	100	no	no. of fish	-----No data-----	
France	BB (Temp)	x	x	100	GG	50-100	yes	no. of fish	FL	Truncated decimals.
	PS (Med.)	x		100	rd. wgt.	39-65	yes	rd. wgt.	FL	Truncated decimals.
Ghana	BB-PS		x	95	rd. wgt.	partial	no	rd. wgt.	FL	Rounded to the closest unit.
Japan	BB	x		100	rd. wgt.	90	no	rd. wgt.	FL	Rounded up.
	LL		x	100	rd. wgt.	80-90	yes	no. of fish	FL or eye-fork	Rounded up.
Korea	BB	x		100	rd. wgt.	50-60	no	rd. wgt.	FL	Truncated decimals.
	LL	x		100	rd. wgt.	60	no	no. of fish	FL	Truncated decimals.
Morocco		x		100	rd. wgt.	-----No data-----			FL	Rounded to the closest unit.
Portugal (Madeira)				ca 100	GG	partial	no	GG	FL	Truncated decimals.
S. Africa		x		partial	rd. wgt.	partial	no	rd. wgt.	FL	Truncated decimals.
Spain	LL	x		partial	rd. wgt.	60	yes	rd. wgt.	FL	Rounded to the closest unit.
	PS (Trop)	x		100	rd. wgt.	partial	up to 75	rd. wgt.	FL, LD ₁	?
U.S.A.	Coastal	x		?	rd. wgt.	-----No data-----			-----No data-----	
	PS (Trop)		x	100	rd. wgt.	100	no	rd. wgt.	FL	Rounded to the closest unit.
Secretariat port sampling		x	x	50-110	rd. wgt.	50-100	no	rd. wgt.	FL	Truncated decimals.

NOTE: truncated 50 cm. = 50.0 - 50.9
rounded 50 cm. = 49.5 - 50.4
rounded up 50 cm. = 49.1 - 50.0

Addendum 1 to Appendix 4 to Annex 10

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. Examination of progress made by the Secretariat
 - 5.1 Reporting unconventional fleet statistics
 - 5.2 Biostatistical assignments
 - 5.3 Data base
 - 5.4 Publications and dissemination of data
 - 5.5 Other matters
6. Analyses of the procedures adopted for collecting, reporting and estimating tuna data
7. Effective utilization of tropical tuna data from the Skipjack Year Program
8. Updating juvenile tropical tuna statistics
9. Statistical training course
10. Future plans to improve statistics, and recommendations to the SCRS
11. Other matters
12. Adoption of Report
13. Adjournment

Report of the Sub-Committee on Skipjack

The Sub-Committee on Skipjack met on November 6, 1982, at the Hotel Madeira Palacio under the convenership of Dr. G. T. Sakagawa (U.S.A.). Dr. P. E. K. Symons (Secretariat) served as rapporteur.

Plans for the 1983 Skipjack Conference were briefly reviewed. The location at the Laboratory of the Spanish Institute of Oceanography (Tenerife, Canary Islands, Spain) and the time (between June 20 and June 30, 1983) were confirmed. The Program Coordinator (P. Symons) requested those who are planning to attend to submit tentative titles of their papers as soon as possible.

The Sub-Committee reviewed the proposed budget for 1983 (COM/82/27). It was agreed that the provision of travel funds for two guest speakers and one scientist from each member country would help to ensure the success of the Conference. It was noted that, although the budget is higher than that approved by the Commission in 1981, no new contributions to the Special Skipjack Budget will likely be needed. This is possible, in part, because expenses associated with closing the Program were not incurred in 1982 and were brought forward to 1983. These expenses can be covered with funds in the Skipjack Working Capital Fund upon payment of outstanding contributions to the Special Skipjack Budget. The Sub-Committee, therefore, recommended the proposed 1983 budget to the SCRS for adoption.

Senegal requested that the ICCAT's systems analyst, biostatistician and Skipjack Coordinator be made available to attend the final meeting of the regional working group in Dakar in March, 1983, in preparation for the Skipjack Conference. The Sub-Committee noted that the progress made at the last meeting of this regional working group in June, 1982, had been greatly aided by the presence of ICCAT Secretariat staff, and agreed that the Secretariat should continue to do all it could, without compromising its regular functions, to bring the Skipjack Program to a successful conclusion.

Report of the Working Group on Juvenile Tropical Tunas

1. Opening of the meeting

The Working Group on Juvenile Tropical Tunas met during the SCRS session on November 8, 1982, at the Hotel Madeira Palacio in Funchal, Madeira. The meeting was chaired by the Group's Convener, Mr. J. B. Amon Kothias (Ivory Coast). Dr. P. M. Miyake (Secretariat) served as rapporteur.

2. Review of present status

The Convener pointed out that the present minimum size regulation on bigeye tuna expires at the end of 1983. He noted that the Working Group has been requested to submit a recommendation to the Commission, through the SCRS, of an alternative regulatory measure, if any, which might be effective in controlling the catch of small sized tunas so that yield-per-recruit can be improved. As was recommended at the 1981 meeting, the updating of the Brest meeting work has been completed up to and including 1980 through the efforts of the national scientists and the Secretariat (SCRS/82/15). These efforts were commended by the Working Group.

3. Plans for future activities

A plan for future activities was drafted and presented to the Working Group by its Convener. The Group discussed the plan at some length, introduced some minor modifications and adopted it for submission to the SCRS plenary session. The proposed plan is attached herewith as Addendum 1.

4. Recommendations

- a) As outlined in the attached plan, the Working Group noted that adequate analyses and evaluations of a large amount of data collected through the International Skipjack Year Program cannot be done until the basic data analyses for the Program are completed. It was recommended that a major meeting of the Working Group be held at the end of the first quarter of 1984 to study these problems. According to this work schedule, the Group can hopefully advise the Commission on the problems referred to the Working Group.
- b) If the above working schedule is acceptable, the Working Group should hold a short meeting at the same time and place as the 1983 Skipjack Conference. Such a meeting could prove helpful in modifying, if necessary, the working plan set out at this time, in light of the results of the International Skipjack Year Program. At the same time, the Group can decide on the place and time of the 1984 major Working Group meeting.

- c) If the Commission does not approve the proposed Working Group plan to postpone the deadline for completion of the work until 1984, then the Group felt that it could provide the Commission with analyses similar to those done by the Group at the Brest meeting in 1980, but with updated statistical data and a better knowledge of stock identity.
- d) Since the present bigeye tuna size limit (3.2 kg) expires at the end of 1983 and since any adequate analyses will not likely be done until 1984, the Group recommended that the Commission give serious thought to the possibility of extending the bigeye tuna regulation for another year.

Addendum 1 to Appendix 6 to Annex 10

**FUTURE ACTIVITIES OF THE WORKING GROUP ON
JUVENILE TROPICAL TUNAS**

1. Data collection and processing to be done in 1983 and first quarter of 1984:

- a) Growth and migration appraisals are to be done from the results of tagging carried out in the past and the future on yellowfin, bigeye and skipjack.
- b) Size frequency distributions (extrapolated to the total catches by $5^{\circ} \times 5^{\circ}$ area by month, by gear) and the corresponding fishing effort for 1976-1981 are to be done by the Secretariat.

2. Analyses to be carried out in 1983 and during the first quarter of 1984:

- a) A critical analysis of yellowfin, bigeye and skipjack stock structure, especially on a fine scale, of movements in the Gulf of Guinea (for example, a $5^{\circ} \times 5^{\circ}$ by month scale), is to be done from the results of tagging and CPUE analyses.
- b) Choice of different management strategies aiming to reduce the catches of young yellowfin and bigeye. The results of item 2.a will permit a fine analysis of the strata from which a considerable number of small (in terms of yield-per-recruit, for example less than 10 kg) yellowfin and bigeye come. Different strategies will then be set: the choice of different areas and seasons of variable duration closed to fishing.
- c) Cohort analysis and simulation model using multi-gear yield-per-recruit, simultaneously accounting for the three species (yellowfin, bigeye, skipjack) in the fishery and using a fine $5^{\circ} \times 5^{\circ}$ by month scale. This model will include apparent natural mortality rate for the strata closed to fishing. These rates will be calculated after the stock structure analyses.

- d) Use of a model to carry out six-year projections of catches (by age), of CPUE by gear and of the stock level which could result by putting into effect each scenario.

3. Responsibilities and work schedule

The responsibilities for the preparation should be divided between the ICCAT Secretariat (size frequencies, etc.) and member country scientists.

The purpose is to draw conclusions from all the analyses described in items 2.a to 2.d from the time of the meeting of the Working Group to the end of the first quarter in 1984. This meeting should take place in a laboratory with computer equipment where the data base entered and processing will be done so that the Group may, if necessary, the analyses which will be prepared and make new projections from other management strategies.

This plan will allow the Working Group to propose complete recommendations to the Commission, but only in November, 1984, the delay being due to the necessity of first analyzing the results of the Skipjack Program.

Table of Assignments

<i>STATISTICS</i>	<i>RESEARCH</i>
<p><i>Yellowfin</i> Task II catch and effort and biological statistics are needed for the new PS fleets, especially in the west Atlantic.</p> <p>ICCAT port sampling to be improved.</p>	<p>Estimates of the recent levels of spawning biomass and recruitment to be submitted regularly.</p> <p>Studies on western Atlantic yellowfin to be carried out.</p> <p>Research on alternative management schemes to reduce juvenile catches to be carried out.</p> <p>Spanish and FISM tropical fleet operations to be studied, resulting statistics on CPUE for 1978-82 to be obtained.</p>
<p><i>Bigeye</i> Bigeye amount in FISM and Tema-based tropical tuna catches to be more accurately estimated.</p> <p>Size sampling of transhipped bigeye in Puerto Rico to be continued.</p>	<p>Bigeye data collected during ISYP to be examined.</p> <p>Tagging file to be analyzed.</p> <p>Abundance index which incorporates information from the bigeye surface fisheries to be developed.</p> <p>Age-structure stock analysis (e.g. cohort and yield-per-recruit) to be continued.</p> <p>Alternative management schemes to reduce juvenile mortality to be continued.</p>
<p><i>Skipjack</i> More effort to be made to improve Task II catch and effort and biological statistics for some PS fisheries.</p>	<p>All data from ISYP to be disseminated in order to include them in analyses for 1983 SJ Conference.</p>
<p><i>Albacore</i> Surface albacore fisheries (BB and PS) on the southern stock to be closely monitored.</p>	<p>Further examination to be made of effort standardization which was used in production model analysis for northern albacore stock.</p>

<i>STATISTICS</i>		<i>RESEARCH</i>
<i>Albacore (Cont.)</i>	<p>Two series of LL albacore standardized fishing effort (Japanese and Taiwanese) to be compared.</p>	<p>Age-sex determination in the adult albacore fishery to be made. More information is needed on differences in ecology between males and females and on possible differences in availability by sex to LL fishery.</p> <p>Better stock recruitment information is needed for northern stock. Production analysis to be updated.</p> <p>Other adult stock abundance indices in the LL fishery on the northern stock to be evaluated.</p> <p>A recruitment index for the southern stock (South African surface fishery??) is needed.</p> <p>Possible interchange of albacore between the Mediterranean Sea and Atlantic to be studied.</p>
<i>Bluefin</i>	<p>Informal exchange of bluefin data to be continued.</p> <p>Mutilated fish to be included in nominal catch statistics.</p> <p>Data that can improve knowledge of total landings and age structure of the catches to be collected, particularly from ICCAT non-members.</p> <p>Statistics on age 0 fish in the Mediterranean Sea to be collected.</p> <p>Sex ratio of catches by season and area to be studied.</p>	<p>Tagging of small fish in the Atlantic to be continued.</p> <p>Use of parasites for stock identification to be continued.</p> <p>Emphasis to be placed on investigation of reproductive biology (including time and location of spawning) of 130-200 cm fish.</p> <p>An Ad Hoc Committee chaired by M. Parrack to be formed to address the problems of best possible estimates of length distribution of the total catch, estimating age distributions, consideration of sex ratios, better bluefin fisheries assessment techniques. An intersessional meeting to be held in Japan in April or May, 1983.</p>

<i>STATISTICS</i>	<i>RESEARCH</i>
<p><i>Bluefin</i> (<i>Cont.</i>)</p>	<p>Research should proceed on consideration of exchange rate models rather than completely separate or single-stock models.</p> <p>Studies to be carried out to develop sampling schemes that would provide continuous reliable indices of stock abundance.</p> <p>Another recommendation on bluefin stock identification (see SCRS Report, Agenda item 11.d)</p>
<p><i>Billfish</i></p> <p>Effort to be made to separate the historical sailfish/spearfish catches by all countries (as done by Japan), and these species be reported separately in the future.</p> <p>Catch (in weight and number) and effort statistics to be reported by 5x5 (or at least by ICCAT areas) and month.</p> <p>Length data by sex to be collected on a regular basis for all fisheries.</p> <p>Close monitoring of the sailfish fishery off Senegal to be continued and monitoring of newly developed Ghanaian commercial fisheries to be started.</p>	<p>Age and growth to be studied for parameters of Y/R and cohort studies; preliminary findings to be reported.</p> <p>Abundance indices for billfishes to be determined for commercial and sport fishing, taking into account changes in target species of the LL fleets and the incidental catch problems.</p> <p>Alternative abundance indices for LL and recreational fisheries not associated with effort (e.g., average size) to be developed.</p> <p>Evaluation of sailfish stock status to be attempted with new growth parameters estimated and with catch data separated from spearfish.</p> <p>Stock identification studies to be initiated for all billfishes.</p>
<p><i>Swordfish</i></p> <p>Catch and effort data to be reported by 5x5 (or at least ICCAT areas) and month.</p>	<p>Age and growth studies on swordfish to be continued and detailed results to be made available.</p>

<i>STATISTICS</i>	<i>RESEARCH</i>
<p><i>Swordfish (Cont.)</i> Length by sex to be collected on a regular basis.</p> <p>Magnitude of unreported catches by US and Canada as a result of past and present mercury content restrictions to be studied.</p>	<p>A laboratory or clinical test to determine sex from tissue samples of dressed fish to be investigated.</p> <p>Biochemical and parasite studies or other analytical techniques to be initiated through cooperative sampling from each major fishing area. Further tagging to be emphasized in Mediterranean and Atlantic.</p> <p>Research on estimating effective effort in the LL fisheries to be made.</p>
<p><i>Southern bluefin</i></p>	<p>The reports received at or produced by the scheduled southern bluefin assessment meeting to be secured for review.</p>
<p><i>Small tunas</i> Catch statistics for small tunas to be improved, particularly for artisanal catches and discards by fisheries for other species.</p> <p>Better species separations to be made in catch statistics.</p> <p>Effort data is needed (even if effort is not directed at small tunas).</p> <p>Biological data (e.g., length) is needed.</p> <p>Development of new fisheries to be closely monitored.</p>	<p>Larval surveys for spawning studies to be continued, particularly where there are important fisheries.</p> <p>Stock structure studies to be continued.</p> <p>Biological parameters to be studied.</p> <p>Distribution and ecological relation studies to be continued (e.g., examination of predator stomach contents).</p> <p>Effort units for artisanal fishery for non-target species to be developed.</p>
<p><i>Multi-species Interactions</i></p>	<p>Detailed fishery data to be studied in combination with studies on availability of species whose habitats are overlapped by a single-gear type.</p>

Report of the Ad Hoc Working Group on Tagging Accounting

1. General

An Ad Hoc working group composed of representatives from Cape Verde, Cuba, France, Ghana, Ivory Coast, Japan, Korea, Portugal, Senegal, Spain, and the U.S.A. met to examine the problems of the ICCAT tagging policy. All activities and past problems, as well as a plan for defining future ICCAT tagging policy were presented in document SCRS/82/16. This document was the basis for discussions of the working group.

2. Importance of tagging tunas

Tagging has been and remains a costly but useful tool in determining the identity and biological parameters relating to stocks, essential elements for assessing the state of stocks. In fact, the tagging of a fish in one fishery, and its recapture when larger in a different fishery, geographically distinct from the first, remains the most convincing proof of migration and the growth of individuals. The large amount of data collected as a result of taggings during the Skipjack Program constitutes a dazzling confirmation, if one was even needed, for the great interest this method contains for the work of the SCRS.

3. The past and future role of ICCAT in tagging programs

The role of ICCAT in tagging programs was defined at the 1971 SCRS meeting, and its responsibility was increased for the tagging of tropical tunas during the Skipjack Program. Most tagging programs were carried out by the various ICCAT countries with active aid from the Secretariat at various levels:

- a) publicity for tuna tagging cruises;
- b) supplying tags and accessories (needles, posters) needed for tagging (for certain developing countries) and attempting to monitor the numbering of the tags;
- c) paying rewards (for certain developing countries);
- d) centralization and distribution of information concerning the returns of tags sent directly to the ICCAT Secretariat by their finders;
- e) holding an annual lottery to encourage the recovery of tags;
- f) management of a central computerized data file of tag releases and recaptures (more or less complete) carried out on Atlantic tunas;
- g) putting at the disposal of member countries data processing software for tag releases and recaptures during the Skipjack Program.

These functions have, in the past, been supported at varying levels, either from the research budget, or from the special budget for the Skipjack Program.

Account being taken of the general importance of these tagging programs, the objective of ICCAT remains to promote the realization of tagging cruises by the member countries and to assure the success of these cruises with a flexible but clearly defined policy.

After discussion of the various aspects, the Working Group put to the SCRS the following recommendations:

4. Proposed ICCAT tagging policy

4.1 Policy for supply of tags and tagging materials

4.1.1 Stocks of materials at the Secretariat

The Secretariat should attempt to maintain a stock of between 5,000 and 10,000 tags, and 1,000 and 5,000 tagging needles. Costs in 1982 can be summarized as follows:

Purchase and assembly of 10,000 tags	\$ 4,000
Tagging needles (1,000)	\$ 4,000
Miscellaneous (mailing, etc.)	\$ 2,000

These costs will increase with time.

4.1.2 Free tag supplies

Annual requests for approximately 1,000 tags and/or 400 needles or less should be granted free of charge. Five thousand tags and 2,000 needles should be reserved for these requests.

4.1.3 Tags purchased by the Secretariat

The Secretariat should be prepared to sell at cost up to 2,000 tags per country to meet emergency needs. These would be available on a first-come-first-served basis.

4.1.4 Tag orders through the Secretariat

Countries planning to use more than 1,000 tags and/or 400 needles per year may purchase their tags through ICCAT if they wish. Orders of more than the above quantities should be placed *at least* a year in advance of needs. They would be sold at cost.

4.1.5 National legend for tags

Countries may order and purchase their own tags printed with their own address directly from a manufacturer. This would enable the country to use the same tags in waters other than the Atlantic. However, such countries are strongly urged to consult the Secretariat concerning prefix letters to be used before they order tags, otherwise they risk duplicate numbering. Also they must notify the Secretariat of the identity (address, letter and number series) in advance of their release if returns are not to be delayed.

4.1.6 ICCAT Tag Return Directory

The Secretariat should circulate an "Annual Tag Return Directory", cumulative listing by number, the location of all known manufactured tags likely to be released in the Atlantic Ocean.

4.1.7 Tag release report

Unless the tag series released differs from those previously given to the Secretariat and appearing in the "Annual Tag Return Directory", there is no need to report releases until the annual call for lottery data. Should a country require current year releases from other countries, these data can be obtained more reliably through individual correspondence.

4.2 *Policy for publicizing tag rewards*

Posters in various languages can be developed by the Secretariat for general tagging publicity of both tuna and billfish tagging programs. Costs of these posters could probably be covered by the Commission's Regular Budget. There should be space on the posters for the address of local fishery offices.

4.3 *Policy for recovery information*

Previous policy should remain unchanged, that is, the releasing agency is responsible for recording receipt of the tag, informing finders of where and when the tagged fish was released, and reporting the tag number with release and recovery information to the Secretariat at the annual call for lottery data.

So far as possible, recovered tags should be sent directly to the release agency, and not to the Secretariat. Exceptions would occur when the release agency is unknown (the tag series does not appear in the current "Tag Return Directory"), or when mail service between two countries concerned is unreliable. A copy of the recapture information should always be kept by persons forwarding tags.

4.4 *Eligibility for rewards*

4.4.1 Tag but no information

The return of information is encouraged by interviewing the finder when paying the reward or by writing to him, but payment should not be delayed or made dependent on provision of information.

4.4.2 Parts of tags

All finders should be rewarded for their efforts to return a tag or a piece of tag, irrespective of information, unless there is a strong suspicion of deceit or fraud (e.g. chopping a tag into pieces to get a reward for each part!)

4.4.3 Information but no tag

If tag numbers with reliable recovery information are reported, and a reasonable explanation is given for not being able to submit the actual tag, a reward should be paid.

4.5 *Amount of rewards*

4.5.1 Tags

ICCAT should maintain the \$4/tag reward and ban T-shirt rewards until otherwise decided. So far as possible, the amount of rewards for tags should be standardized between ICCAT countries, and between ICCAT and other Commissions who may have tagging programs for tuna (IATTC and the Indian Ocean Fishery Commission currently are commissions which should be consulted or appraised).

4.5.2 Rewards other than tags

During the International Skipjack Year Program, rewards were given for tetracycline-injected fish. These fish were identified by red (instead of yellow) tags. The reward for such fish was \$16 (or equivalent in T-shirts).

Such programs require special advertising and instructions, the costs and administration of which must be considered for each individual program.

4.6 *Responsibility for paying rewards*

4.6.1 Final bill

In principle, countries releasing tags are responsible for finally paying or reimbursing payments for rewards. An exception to this rule may be granted to developing countries which have limited funds for tagging. However, arrangements for payment by ICCAT must be made prior to any tagging by such developing countries.

4.6.2 Paying rewards on the spot

The fisheries officers or research institutes which have the first contact with tag recoverers in the field are responsible for paying rewards to the recoverers immediately upon confirmation of tag recoveries. In support of this responsibility, and in the event of any problem obtaining reimbursement through regular methods, ICCAT will guarantee reimbursement to fishery officers for rewards paid and properly documented with tag numbers.

Where institutes or countries cannot pay on the spot even for a small number of tags, ICCAT may advance a sum to cover the recoveries expected. To aid ICCAT in anticipating the number of recoveries, release agencies must report the approximate number and location of releases planned for the year before tagging commences. The person to whom the advance is made must later justify his expenses with a list of tag numbers for which rewards have been paid.

4.6.3 Accounting and reimbursing for rewards

The system of administering funds for payment of rewards should be flexible, so that accounting needs can be met by the simplest means possible. The following are suggested guidelines which may need revising as practice dictates:

— In principle, the country or institute which pays rewards in the field may bill the releasing agency directly. If there are only a few recoveries, they may agree to pay the rewards without requesting reimbursement from the releasing agency.

— If the above principle is impractical (e.g. too many different releasing agencies are involved, or many complications in money exchanges, etc.), the institute or country paying rewards may bill ICCAT rather than the releasing country or countries. Payment will be guaranteed by ICCAT provided a list of tag numbers accompanies the bill (tag numbers can be checked later against recoveries recorded).

— ICCAT may or may not seek reimbursement for rewards it has paid, depending upon the size of the bill and prior agreements.

— When large-scale tagging programs are envisaged (as for the Skipjack Program), ICCAT should develop appropriate accounting procedures for recuperating the cost of rewards from the countries releasing tags. With inclusion of additional information, this might be done on the same forms used for requesting lottery information. Extra administrative costs (time) should be monitored and the need for extra assistance recognized.

4.7 Annual lottery and recording of release-recapture information at ICCAT

Current policy should be maintained. This may be summarized as follows:

— All tags recovered and reported to national offices and agencies conducting tagging between January 1 and December 31 (of a given year) and thereafter reported to ICCAT by March 31 (of the following year) will be eligible for the lottery.

– With the exception of the years 1980-1983, when special lotteries were held for the International Skipjack Year Program, there are two lottery rewards annually: one for tropical tunas (YFT, SKJ, BET) and a second for temperate tunas and tuna-like fishes. The prize for each of these drawings should be \$500 until otherwise determined.

– The winners of the annual lottery should continue to be publicized as widely as possible.

– If additional lotteries should be desired in the future, the experience with the special skipjack lottery should be taken into consideration.

– The ICCAT should continue to maintain a complete release-recapture data file requesting this information annually as in the past.

Report of the Symposium on Criteria to Define Stock Units

The 1982 ICCAT Symposium, entitled "Criteria to define stock units", was held on November 4, 1982, at the time of the SCRS Meeting. Mr. A. González-Garcés (Spain) was the Symposium Coordinator and Dr. I. Barret (U.S.A.) served as rapporteur. The List of Documents presented to the Symposium is attached herewith as Addendum I.

Presentations by the speakers at the Symposium focused on the definition of stocks as well as the limitations of those definitions, and on the methods used at present to separate stock units. Presentations were also made on the application of those methods to specific tuna and tuna-like species.

Papers given in the first part of the Symposium dealt with general topics and included detailed presentations on the definition of a stock. The possible double definition of a stock as a genetic (or phenotypic) unit or as a fisheries management unit was also discussed.

Methods which might serve to characterize the stocks as genetic units -- analysis of protein or enzyme characteristics, chromosomal comparisons, mitochondrial DNA comparisons, color differences, immunological reactions, differences in the presence of trace elements as shown by X-ray analysis and differences in morphometric characteristics were reviewed. Other methods for distinguishing stocks, including the study of the distribution of the fish, migrations, sexual maturity, spawning, distribution of eggs, larvae and juveniles, growth rates, parasites and meristic studies, among others, were mentioned.

Each of these methods was analyzed and comments were presented as to their value in studies to separate stocks. Information was also provided on the practical use of each of these methods.

Size frequencies and areas and types of reproduction were examined in one document. In another, the influence of currents on the passage of tunas from one side or the other of the Strait of Gibraltar so that they may proceed to spawning areas in the Mediterranean or leave these areas for the Atlantic was reviewed.

The mitochondrial DNA method was explained in detail and its first application to fisheries populations, specifically to Atlantic and Pacific skipjack, was analyzed. From preliminary results, no significant differences between the sequence of base pairs of the mitochondrial DNA of the individuals from the two oceans were found. It was therefore implied that some genetic interchange between individuals of the Atlantic and the Pacific may occur. This interchange could be through the passage of skipjack from the Atlantic to the Indian Ocean or vice versa through the area around the south of Africa, since there are no natural barriers in that area to interfere with this interchange.

A study using several traditional methods to examine the population structure of South Pacific skipjack was presented. These methods included tagging, biochemical blood analysis, analysis of internal parasites, size frequencies, maturity, sex, stomach contents and the presence of juvenile skipjack in the stomachs of predators (including the presence of small skipjack in the stomachs of large skipjack).

A study on the homogeneity or heterogeneity of the North Atlantic stock of

albacore was reported. The existence of two sub-stocks, "traditional" and "Azorean" separated until 1977 at about 18°W by a certain number of characteristics (stomach parasites, juvenile post-ventral coloration, length at size/age, migratory routes, time-area distribution) required not only population dynamics studies but also consideration of environmental variations. This will perhaps lead to an explanation of the geographic depletion of stocks as well as of the shifting of migratory routes of albacore which has been seen since 1978 in the eastern North Atlantic. The surface fishery in this area is affected by these variations, which influence the yield and future of the fishery, but which cannot be explained by population dynamics studies alone.

In another presentation, the complex stock structure of swordfish in the Atlantic, as demonstrated by tagging, CPUE trends, morphometric studies and differences in the average size of the catch, was described. From this, it was suggested that there may be three stocks, one in the northeast Atlantic, one in the northwest Atlantic and another in the south Atlantic. Variations in sex ratio from one area to another and even within the three aforementioned areas, make the stock structure even more complex. More extensive studies in this area are necessary to clarify the problem.

The analysis of the distribution of bluefin tuna through a study of parasites indicated that internal parasites are more useful than are external parasites in studies of stock structure. The larvae of the trypanorhynch cestode and of the juvenile state of acanthocephalans were indicated as good natural tags for such studies. It was also suggested that the trematode *Nasicola klawai* could be used as a natural tag with good results, while the copepod *Euryphorus brachypterus* did not seem as good.

A presentation was then made on the interchange between the two assumed stocks of bluefin tuna in the North Atlantic. This study was based on recoveries of tagged fish that made transatlantic migrations and on observations on the presence of external parasites. The results, compared with previous experience, showed very significant differences between the samples studied, concluding that, based on this study, there exists a difference in the magnitude of temporal migrations of young tunas and that this migration seems to be more intense in the east to west direction of the Atlantic.

Finally, a detailed explanation on the use of X-ray detection of trace elements in the studies on the delineation of stocks in general and the application of methodology to Atlantic bluefin tuna to analyze vertebrae of individuals from the eastern and western parts of the North Atlantic was presented. The method seems useful and precise, and it was concluded that individuals from one side or the other of the North Atlantic could be identified with this technique. However, due to the small number of samples which have been analyzed so far, no conclusion could be drawn on stock structure, because the confidence limits on the mixing rate between one side of the Atlantic and the other were very wide. It is hoped that planned analyses with this method of a larger number of samples will yield valid conclusions on the stock structure of bluefin tuna in the North Atlantic.

Two principal themes were developed in the discussions arising during the Symposium, following the presentation of papers.

One theme dealt with how a knowledge of the early life history phases of tunas was related to the stock recruitment problem and the management of tuna fisheries. Dr. G. D. Sharp noted that the first effects of mortality in larval tunas are evidenced in the juvenile fishes, and that recruitment could be considered random until the juvenile

stage is attained. Fish larvae must be in the right place in the ocean at the right time to survive -- where and when they are born in the sea is the determinant of survival. Thus, it is conceivable that the entire recruitment of a few millions of juvenile bluefin tunas could result from the spawning of only a few adults in an optimal environment for larval survival. This possible dependence of major recruitment on the spawning of just a few females shows the need for the specific kinds of stock information.

Another principal theme of the discussion was the question of the existence of local stocks of tunas, and the significance of this in respect to fisheries management. Dr. Sharp referred to Dr. J. R. Calaprice's work on the presence of different ratios of elements in the vertebrae of bluefin tuna resulting from spawning in different areas of the Atlantic.

Dr. Sharp, as did others, suggested that both migrant and local forms of tunas may exist, possibly determined by genetic or behavioral mechanisms. This possibility, then, raises the question of migration of tunas among elements of a tuna population and the problem of how to measure the portion of that population so migrating. Dr. H. Aloncle, pursuing this theme, considered that this issue of possible local stocks was a key question, specifically in regard to the stocks of albacore in the North Atlantic. Thus, while the entire Atlantic-wide stock of albacore was considered to be in good condition, there were local discrepancies and knowledge of the local stocks was needed for management purposes. The need for this kind of information was underscored by Mr. González-Garcés, referring to a similar situation in the Spanish fishery in the Bay of Biscay and to possible "local" stocks of skipjack throughout the world even given the apparent genetic unity of world skipjack stocks as indicated by the preliminary mitochondrial DNA studies. From this discussion, Dr. Sharp suggested that it might be better not to take a broad-scale ocean view but instead to deal with smaller population units, perhaps looking at biological and environmental factors rather than at global population dynamics. Dr. S. A. Berkeley stated that while this local approach was a valid one, the actual management of fisheries was, of necessity, pragmatic; it often was not practical for managers to wait on the fine details of population differences before instituting management practices. If it was not possible to detect the consequences of small population changes, then these could have little practical management significance or importance.

Stressed throughout the discussions was the need for increased numbers of samples (temporal and spatial, and by age and sex) of bluefin tuna caudal vertebrae, for the trace element studies being undertaken by Dr. Calaprice. These increased numbers of samples are needed to strengthen the statistical reliability of the analytical results on the problems of origin, migration and mixing of Atlantic bluefin tuna, all of which were important areas of concern during the Symposium proceedings. Dr. J. Graves, dealing with sample size, noted that the mitochondrial DNA technique may require considerably fewer samples than did many other stock discrimination techniques, although improvement of sample preservation techniques and confirmation of the applicability of the method to the delineation of fish populations awaited the results of ongoing studies.

*Addendum 1 to Appendix 9 to Annex 10***LIST OF DOCUMENTS PRESENTED TO THE 1982 SYMPOSIUM**

- SYMP/82/ 1 Considerations on the migration of tunas in relation to the hydrology of the Strait of Gibraltar – J. C. Rey.
- 2 The use of mitochondrial DNA to study relatedness in pelagic species – A. Dizon, J. Graves, S. Ferris.
- 3 Document withdrawn.
- 4 Analysis of population structure of fishes from life history data – W. H. Bayliff.
- 5 X-ray vision—a new method of examining an old problem – J. R. Calaprice.
- 6 Le germon dans l'Atlantique Nord, stock homogène ou hétérogène? Conséquences – H. Aloncle, F. Delaporte.
- 7 Análisis de la pesquería de atunes rojos (*Thunnus thynnus*) jóvenes del Atlántico Este y comentarios acerca de la estructura del stock – J. L. Cort, J. C. Rey.
- 8 Investigation of skipjack stock for management purposes – P. M. Kleiber, A. W. Argue, R. E. Kearney.
- 9 Tuna fisheries, elusive stock boundaries and illusory stock concepts – G. D. Sharp.
- 10 Report of the NAFO species session on stock discrimination on finfish and squid in the northwest Atlantic – T. D. Iles.
- 11 The selection of parasites for use as biological tags in population studies of bluefin tuna – K. MacKenzie.
- 12 Atlantic swordfish stock structure data and suggestions for its interpretation – S. A. Berkeley.

CHAPTER III

National Reports

NATIONAL REPORT OF BRAZIL

by

R. CAVALCANTE RIBEIRO

1. Present status of the fisheries

1.1 Development of the fleet

The tuna fishery in Brazil is conducted along the entire coast. In the northeast region, exploitation is typically artisanal, while in the southeast region the industrial fleet is concentrated.

The artisanal fleet has not had any significant changes in technology and the number of boats has been constant in recent years. The industrial fleet is composed of two types of vessels: longliners and baitboats. The number of longliners, three national and three leased, has been the same in the last few years. The number of baitboats continues to increase. At the end of 1981, 75 national (10-30 m length) and four foreign leased boats were engaged in this fishery, although about half of them operated for a few months only.

1.2 Main fishing grounds

The main fishing grounds for the longliners continue to be the southeast coast. In the case of the leased vessels, activities are concentrated in the south.

The development of the baitboat fleet in other states, such as Sao Paulo and Santa Catarina, resulted in the expansion of the fishing area. There are now four known fishing grounds of good productivity. In Figure 1, areas A, B and C were initially exploited by the national fleet; area D was discovered only after operation of the leased boats at the end of 1981.

Original report in English.

1.3 Trends in catch and effort

During 1981, the total landings of the national longliners (996.4 MT) were about 40 percent less than in 1980. This decrease was due to the partial paralization of two units of the fleet as well as to the low swordfish catch which was similar to catches before 1980. On the other hand, the total fishing effort (1,223,000 hooks) was only slightly lower than the mean of the last years (1,260,000 hooks) and the yield of the fishery (81.46 kg/100 hooks/day) decreased considerably.

The leased fleet landed about 1,738.8 MT in 1981 and the total fishing effort was 1,178,950 hooks, a relatively low level compared to 1980. A significant changes (plus 40 percent) was observed in the yield of the fishery. This occurred because the operation of the fleet was concentrated in the second and third quarters, which are the periods of best productivity.

The baitboats continue to increase their production. The total catch reached 14,992 MT in 1981, a 118 percent increase over 1980. The fishing effort of this fishery is only partially covered now. The mean yield was 5.2 kg per effective fishing day, considering 242 trips monitored. Estimations of total effort are not yet available.

Good statistical information on the artisanal fleet is not available and only figures of total catch can be estimated for 1981 (2,588.6 MT).

2. Research program

In the last few years research projects have developed in the following areas: (1) experimental fishing; (2) larval survey; (3) fishery oceanography; (4) maturity and fecundity; and (5) stomach contents analyses. The main research institutions involved in these programs are:

- Oceanographic Institute of the University of Sao Paulo (IO-USP)
- Fisheries Institute of the State of Sao Paulo (INST. DE PESCA-SP)
- State Enterprise for Agriculture Research of Rio de Janeiro (PESAGRO-RJ)
- National Institute of Space Research (INPE)
- Superintendency for the Development of Fisheries (SUDEPE)

The results of some research have been submitted to the SCRS and as research evolves other results will be presented. More effort has been applied to the collection of biological and statistical data, especially for the surface fishery and this program was significantly expanded to include the collection of samples of gonads, spines, blood and stomachs of skipjack. This material has been sent to the ORSTOM-COM (Brest, France) and to the SWFC-NMFS (La Jolla, California, U.S.A.) for analysis.

Table 1. Total landings of tunas and tuna-like fishes in Brazil, by area and by fishing gear, 1976-81.

Yrs.	Area	Gear	Effort (No/hooks)	Total Catch	Catches by species (MT)													
					BFT	YFT	ALB	BET	BLF	SWO	WHM	BUM	SAI	SKJ	KGM	WAH	SSM	Others
76	SE ¹	LL	1,085,005	1,276.1	--	375.5	156.8	99.9	0.4	309.8	25.8	--	94.8	--	--	--	--	213.1
	NE	LL	--	496.5	--	221.6	123.6	69.9	--	22.3	26.4	--	--	--	--	--	--	32.7
	NE	Troll	--	1,556.7	--	34.4	1.4	449.2	56.4	0.3	25.2	10.9	61.9	83.2	546.0	4.8	283.0	
	Total			3,329.3	--	631.5	281.8	619.0	56.8	332.4	77.4	10.9	156.7	83.2	546.0	4.8	283.0	245.8
77	SE ¹	LL	1,250,335	1,290.5	--	326.2	157.0	133.3	--	275.2	9.7	--	79.8	--	--	--	--	309.3
	SE ²	LL	273,825	417.3	0.2	40.4	55.3	57.8	--	8.5	188.9*	--	--	--	--	--	--	66.2
	NE	LL	1,739,966	1,207.2	--	455.5	329.8	219.6	--	41.2	18.8	29.4	34.5	--	--	--	--	78.4
	NE	Troll	--	3,721.9	--	373.8	142.6	710.5	272.5	12.3	3.1	51.9	119.1	187.5	790.2	72.9	985.5	--
	Total			6,636.9	0.2	1,195.9	684.7	1,121.2	272.5	337.2	202.5	81.3	233.4	187.5	790.2	72.9	985.5	453.9
78	SE ¹	LL	1,281,380	777.4	--	292.6	64.8	66.6	--	115.0	17.0	9.8	82.0	--	--	--	--	129.5
	SE ²	LL	1,733,413	1,718.1	11.9	398.3	374.2	426.1	--	128.9	119.5	24.0	34.1	--	--	--	--	201.1
	SE	Uncl.	--	384.0	--	26.0	--	--	5.0	--	--	--	--	353.0	--	--	--	--
	NE	Troll	--	3,135.1	--	31.3	38.7	84.0	189.6	4.9	1.9	1.7	89.5	279.9	844.6	46.6	1,522.4	--
	Total			6,014.6	11.9	748.2	477.7	576.7	194.6	248.8	138.4	35.5	205.6	632.9	844.6	46.6	1,522.4	330.7
79	SE ¹	LL	1,294,565	1,229.0	--	488.8	150.7	148.1	--	177.7	13.7	10.1	35.1	--	--	--	--	204.8
	SE ²	LL	1,176,277	1,336.0	8.7	335.1	215.6	355.3	--	144.0	92.5	3.2	21.6	--	--	--	--	160.0
	SE	BB	--	2,345.4	--	586.4	--	--	351.8	--	--	--	1,407.2	--	--	--	--	--
	NE	Troll	--	3,054.2	--	159.8	134.1	135.4	172.6	1.2	3.9	12.7	83.9	246.4	847.6	65.9	1,190.7	--
	Total			7,964.6	8.7	1,570.1	500.4	638.8	524.4	322.9	110.1	26.0	140.6	1,653.6	847.6	65.9	1,190.7	364.8
80	SE ¹	LL	1,192,610	1,892.8	--	209.4	184.9	154.1	--	937.8	26.6	10.0	67.2	--	--	--	--	302.9
	SE ²	LL	1,278,542	1,369.4	1.4	250.8	204.1	347.4	--	292.5	21.7	6.5	9.9	--	--	--	--	235.1
	SE	BB	1,068	6,846.0	--	479.2	--	--	68.5	--	--	--	--	6,298.3	--	--	--	--
	NE	Troll	--	3,093.4	--	95.2	86.4	109.7	180.9	3.0	2.9	7.2	86.7	263.1	846.1	56.2	1,356.0	--
	Total			13,201.6	1.4	1,034.6	475.4	611.2	249.4	1,233.3	51.2	23.7	163.8	6,561.4	846.1	56.2	1,356.0	537.9
81	SE ¹	LL	1,223,105	996.4	--	406.6	63.1	90.6	2.2	337.9	25.5	--	38.3	--	--	--	--	32.2
	SE ²	LL	1,284,966	1,738.8	2.5	680.2	206.4	319.3	--	177.8	4.3	4.4	0.3	--	--	--	--	342.6
	SE ³	BB	--	14,797.7	--	905.5	--	--	--	--	--	--	--	13,729.6	--	--	--	162.6
	SE ⁴	BB	--	194.0	--	11.6	--	--	--	--	--	--	--	182.4	--	--	--	--
	NE	LL	--	25.1	--	25.1	--	--	--	--	--	--	--	--	--	--	--	--
	NE	Troll	--	2,588.6	--	8.0	20.0	50.0	85.0	0.5	0.1	20.0	55.0	--	827.0	62.0	1,461.0	--
	Total			20,340.6	2.5	2,037.0	289.5	459.9	87.2	516.2	29.9	24.4	93.6	13,912.0	827.0	62.0	1,461.0	538.4

* Total of marlins.

1 National longliners.

2 Leased longliners.

3 National baitboats.

4 Leased baitboats.

Source: PDP/SUDEPE, Inst. Pesca (Sao Paulo).

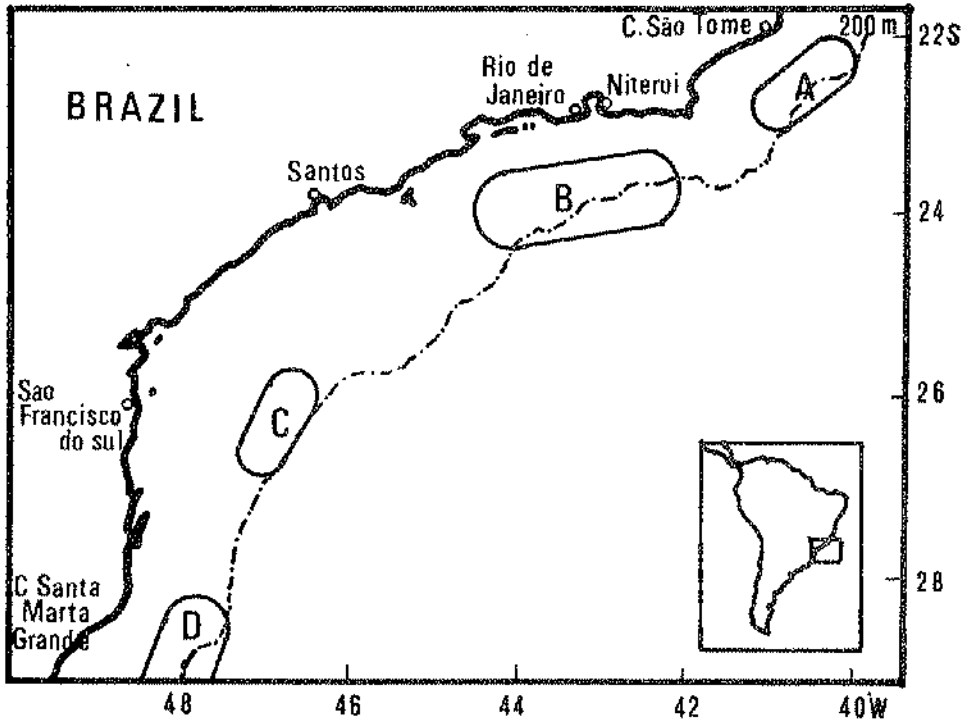


Fig. 1. Fishing grounds of the baitboat surface fishery off the Brazilian coast.

CANADIAN NATIONAL REPORT, 1981-82

by

P. C. F. HURLEY, K. I. METUZALS, and T. D. ILES

I. Status of the fisheries

1.1 Swordfish

The nominal catch of swordfish in Canada in 1981 was estimated to be 561 MT, a substantial decrease from 1,885 MT reported in the previous year. Of this total, 542 MT were taken by longline while the remainder was taken by other gear types, principally harpoon. This decrease in landings was due primarily to a lack of available markets.

1.2 Tunas

Canadian landings of Atlantic bluefin tuna amounted to 425 MT in 1981, an increase from 324 MT reported in the previous year. The mackerel trap fishery in St. Margaret's Bay took only 41 MT, a slight decrease from 47 MT reported in 1980 and still substantially lower than catches reported prior to 1979. A new handgear was introduced into the rod-and-reel fishery in the Gulf of St. Lawrence in 1981. Catches in the Chaleur Bay area decreased substantially, from 83 MT in 1980 to 23 MT in 1981; however, catches off Prince Edward Island increased from 155 MT to 219 MT and catches in the St. Georges Bay area increased from 21 MT in 1980 to 36 MT. Seasonal mean weights increased throughout the Gulf of St. Lawrence in 1981 and, unlike 1980, were consistent with the trend of annually increasing mean weight observed in the Canadian bluefin catch over the last decade. One metric ton of bluefin was taken by sport boats in Newfoundland waters. One vessel participated in a purse seine fishery for tuna in the northwest Atlantic in 1981 and landed 105 MT of juvenile bluefin and 180 MT of skipjack.

Original report in English.

2. Research studies

2.1 *Swordfish*

Research efforts on swordfish have been concentrated on the analysis of material collected during the 1980 research survey, particularly on gut and gill parasites, feeding habits, electrophoretic analysis, and ageing techniques. In the parasite study, a total of 21 species of helminth parasites were recovered, including two previously undescribed species. Representatives of all the major helminth parasite groups were found. Preliminary analyses indicate significant differences in prevalence and intensity of several species that occurred in all sampling areas. Further analyses should yield insight into the distribution and migration of swordfish. Examination of stomach contents of 197 swordfish produced ten species of fish and two species of squid. Results of the electrophoretic analysis of five tissues of swordfish were inconclusive and require collection and analysis of samples from other areas of the Atlantic. Results of the study using otoliths to age swordfish suggest that swordfish are a relatively slow-growing and long-lived species, when compared to other studies. Fin spines and vertebrae are currently being analyzed as alternate ageing techniques.

No swordfish tagging was conducted in 1981 or 1982. One recapture was reported in 1982, of a fish tagged and released 15 years previously. This swordfish had increased from 27 kg estimated at the time of release to 226 kg and approximately 224 cm FL at the time of recapture. This growth rate agrees closely with the results of the ageing study using otoliths.

2.2 *Tunas*

Sampling of bluefin tuna was continued in various Canadian ports in 1981 as part of an age and growth study. Sampling this year included juvenile bluefin taken by a Canadian purse seiner, thereby correcting a deficiency in the data set by providing material over the entire size range of the species.

No giant bluefin tuna were tagged and released in Canadian waters in 1981. Seventeen juvenile bluefin were tagged in a co-operative program with the NMFS, Miami Laboratory, to evaluate a new tag designed by Miami Laboratory personnel.

Three bluefin tuna recaptures were reported in 1981, two from Prince Edward Island waters. One had been released in Chaleur Bay in 1980, while the other had been released from a trap net in St. Margaret's Bay in 1975. The third recapture was off the Bahama Islands, of a fish tagged and released from a purse seiner in the west Atlantic almost 16 years previously.

Analysis of a caudal vertebra in co-operation with Miami Laboratory personnel resulted in close agreement between age estimates from the vertebra and from the number of years at large and size at release. No tagging was conducted in 1982 and no recaptures have been reported to date this year.

3. Preliminary information for 1982

There was little change in Canadian swordfish regulations in 1982. Participation in the fishery was poor once again this year due to lack of markets. The total catch is not expected to exceed 300 MT.

At the meeting on Western Atlantic Bluefin Management Measures, held in Miami, Florida, U.S.A., in February, 1982, a western Atlantic bluefin quota of 1,160 MT and a Canadian allocation of 250 MT were agreed to. As a result, Canadian bluefin regulations were changed substantially in 1982. Seasons were reduced and sub-area quotas were established for the first time. Catch rates were limited to one fish per boat per day and licensing remained closed in an effort to reduce the number of licenses through attrition. Bluefin appeared to be more abundant in all sub-areas this year and quotas were reached quickly in most sub-areas. Fishing remains open in one sub-area at this time, but all indications are that the quota of 250 MT will be taken. Sampling coverage was increased this year and detailed sampling data including otoliths were collected from approximately 50 percent of the catch.

SUMMARY OF THE STATE OF THE TUNA FISHERIES — REPUBLIC OF CAPE VERDE

by

M. A. SANTA RITA VIEIRA, M. DUPRET DE MELO and M. EDELMIRA MONIZ

1. The fleet

The Cape Verde industrial and semi-industrial tuna fleet is comprised of three freezer purse seiners converted to baitboats and 23 baitboats without freezer facilities, of which only 19 fished in 1982.

2. The catches

The main species caught, in order of tonnage, are skipjack, yellowfin and bigeye. Frigate tuna and Atlantic little tuna are taken in small quantities. The catches of the industrial fleet for the years 1979-1982 (up to the end of September) are shown in Table 1.

3. Fishing gear

The three freezer baitboats fished off Angola for two months at the beginning of the year and off Cape Verde after September. The other baitboats (without freezer facilities) make 10- to 12-hour trips, fish the schools nearest the island where they are based and return each day.

4. Research

Research has centered on improving statistical services. A total of 438 yellowfin and 48 bigeye tunas were measured. Within the framework of the International Skipjack Year Program, Cape Verde carried out port sampling at Praia, Sal Rei and Mindelo. Some 333 skipjack were sampled up to the end of September.

A 13-day (September 28 - October 10) skipjack tagging cruise was carried out in Cape Verde. This was the second joint cruise made by Senegal and Cape Verde financed by the EEC.

<i>Results of the tagging cruise</i>	
Skipjack tagged with yellow tags	4,351
Skipjack injected with tetracycline and tagged with red tags	201
Yellowfin tagged with yellow tags.	14
Gonads sampled	75
Dorsal fin rays	75
Stomach contents	75
Skipjack captured at Praia (up to October 22)	
a) with yellow tags	149
b) with red tags	6

Table 1. Catch of tunas (MT) for 1979-82 (up to the end of Sept, 1982)

	<i>YFT</i>	<i>BET</i>	<i>SKJ</i>	<i>Others</i>	<i>TOTAL</i>
1979	581	45	997		1,623
1980	818	26	1,742	107	2,693
1981	877	13	1,584	261	2,735
1982	620	202	474	241	1,537

Table 2. Tuna exports (MT)

<i>Year</i>	<i>Frozen tuna</i>	<i>Canned tuna</i>
1979	1,207	157
1980	2,350	327
1981	1,745*	300*

*Exported in 1982.

CUBAN TUNA FISHERIES IN THE ATLANTIC OCEAN AND RESEARCH ACTIVITIES CARRIED OUT IN 1981 AND 1982

by

B. GARCIA MORENA and A. RODRIGUEZ RODRIGUEZ

1. Fishing areas

As in past years, fishing operations by the Cuban tuna fleet were conducted between 20°N and 10°S latitude, and from 85°W longitude to the waters off the central west African coast. Fishing activities within the aforementioned zone were concentrated in areas of the central western Atlantic and the central eastern Atlantic; the Gulf of Guinea was the principal area of operation of the Cuban longline fleet.

2. The tuna fleet

The 1981 Cuban tuna fleet was comprised of 21 longliners, mostly all of them in the 501-1000 GRT class, and one 600 GRT purse seiner. A total of 65 live-bait vessels (51-150 GRT) caught skipjack and blackfin tunas in the waters near the Cuban coast. The combined catches of these two species amounted to about 1,800 MT.

Two freezer shrimp boats (51-200 GRT) converted to longliners started fishing operations on an experimental basis in the waters off Cuba. These vessels directed their effort at tunas and tuna-like species.

3. Improvement in statistics

With regards to tuna catch statistics, since 1981 Cuba has been submitting to ICCAT Task I data with a finer species breakdown. This breakdown was based on the need to separate *Katsuwonus pelamis* and *Thunnus atlanticus* catch data, which had been combined and reported as skipjack in previous years. Blue marlin catches are not reported separately from other billfish data. An effort is being made to break down billfish catches by species. Catch statistics of other tunas, such as Atlantic little tuna, were also included in the species breakdown for 1981.

Original report in Spanish.

4. The catches

Cuban tuna catches in 1981 reached 9,700 MT, broken down as follows: 4,900 MT yellowfin, 700 MT bigeye, 1,300 MT skipjack, 400 MT swordfish, 600 MT billfishes, 100 MT albacore, 600 MT spotted Spanish mackerel, 300 MT blue marlin, 100 MT Atlantic little tuna, and 700 MT blackfin.

The breakdown by species of the Cuban catches (in 1,000 MT) from 1975 to 1981 was as follows:

<i>Species</i>	1975	1976	1977	1978	1979	1980	1981
Yellowfin	2.6	3.6	3.9	3.0	3.4	5.8	4.9
Albacore	0.1	0.1	0.1	0.1	--	0.1	0.1
Bigeye	1.9	1.3	1.8	2.3	2.3	1.4	0.7
Skipjack	2.6	3.0	2.5	2.0	2.1	2.5	1.3
Spotted Spanish mackerel . .	0.6	0.5	0.4	0.6	0.4	0.5	0.6
Billfish	1.4	0.7	0.6	0.5	0.8	0.8	0.6
Swordfish	--	0.6	0.7	0.6	0.4	0.6	0.4
Blue marlin	--	--	--	--	--	--	0.3
Atlantic little tuna	--	--	--	--	--	--	0.1
Blackfin	--	--	--	--	--	--	0.7
Others	1.0	0.4	0.1	0.1	0.1	0.1	--
Total	10.2	10.2	10.1	9.2	9.5	11.8	9.7

The 1981 tuna catches showed a 2,100 MT decrease, after reaching a record high of 11,800 MT in 1980. Longline and live-bait catches showed the largest declines, 1,800 MT and 500 MT, respectively (Figure 1).

Figure 2 shows the tuna catches, by species, in 1981. Yellowfin and skipjack comprised the major part of the catch. Bigeye catches in 1981 showed a significant (50 per cent) decline with respect to 1980.

5. Research

Cuban research activities carried out within the framework of the International Skipjack Year Program were as follows:

a) Port sampling

The port sampling program involved four of the seven ports where skipjack are landed in Cuba. In 1981, 6,122 skipjack and 4,275 blackfin were measured.

b) Dart tagging

Dart tagging was carried out on board commercial vessels. This program was de-

layed at the onset due to a decrease in skipjack catches. During the second quarter of 1981, only 59 fish, mostly blackfin, were tagged.

Of a total of 591 fish tagged in 1981 (183 skipjack and 408 blackfin), there were seven recoveries (six blackfin and one skipjack). In 1982, 712 yellow tags were applied to fish, which raised the figure of fish tagged to 1,303. At the time of writing of this report, 40 yellow tags had been recovered.

c) Exploratory fishing

This activity was begun in May, 1980, and concluded its first cycle in May, 1981. During this first cycle, nine cruises were carried out, six in 1980 and three in 1981, on board the vessel "Pelamis", which pertains to the "Centro de Investigaciones Pesqueras" (Center for Fisheries Research).

d) Oceanography

Oceanographic research in 1981 centered on a study of the temperature of surface Cuban waters (150 m), studies on the surface layer, currents and analysis of temperature in relation to the presence of skipjack (*Katsuwonus pelamis*) and blackfin (*Thunnus atlanticus*) in Cuban waters.

e) Larval survey

A 21-day cruise (February-March, 1981) was conducted by means of a network of stations which monitored the Cuban fishery economic zone (south coast). At each station, oceanographic measurements to 200 m were carried out to determine temperature, salinity and oxygen.

The samples collected were placed in a 10 percent formaldehyde solution and processed later in the laboratory. No marked abundance in larvae was observed, which corresponds to results obtained in 1980 from analysis carried out at the same time of the year.

Another larval survey cruise was carried out in September, 1982, and samples collected are presently being laboratory tested.

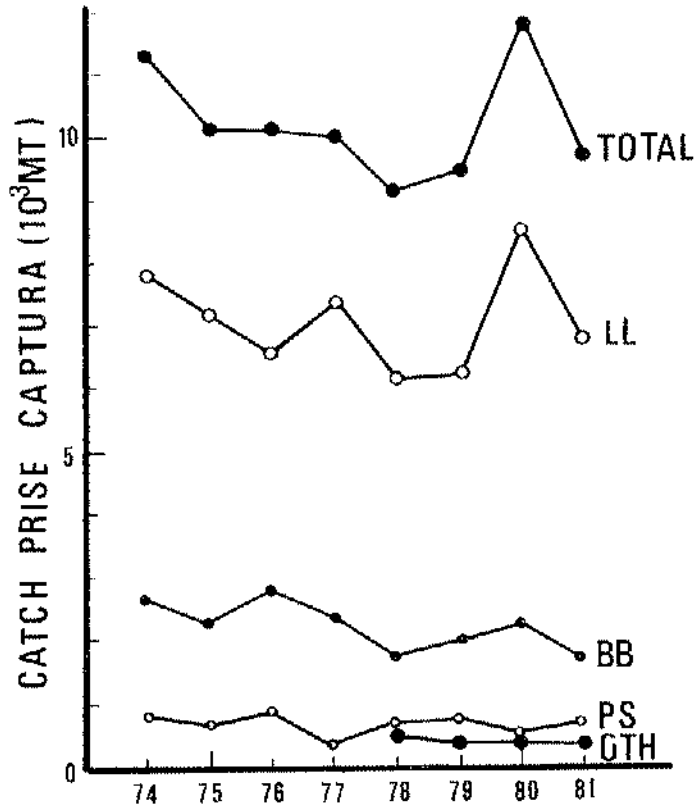


Fig. 1. Catches, by fishing gear, during the period 1974-81.

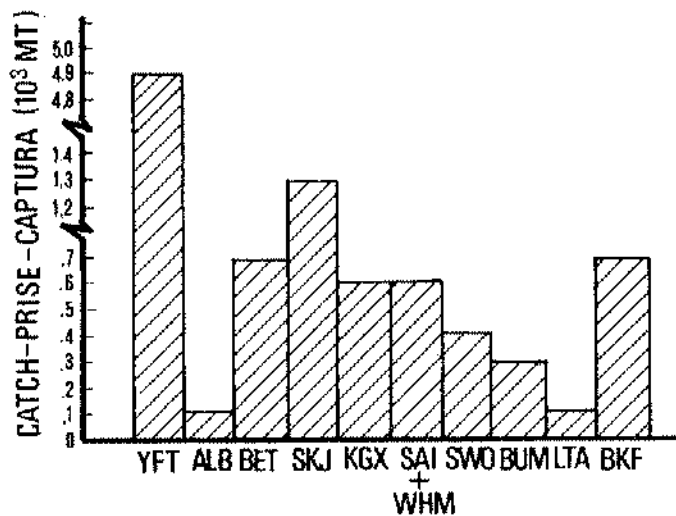


Fig. 2. Tuna catches, by species, in 1981.

REPORT OF FRENCH RESEARCH

1. Status of fishing

	1975	1976	1977	1978	1979	1980	1981
Albacore	6.1	6.7	6.8	8.4	8.0	4.2	3.3
Yellowfin. . . .	38.0	48.0	37.9	41.6	38.7	43.6	40.6
Skipjack	11.4	18.4	24.8	19.9	15.2	22.5	27.2
Bigeye.	0.0	1.0	3.0	2.2	3.1	0.8	0.4
Bluefin	2.3	3.8	3.7	2.3	1.8	1.7	2.4
Total.	57.8	77.9	76.2	74.4	66.8	72.8	73.9

The tonnage landed during 1981 shows very little increase compared to last year. The skipjack and bluefin tuna catches are increasing slightly. A decrease is noted in the yellowfin catch.

The peninsular albacore catches continue to decline. There was a slight decrease in fishing effort as well as a slight decrease in the CPUE.

2. Research

As in previous 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 "Institut Scientifique et Technique des Pêches Maritimes" (ISTPM).

a) Albacore

Two research cruises were carried out on board the research vessel "La Pélagia" off the west coast of the Iberian Peninsula in June and off the southwest coast of Ireland in August. The study of the age structure of the stock was continued as well as the "off-shore" and "near-Europe" components. The study of the hydrological condition showed a rarefaction of the thermal fronts compared to previous years and a decrease in the mean surface temperature in August.

Original report in French.

The collection of data (catch, effort and age composition) was continued in 1981. The processing of these data was done by methods developed during previous years by the CNEXO-COB.

During these studies, 1,195 fish were sampled and 130 were examined.

b) Bluefin

Observations were made essentially on the Mediterranean stock caught by 23 French purse seiners. A document presented to the SCRS described the sampling carried out.

c) Tropical tunas

As in the past, the overall processing of the data from the FISM fleet has been done at the computer center by ORSTOM at the COB (Brest). The results of this work were presented during the 1982 ICCAT meeting.

3. Skipjack Program

France participates to a great extent in the scientific activities of the Program, either 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 the three organizations participated: CNEXO-COB, ISTPM and ORSTOM.

a) Ageing

In 1981, the skipjack age-reading group had 2,500 skipjack dorsal fins available. These samples came principally from regular Skipjack Program sampling (in Dakar, Abidjan, Ghana and Brazil). However, two samples came from the northwest Atlantic (ISTPM) and one sample came from Venezuela (CNEXO). The reading technique was updated and a comparison between reading was done during 1981.

b) Tagging

The "A. Nizery" (ORSTOM research vessel) carried out several tagging cruises in 1981 from Abidjan and in collaboration with Ivory Coast and Congo. A total of 3,000 tunas were tagged, of which 981 were skipjack.

Two sonic tagging cruises were carried out: one French cruise on board the "Nizery" and the "Capricorne" in the Gulf of Guinea and one Senegalese cruise with the participation of a French scientist from CNEXO, off the Senegalese coast. The results of these cruises were presented to the Commission in 1981.

c) Fishing statistics

France participated in intensive sampling in the Gulf of Guinea by taking observers on board FIS tuna vessels.

d) Fishery oceanography

Many activities were carried out by France, including 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 one in relation to sonic tagging) and airborne radiometry in collaboration with professional organizations, and weekly analyses of surface temperatures in the Gulf of Guinea from METEOSAT satellite data.

All these activities are described in detail in the Report of the Sub-Committee on Skipjack.

GHANA NATIONAL REPORT — TUNA FISHERY, 1981

1. Tuna fleet

The tuna fleet increased from 42 vessels in 1980 to 51 vessels in 1981. The fleet is comprised of 24 Ghanaian and 27 foreign flag vessels. The number of Ghanaian purse seiners in the fleet increased from 2 in 1980 to 6 in 1981, while the only foreign flag purse seiner in 1980 left the Tema-based foreign fleet in 1981.

The Ghanaian fleet that operated in 1981 consisted of the following:

<i>Vessel</i>	<i>Gear</i>	<i>GRT</i>
Afko No. 301	Baitboat	254.46
Afko No. 302	"	253.94
Afko No. 303	"	284.28
Afko No. 305	"	440.41
Afko No. 306	"	439.89
Afko No. 307	"	440.24
Afko No. 308	"	450.27
Kaas No. 101	"	253.00
Kaas No. 102	"	254.25
Mary Radine	"	283.88
Fernanda Marisa	"	282.94
No Catch No Pay	"	284.73
Azuma Maru No. 2	"	284.76
Joy	"	253.88
Manko Star	"	342.04
Dong Won No. 803 (Brenya)	"	249.26
Dong Won No. 808 (Obaatan)	"	245.00
Gold Coast	Purse seiner	958.00
Marian Rosina	"	898.00
Wansima	"	898.06
Pioneer Two	"	299.28
Captain Stendal	"	898.06
Donna "H"	"	898.00

Original report in English.

The foreign fleet consisted of the following:

<i>Flag</i>	<i>Gear</i>	<i>Number</i>	<i>Gear</i>
Japan	Baitboat	12	285 - 380
Korea	"	7	249 - 417
Panama	"	6	440 - 455

The Ghanaian artisanal fleet continued to catch tunas and related species in 1981. The fleet used specially designed drift set nets.

2. Landings

The following landings, in metric tons, were made by foreign and Ghanaian flag vessels in 1981.

<i>Species</i>	<i>Foreign flag</i>	<i>Ghanaian Industrial</i>	<i>Ghanaian Artisanal</i>	<i>Total</i>
Yellowfin	941.771	2974	2	3917.771
Bigeye	189.509	122	--	311.509
Skipjack	21653.480	8099	231	29983.480
Black skipjack	134.284	387	2905	3426.284
Frigate tuna	--	--	2048	2048.000
Others	3888.611	2776	640	7304.611
Total	26807.655	14358	5826	46991.655

Black skipjack includes *Euthynnus alletteratus* and *Sarda sarda*. Other species include broken tuna (of any species) and *Elagatis bipinnulatus*.

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	197.908	165.111	478.769	348.776	1190.564
Bigeye	97.620	--	57.618	72.230	227.468
Skipjack	5252.467	6658.735	8240.031	6434.916	26586.149
Black skipjack	2.727	--	19.176	139.680	161.583
Others	580.449	335.614	2524.129	3216.060	6656.252
Total	6131.171	7159.460	11319.723	10211.662	34822.016

The total quarterly landings of the industrial purse seine 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	737.911	661.682	375.600	911.558	2686.751
Bigeye	--	22.500	1.080	7.440	31.020
Skipjack	627.598	320.168	892.418	791.823	2632.007
Black skipjack	--	--	138.912	229.405	368.317
Others	318.411	174.890	92.484	39.759	625.544
Total	1683.920	1179.240	1500.494	1979.985	6343.639

3. Research

During the year, collection of catch statistics (Task I and II) continued while considerable effort was expended in the implementation of the International Skipjack Year Program.

- i) Studies were continued on length frequency distributions, maturity and feeding of the three tropical tuna species, namely, yellowfin, bigeye and skipjack. A total of 5,900 yellowfin, 550 bigeye and 6,850 skipjack were measured during the year. The length frequency distributions continued to show the predominance of young yellowfin and bigeye off Ghana.
- ii) Port sampling was continued and improved. Two trips for sampling at sea were executed in conjunction with the International Skipjack Year Program.
- iii) There was very active participation in the tag recovery and return exercises for the International Skipjack Year Program; 207 tags were recaptured and returned to the laboratories that released them. One of the tags recovered won \$500 in the ICCAT skipjack lottery.

4. Research programs for 1982-83

- a) Analyses of data and samples for the International Skipjack Year Program.
- b) Gonado-somatic indices of skipjack.
- c) Improvement in Task II statistics and size sampling.
- d) Improvement in logbook coverage.

NATIONAL REPORT OF IVORY COAST

by

J. B. AMON KOTHIAS and F. X. BARD

1. Statistics

1.1 National production

a) Catches

The catches taken during the last three years by the Ivory Coast fleet (comprised of eight purse seiners) are broken down as follows:

	1979	1980	1981
Yellowfin (YFT)	8,981	9,847	9,913
Skipjack (SKJ)	3,804	5,774	7,495
Bigeye (BET)	207	231	59
Albacore (ALB)	26	77	93
Total.	13,018	15,929	17,568

The total catch for 1981 represents a 10 percent increase over last year. With regards to species composition, a significant increase (30 percent) in skipjack catches can be noted, whereas bigeye catches, already less important, decreased 75 percent.

b) Canning

In 1981, more than 9,000 MT of tunas were utilized in canning.

1.2 Overall tuna fleet activities

Landings and transshipments of tunas at the port of Abidjan in 1981 have remained at a level comparable to that of last year, i.e., between 100,000 and 120,000 MT.

Original report in French.

The 1982 preliminary estimates indicate a slight decrease in catches of the Abidjan-based tuna fleet. The main reason for this decrease in catches was the overall decline in yield in the east Atlantic in the second quarter of the year.

2. Research

All the landings and transshipments of tuna are supervised by the CRO-Abidjan, which collects data, not only for FISM tuna vessels, but also for the Spanish tuna vessels, in conjunction with the Spanish Institute of Oceanography. The CRO-Abidjan complies with ICCAT requirements for Task I, Task II and biological data.

Other research was directed mainly at the International Skipjack Year Program (see the Ivory Coast report on scientific activities of the International Skipjack Year Program).

Eight tagging cruises were carried out in 1981 on the oceanographic vessel "A. Nizery", which was put at the disposition of the Skipjack Program by France. A total of 3,555 tuna, including 909 skipjack were tagged. As of August 31, 1982, there were 726 recoveries, of which 69 were skipjack. Because of the large quantity of tunas landed at Abidjan, a large amount of tags of various origins are recovered there—826 in 1981 and 446 in 1982.

Improvements in fishery statistics included 100 percent coverage for Task I and Task II data, biological sampling of 67,564 skipjack, and observers on board vessels. With regards to biological data, Ivory Coast collected gonads for fecundity studies, hard parts for age studies and stomach contents. These were then transmitted to other centers for analysis.

Scientists from the CRO-Abidjan participated in the regional working group meeting on the processing of Skipjack Program data. The meeting was held in Dakar, Senegal, June 14-25, 1982.

3. Documents presented to the 1982 SCRS Meeting

BARD, F. X., S. KUME and L. ANTOINE

Données préliminaires sur la croissance, les migrations et la mortalité du listao (*Katsuwonus pelamis*) en Atlantique est, obtenues à partir du marquage.

BARD, F. X. and J. B. AMON KOTHIAS

Rapport de la Côte d'Ivoire sur les activités scientifiques lors de l'Année internationale listao.

JAPANESE TUNA FISHERY AND RESEARCH IN THE ATLANTIC, 1981-82

by

S. KUME

FAR SEAS FISHERIES RESEARCH LAB (FSFRL)

Japanese tuna fishing in the Atlantic is presently carried out by three gear types. Historical catches by species are shown in Figure 1. The longline fishery participated in the Atlantic in 1957 for the first time. Since then a peak tuna catch was recorded from almost the entire Atlantic in 1965 (Figure 2). Recent longline catches ranged annually between 20,000 and 40,000 MT, indicating an increasing trend. The size of the pole-and-line fleet operating in the Gulf of Guinea has been decreasing although catches in recent years have leveled off between 14,000 and 17,000 MT, up to 1981. In early 1982, one purse seiner rejoined the Atlantic tuna fishing fleet after its cessation in 1975.

Since the establishment of the International Commission for the Conservation of Atlantic Tunas (ICCAT) in 1969, results of Japanese scientific research have contributed to a better understanding of Atlantic tunas and tuna-like resources and fisheries at the regular meetings of the Standing Committee on Research and Statistics (SCRS), and at various intersessional meetings.

1. Fishing activities

The catches of tuna and tuna-like fishes caught by Japanese Atlantic tuna fleets in 1981 were 52,975 MT, about 8 percent higher than those of the preceding year. The 1981 longline catch, representing 70 percent of the total, increased more than 6 percent over the 1980 catch, and the pole-and-line catch also increased 15 percent (Table 1). The number of Japanese Atlantic tuna boats which operated in 1981 increased in the longline fishery, but decreased in the pole-and-line fishery (Table 2).

1.1 Longline fishery

The longline catch in 1981 was 36,797 MT, continuing an increasing trend during recent five years (Table 3). Except for bluefin and southern bluefin tunas, 1981 catches by species increased compared to the preceding year. It is noted that the species composition of the longline catch changes year to year regardless of the abundance of the resource of each species. This is due to the multi-species nature of the gear, which takes several species concurrently in a single operation, and also to the high mobility of the

Original report in English.

fleet in which fishermen are capable of switching their operational strategy by selecting fishing seasons and grounds of main target species. In recent years, the main target species of the Japanese longline fleet have changed to bigeye tuna and, in part, bluefin and southern bluefin tunas from yellowfin tuna and albacore, which used to account for the majority of the catches until early 1970. The bluefin catch has leveled off due to the ICCAT regulation in effect since 1975. The longline fishing ground in 1980 is shown in Figure 3.

Japanese longline vessels in the Atlantic have been on the increase in recent years, and numbered 320 in 1981, all Japan-based. The increase has been ascribed to the concentrated fishing activities on bigeye tuna in the overall Atlantic, and southern bluefin tuna fishing in high latitudes of the south Atlantic during the first half of the year.

In the first half of 1982, the monthly number of longliners operating in the Atlantic ranged from 80 to 160, somewhat less than during the same period of 1981. Many boats shifted to fishing grounds in the south Atlantic.

To observe the ICCAT bluefin regulation initiated in 1975, including the special regulation for bluefin tuna in the west Atlantic imposed in February 1982, Japanese fishermen have been subject to governmental regulatory measures. A patrol boat was dispatched repeatedly to monitor the Atlantic longline fleet for bluefin tuna fishing in May and June, 1981.

1.2 Pole-and-line fishery

Japanese pole-and-line boats based at Tema, Ghana, decreased from 12 in 1980 to 10 in 1981 (Table 2). The 1981 catch of the fleet was 16,178 MT, of which skipjack accounted for 95 percent (Table 4). In the first half of 1982, Japanese Tema-based pole-and-line boats further decreased to 7 in number and unloaded about 5,300 MT, 92 percent of which was skipjack.

1.3 Purse seine fishery

The Japanese tuna purse seine fishery in the Atlantic has been inactive since 1975. In March, 1982, however, one purse seiner of 500 gross tonnage started tuna fishing in the Gulf of Guinea. Several trips have been completed up to now.

2. Research activities

Scientific research on Atlantic tunas and billfishes was conducted by the Far Seas Fisheries Research Laboratory (FSFRL) during the 1981-1982 period. In February, 1982, Japanese scientists participated in the meeting on the West Atlantic Bluefin Tuna Management Measures held in Miami, Florida, U.S.A.

2.1 Fishery statistics

Annual catch statistics (Task I) up to final 1981 figures were reported to ICCAT. Also routinely submitted to ICCAT were catch and effort statistics (Task II) for final 1981 pole-and-line fishery and the 1980 longline fishery. Size frequency statistics (bio-

logical sampling) have been collected and compiled through size measurements on board the tuna boats in the Atlantic. Length data for 1980 were compiled for tunas and billfishes and reported to ICCAT.

Preliminary statistics of catch and size data on bluefin tuna in 1981 were provisionally output and distributed to the bluefin scientists concerned for a better evaluation of the stock. Due to the nature of the Japanese Atlantic longline fishery, i.e., trip lengths of more than one year, the data summarized are as of July 1982, and consequently, more data will be added.

2.2 International Skipjack Year Program (ISYP)

For the ISYP, Japan has conducted extensive tagging in the Gulf of Guinea during the summers of 1980 and 1981. The results and the biological measurements obtained are now being compiled for analysis. The predator stomach contents were also examined for the samples collected from Japanese longliners in the Atlantic.

2.3 Tuna biology and stock assessment

Three scientists attended the Miami meeting on West Atlantic Bluefin Tuna Management Measures and presented new analyses on the status of the stock. The working papers submitted to that meeting are listed in the reference section.

The standardization of longline effort by species was carried out for some species to estimate effective effort and overall fishing intensity for the years up to 1980. A cooperative study with Taiwan University was conducted on the effort standardization of Atlantic albacore. The results of studies on biology and population dynamics of Atlantic tunas and billfishes were presented at the 1982 SCRS meeting. The list of working papers submitted to the SCRS is shown in the reference section.

3. References

3.1 Working papers presented to the meeting on West Atlantic Bluefin Tuna Management Measures

ANONYMOUS

Japanese re-evaluation of the stock conditions of bluefin tuna in the western Atlantic (Summary report).

IKEDA, I.

- a) Allowable catch of bluefin tuna in the western Atlantic in 1982 - a minimum improvement of the calculation on the surplus production made by Parrack.
- b) Suspect parameters used by Parrack for estimating the stock size of young ages in the western Atlantic bluefin tuna.

KUME, S.

Re-evaluation of surplus production of bluefin tuna in the western Atlantic during 1982.

PELAGIC RESOURCES DIVISION, FSFRL

Monitoring plan of stock condition of bluefin tuna in the western Atlantic - estimation of necessary catch amount.

3.2 Documents presented to the 1982 SCRS Meeting

KIKAWA, S. and M. HONMA

- a) Trends in Japanese sailfish/spearfish catches in the Atlantic Ocean as apportioned into separate species.
- b) Catch and overall fishing intensity of the Atlantic billfishes, 1956-1980.

KUME, S.

Evaluation of stock status on Atlantic bigeye tuna, by production model analysis.

KUME, S. and S. KIKAWA

Activities carried out by Japan for the International Skipjack Year Program.

KUME, S. and Z. SUZUKI

Estimation of allowable catch of bluefin tuna in the Atlantic Ocean.

MIYABE, N.

Estimation of recruitment of 1973 cohort of bluefin tuna in the west Atlantic, using tagging results.

NISHIKAWA, Y. and S. KIKAWA

A note on the juvenile blackfin tuna (*Thunnus atlanticus*), and frigate tuna (*Auxis*, spp.) from the stomach contents of longline-caught tunas and billfishes in the western North Atlantic Ocean.

SUZUKI, Z.

CPUE trends of Atlantic bluefin tuna based on age-specific effective fishing effort estimated from the Japanese longline fishery, 1971-1980.

SUZUKI, Z. and K. HISADA

- a) Critical review and improvement of cohort analyses on bluefin tuna in the western Atlantic.
- b) A note on the appearance of medium-sized bluefin in the catches of Japanese longline boats operated in the northwest Atlantic.

**Table 1. Japanese catch (MT) of tuna and tuna-like fishes by type of fisheries,
Atlantic Ocean and Mediterranean Sea, 1977-81**

Type of fishery	1977	1978	1979	1980	1981
Total	42,842	38,882	44,480	48,833	52,975
LL (Home-based) . . .	21,855	21,690	27,613	34,765	36,797
Pole-and-line.	20,987	17,192	16,867	14,068	16,178

**Table 2. Annual number of Japanese tuna boats which operated in the Atlantic
Ocean and Mediterranean Sea, 1977-81**

Type of fishery	1977	1978	1979	1980	1981
LL (Home-based) . . .	179	216	249	300	320
Pole-and-line.	18	19	15	12	10

**Table 3. Catch (MT) of tunas and tuna-like fishes taken by the Japanese
Atlantic longline fishery, 1977-81**

Year	1977	1978	1979	1980	1981
TOTAL	21,855	21,690	27,613	34,765	36,797
ATLANTIC					
Sub-total	21,335	21,627	27,511	34,645	36,696
Albacore	930	666	1,324	1,369	2,298
Bigeye.	9,137	9,301	11,957	20,477	21,044
Bluefin	5,252	3,721	4,251	4,816	4,286
S. bluefin.	3,168	4,651	6,192	2,116	1,667
Yellowfin.	1,467	1,923	1,986	2,839	4,145
Swordfish	792	853	968	2,107	2,232
Blue marlin*.	135	69	134	308	468
White marlin.	106	41	57	106	143
Sailfish**.	47	20	39	55	94
Others.	301	382	603	452	319
MEDITERRANEAN					
Sub-total	520	63	102	120	101
Bluefin	520	61	99	119	100
Swordfish	0	2	3	1	1

*Includes a minor amount of black marlin.

**Includes shortbill spearfish.

Table 4. Catch (MT) of tunas and tuna-like fishes landed by the Japanese pole-and-line fishery, 1977-81

Year	1977	1978	1979	1980	1981
Total.	20,987	17,192	16,867	14,068	16,178
Albacore	2	0	0	0	0
Bigeye.	1,144	1,201	582	243	3
Yellowfin.	2,451	807	573	697	254
Skipjack	16,845	14,614	14,686	12,304	15,426
Others.	545	570	1,026	824	495

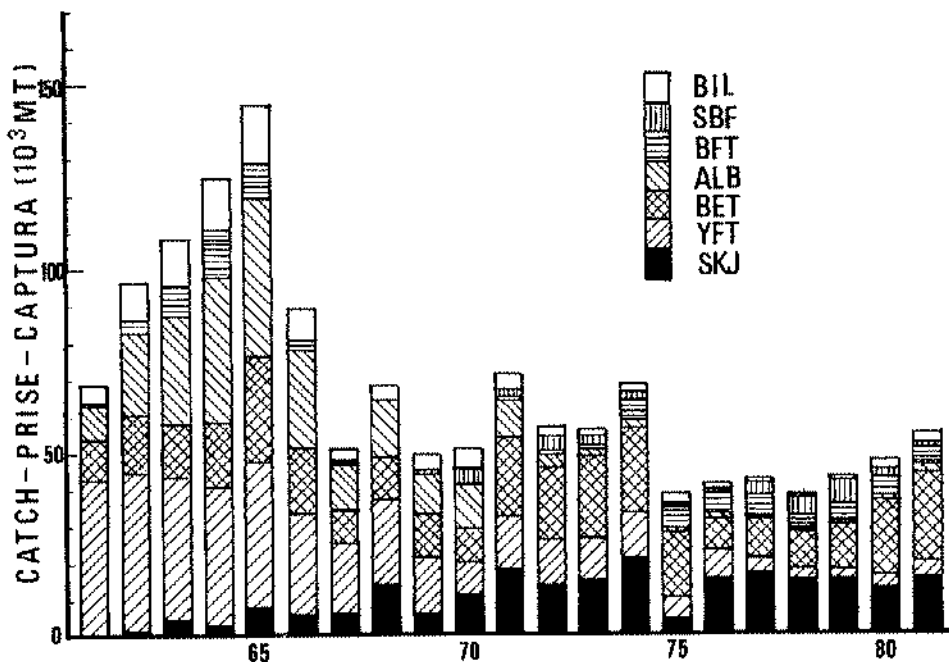


Fig. 1. Annual yield of the Japanese tuna fisheries in the Atlantic Ocean, by species, 1961-1981.

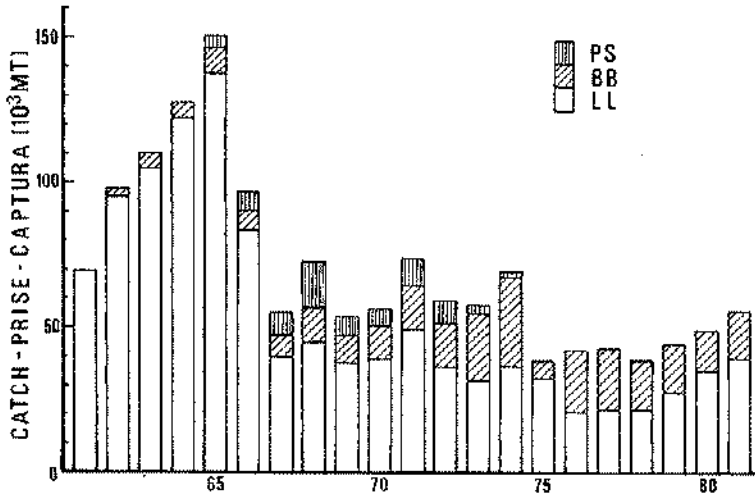


Fig. 2. Annual yield of the Japanese tuna fisheries in the Atlantic Ocean, by type of fishery, 1961-1981.

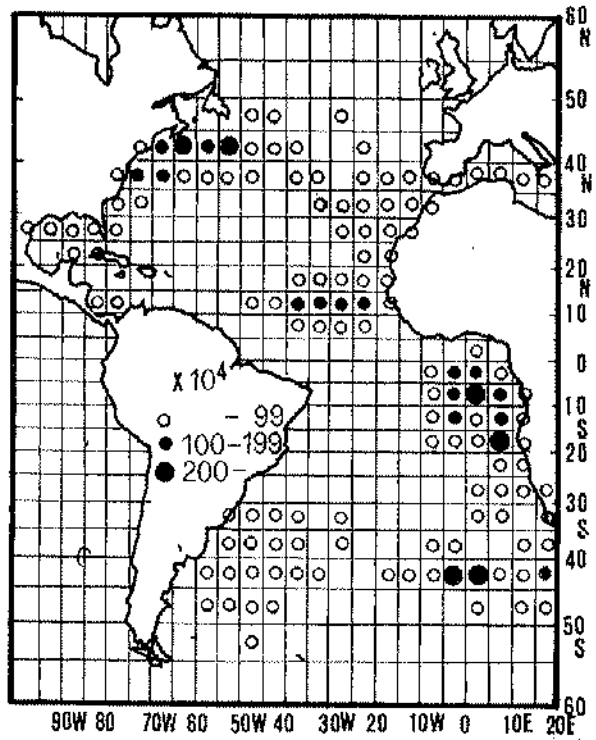


Fig. 3. The Japanese longline fishing ground in 1980, expressed in fishing effort (number of effective hooks) by 5 x 5 degree square.

KOREAN TUNA FISHERIES AND RESEARCH ACTIVITIES IN THE ATLANTIC OCEAN, 1981-1982

1. Fishing activities

In 1981, a total of 64 fishing vessels, six less than in 1980, operated for tunas and tuna-like fishes in the Atlantic Ocean. These vessels caught 31,835 MT, an increase of 10.3 percent over last year (Table 1). Of the total catch, 70.1 percent was taken by 56 longliners, and 29.9 percent was taken by 8 baitboats.

The total catch during the first quarter of 1982 was estimated to be 6,630 MT, using the two aforementioned fishing methods, a 13.6 percent decrease over that of last year.

1.1 Longline fishery

The total catch by the 56 longliners in 1981 was 22,306 MT which represents a 17.7 percent increase compared to the 1980 catch (Table 1). A breakdown of the catch by major species is as follows:

- 11,682 MT bigeye (52.4 percent of the total catch)
- 6,650 MT yellowfin (29.8 percent)
- 1,620 MT albacore (7.3 percent)
- 447 MT swordfish (2.0 percent)

Bigeye catches comprised the highest proportion of the total catch and were 30.3 percent higher than in 1980; skipjack and albacore catches showed a slight increase; swordfish catches decreased by 34.6 percent (Table 2).

The total catch by longline has generally shown a decreasing tendency since 1975 (Figure 1). This is due mainly to the withdrawal of fishing vessels from the ocean and also to the decrease in the catch of target species such as yellowfin and albacore.

1.2 Pole-and-line fishery

Korean baitboats based in Tema, Ghana, decreased from 16 in 1980 to 8 in 1981, and operated for tropical tunas in the east Atlantic as in past years. The 1981 catch by this fishery amounted to 9,529 MT, a 3.8 decrease compared to the 1980 catch (Table 1).

Original report in English.

A breakdown of the catch by species is as follows:

- 8,085 MT skipjack (84.8 percent of the total)
- 947 MT yellowfin (9.9 percent)
- 61 MT bigeye (0.6 percent)

The skipjack catches showed a 20.3 percent increase, while there was a considerable decrease in yellowfin and bigeye catches, 55.4 percent and 89.2 percent, respectively. The total catch by this fishery has gradually decreased since 1979 (Figure 1). This is due to the decrease in the number of fishing vessels as mentioned above and to the ineffective effort exerted on the fishing grounds.

2. Research activities

Korean research activities on Atlantic tunas and related species have been conducted at the Fisheries Research & Development Agency (FRDA). Research in 1981-82 was focused on improving the collection and analysis of catch/effort data and biological data from commercial fishing vessels, and on carrying out dart tagging activities for the International Skipjack Year Program. The coverage rate for the longline fishery in 1981 was approximately 61 percent, and 64 percent for the baitboat fishery. The 1981 data for Task I, II and size frequency statistics were submitted to ICCAT.

A scientist from the FRDA was sent to Tema, Ghana, in May, 1982, where he performed direct tagging experiments and simultaneously collected biological information from Korean baitboats in the Gulf of Guinea.

From 1980 to the end of June, 1982, a total of 530 dart tags had been released in the Gulf of Guinea; their recovery rate is approximately 1.5 percent that of 1981. On the other hand, Korean baitboats recaptured 44 tags during 1981 which had been released by other ICCAT member countries in the Atlantic Ocean.

Table 1. Korean catch (in MT and number of boats) for tuna and tuna-like fishes in the Atlantic Ocean, 1971-1981

<i>Year</i>	<i>Number of boats</i>			<i>Catch (MT)</i>		
	<i>Longline</i>	<i>Baitboat</i>	<i>Total</i>	<i>Longline</i>	<i>Baitboat</i>	<i>Total</i>
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
1981	56	8	64	22,306	9,529	31,835

Table 2. Catch (in MT) by species of tunas and tuna-like fishes taken by the Korean longliners in the Atlantic Ocean, 1971-1981

<i>Year</i>	<i>Bluefin</i>	<i>Yellow- fin</i>	<i>Albacore</i>	<i>Bigeye</i>	<i>Skipjack</i>	<i>Sword- fish</i>	<i>Blue marlin</i>	<i>White marlin</i>	<i>Sail- fish</i>	<i>Other Billfishes</i>	<i>Others</i>	<i>Total</i>
1971	3,039	9,901	11,539	7,353	47	---	---	---	---	780	4,078	36,737
1972	30	11,078	13,577	5,730	45	---	---	---	---	1,714	3,562	35,736
1973	66	12,844	8,525	5,829	---	---	---	---	---	1,984	2,809	32,051
1974	56	15,518	5,216	7,376	116	---	---	---	---	1,335	3,951	33,568
1975	23	15,344	6,073	10,162	196	451	---	---	---	990	5,580	38,819
1976	10	11,211	8,755	6,747	26	1,147	---	---	---	1,015	2,664	31,575
1977	3	16,347	9,345	7,610	9	1,240	164	202	141	449	3,339	38,849
1978	---	11,512	4,418	9,182	42	1,333	177	79	29	111	2,211	29,094
1979	2	6,997	3,875	7,035	2	606	95	13	20	96	1,058	20,069
1980	---	5,869	1,487	8,963	4	683	9	1	5	167	1,764	18,952
1981	---	6,650	1,620	11,682	47	447	81	13	11	171	1,584	22,306

Table 3. Catch (in MT) by species of tunas and tuna-like fishes taken by Korean baitboats in the Atlantic Ocean, 1973-81

Year	Yellowfin	Bigeye	Skipjack	Albacore	Unclassified & others	Total
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
1981	947	61	8,085	—	436	9,529

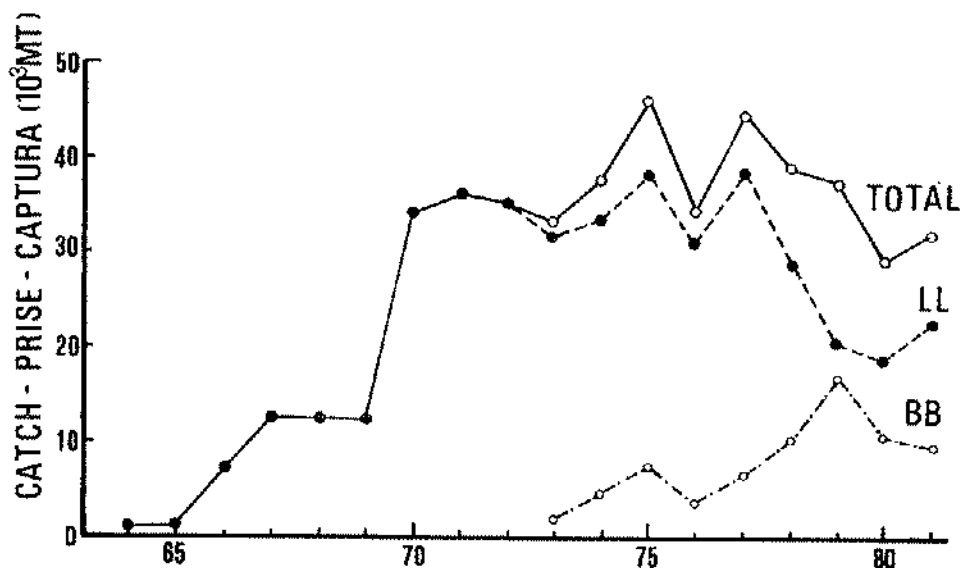


Fig. 1. Annual yield of the Korean tuna fishery in the Atlantic Ocean, 1964-1981.

NATIONAL REPORT OF PORTUGAL

Portuguese tuna catches taken by Azorian and Madeiran baitboats reached 6,286 MT in 1981, a 13 percent increase over that of 1980 (tropical purse seiners are not included). The breakdown of the catches of the principal species is as follows: A total of 5,752 MT of tunas were taken by Azores, comprised of 2,663 MT bigeye, 2,619 MT skipjack and 440 MT yellowfin. Madeiran catches totaled 534 MT, of which 440 MT were bigeye and 77 MT were skipjack.

Preliminary 1982 estimates indicate an important increase in skipjack catches and a significant decline in bigeye catches.

Research is centered on the principal species taken. Research activities within the International Skipjack Year Program have been particularly important and include intensive sampling, removal and analysis of dorsal fin ray spines and gonads. An effort has also been made so that sampling coverage includes the artisanal skipjack fishery.

REPORT ON TUNA FISHING AND RESEARCH IN SENEGAL IN 1981 – 1982

by

P. CAYRE

1. Tuna fishing

1.1 *Yellowfin, skipjack and bigeye*

Tuna landings and transshipments at Dakar in 1981 and 1982 are shown in Table 1. In 1981, the tuna fleet based at Dakar was comprised of 26 baitboats and 4 purse seiners. The slight decrease in the number of baitboats from that reported in 1981 (28 baitboats) was compensated by the increase in the number of purse seiners. In 1981, the overall baitboat catch (7,679 MT) and the composition of the yellowfin, skipjack and big-eye catches were similar to those in 1980 (total catch of 7,860 MT).

The increase in total baitboat and purse seine landings in 1981 (10,366 MT compared to 7,860 MT in 1980) was due to the renewal of the purse seine fishery.

Transshipments made by the FISM fleet in 1981 (13,297 MT) were much greater than those in 1980 (8,059 MT). Landings by the Spanish tuna vessels were 6,280 MT in 1981 and the total weight of tuna landed or transshipped at Dakar in 1981 could be estimated at about 35,000 MT.

For 1982, preliminary figures seem to indicate a decrease in the catches of the tuna fleet based at Dakar. This can be attributed to two factors: (1) there was a general decrease in yield in the east Atlantic in 1982, and (2) the economic situation of the tuna market which forced boats to remain at port during almost a month of the fishing season.

1.2 *Other species*

The landings of small tunas (three species) in 1981 are shown in Table 2 for the artisanal (2,765 MT) and the industrial (621 MT) fisheries. The total landings in 1981 (3,386 MT) were very similar to those in 1980 (3,261 MT).

In 1981, the artisanal and sailfish sport fisheries landed 442 MT and 87 MT, respectively (Table 3). There was a strong increase (62 percent) in the catch of these two fisheries compared to 1980. The importance of the artisanal fishery (81.0 percent in 1980, 83.6 percent in 1981) has been increasing for the past three years.

Original report in French.

2. Research

Sampling and data collection activities were carried out as usual by the FISM vessels as well as by the Spanish vessels according to an agreement reached with the Spanish Institute of Oceanography. Collection of catch statistics on small tunas and sailfish also continued.

Research activities associated with the Skipjack Program in 1981 and 1982 included the following:

- Cruises financed by the EEC tagged 691 yellowfin, 1,392 skipjack, 23 bigeye and 17 little tunas for a total of 2,122 tunas in October 1981; and 2 yellowfin, 2,794 skipjack and 206 little tunas in June-July, 1982, for a total of 3,002 tunas.
- Biological sampling of skipjack gonads and spines was halted in 1982 due to the beginning of data processing.
- A meeting, attended by the Skipjack Program Coordinator, the ICCAT Systems Analyst, and participants from Cape Verde, Ghana, Spain, Ivory Coast, France and Senegal, was held in Dakar in June, 1982. The purpose of this meeting was to make the data files uniform as well as to coordinate the processing of data collected by these countries during the Program. The first joint data processing carried out during the meeting gave partial and preliminary results for many activities. The prior visit to Senegal by the ICCAT Systems Analyst in April, 1982, contributed greatly to the success of this meeting.

The tuna statistics of the entire FISM fleet were, as in the past, compiled and processed in Dakar.

3. Documents presented by CRODT to the 1982 SCRS Meeting

CAYRE, P.

- a) Rapport sur la pêche et la recherche thonière au Sénégal en 1981-1982.
- b) Activités exécutées par le Sénégal pour le programme d'année listao.

DIOUF, T.

Marquage de thonine (*Euthynnus alletteratus*) au Sénégal en 1981 et 1982.

FONTENEAU, A. and T. DIOUF

Etat des stocks d'albacore de l'Atlantique au 30 septembre 1982.

FONTENEAU, A. et P. CAYRE

Statistiques de la pêcherie thonière FISM durant la période de 1969 à 1981.

Table 1. The tuna fishery in Dakar, 1981-82

	<i>BB</i>	<i>Dakar-based PS</i>	<i>Total</i>	<i>FISM¹</i>	<i>Foreign vessels Spain²</i>	<i>Total³</i>
1981 Catch (MT)						
No. of boats.	26	4	30	27	15	42
Effort (days at sea)	2918	505		1268		
Yellowfin	2259.1	323.8	2582.9			
Yellowfin - Bigeye.				8724.2	3708.4	12432.6
Skipjack	3264.7	2054.0	5318.7	4572.8	2572.0	7144.8
Bigeye	2155.3	308.8	2464.1			
Total	7679.1	2686.6	10365.7	13297.0	6280.4	19577.4
1982 Catch (MT)⁴						
No. of boats.	25	4	29	26		26
Effort (days at sea)	1643	327		1269		1269
Yellowfin	1025.4	428.8	1454.2			
Yellowfin - Bigeye.				6650.7		6650.7
Skipjack	2939.7	911.1	3850.8	4090.4		4090.4
Bigeye	978.1	409.1	1387.2			
Total	4943.2	1749.0	6692.2	10741.1		10741.1

1. Landings and transshipments for 1981 and 1982.

2. 1981 landing data available.

3. The 1982 total (up to August, 1982) does not include Spanish landings.

4. Provisional data up to August 31, 1982.

Table 2. Landings (MT) of small tunas in Senegal (1980-81)

<i>Species</i>	<i>1980</i>			<i>1981</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>)	1622	1095	2717	1660	621	2281
West African Spanish mackerel (<i>Scomberomorus tritor</i>)	404	0	404	615	0	615
Atlantic bonito (<i>Sarda sarda</i>)	140	0	140	490	0	490
TOTAL	2166	1095	3261	2765	621	3386

N.B.: Discards estimated at 1,000 MT are not included in these landings.

Table 3. Landings (MT) of sailfish (*Istiophorus albicans*) in Senegal in 1981

	<i>Number of individuals</i>	<i>Weight (MT)</i>	<i>Percent</i>	<i>Percent in 1980 report</i>
Artisanal fishery	14,741	442.3	83.6	81.0
Sport fishery	2,900	87.0	16.4	19.0
Total	17,641	529.3	100.0	100.0
1980 Report (MT)	10,856	325.7	--	--

REPORT OF SPANISH TUNA FISHING AND RESEARCH, 1981-1982

by

A. GONZALEZ-GARCES
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1. Catches

Spanish catches of tunas and tuna-like fishes in 1981 reached 135,396 MT, and represented the largest annual catch taken by Spain in the Atlantic up to now. These catches show an 18,800 MT increase over those of 1980. This increase is due basically to the increased catches by the tropical fleet which operates in the east Atlantic.

The catches, in metric tons, of the principal species for the last five years have been 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	33,720	28,084	6,336	2,982	25,155	3,976	5,438	105,691
1978	37,424	27,484	4,703	3,660	25,404	4,342	6,045	109,067
1979	39,353	20,888	5,080	2,643	29,810	3,382	1,793	102,901
1980	34,246	30,989	8,388	2,397	25,202	4,560	10,800	116,582
1981	50,866	38,192	7,739	2,428	22,631	5,134	8,307	135,396

Spain catches tunas in three distinct areas: the Gulf of Guinea, the Canary Islands and around the Iberian Peninsula. In each area, a specific fleet operates and takes distinct species. Therefore, each area is discussed separately in this report.

1.1 Gulf of Guinea

Spain has been fishing in this area since 1961. The fishing area is very wide and actually goes beyond the Gulf of Guinea proper. The Spanish fleet which operated in this area in 1981 was comprised of 44 baitboats. The distribution of this fleet, according to vessel gross tonnage, was as follows:

Original report in Spanish.

<i>No. of vessels</i>	<i>GRT</i>
1	300 - 450
9	451 - 750
27	751 - 1250
7	over 1250

In 1982 the fleet was comprised of 47 baitboats. There were actually less vessels in operation as compared to 1981. However, three vessels from the Pacific and one newly constructed vessel were added to the fleet.

The 1980 and 1981 Gulf of Guinea catches were broken down as follows:

<i>Year</i>	<i>YFT</i>	<i>SKJ</i>	<i>BET</i>	<i>ALB</i>	<i>OTH</i>	<i>TOTAL</i>
1980	34,169	28,827	4,354	0	5,800	73,130
1981	50,770	34,041	5,426	889	4,685	95,811

A notable increase in catches (plus 31 percent) from 1980 to 1981 can be observed. Yellowfin catches showed the most substantial increase, although skipjack and bigeye catches were also noteworthy. It should be pointed out that the "OTH" species category includes frigate tuna and Atlantic little tuna.

It is expected that total annual catches for 1982, estimated on the basis of catches taken up to September 30, will be somewhat below those of 1981. Estimated catches for 1982 are expected to be on the order of 90,000 MT, as follows: 50,000 MT yellowfin, 35,000 MT skipjack, 2,000 MT bigeye, 200 MT albacore and about 2,500 MT other species.

1.2 Canary Islands

The Canary Islands fishery is conducted by a fleet comprised mainly of small vessels which use live bait. In 1981, this fleet had 256 vessels of less than 20 GRT, 34 vessels in the 20-50 GRT class and 24 vessels of 51-150 GRT.

Catches increased only slightly from 1980 to 1981. However, there was a change in the breakdown by species, whereby catches of bigeye tuna, which had been the main target species of the Canary Islands fishery in recent years, decreased almost 50 percent. On the other hand, skipjack catches practically doubled and this species became the principal species of the fishery in 1981. Catches of the other species taken by this fishery also increased slightly.

The breakdown of the catches, in MT by species for the last two years, is as follows:

<i>Year</i>	<i>YFT</i>	<i>SKJ</i>	<i>BET</i>	<i>BFT</i>	<i>ALB</i>	<i>TOTAL</i>
1980	77	2,162	4,034	397	518	7,188
1981	96	3,876	2,313	524	1,009	7,818

Estimates for 1982 indicate that catches will be similar to those of 1981.

1.3 Iberian Peninsula

Whereas the Spanish Gulf of Guinea fishery fishes exclusively by baitboat, and the Canary Islands fishery uses live bait vessels, the Spanish peninsular fleet uses a variety of fishing types. The most important gears used are: live bait, troll, surface longline, trap, small-sized baitboat, mesh nets and handlines. In 1981, 240 live-bait boats, 255 trollers, 136 longliners and 4 traps operated, as well as an undetermined number of small bait-boats, mesh nets and handlines, which although they were not directing their catch at tunas, caught tunas sporadically.

For the first time in 1981, a Spanish live-bait fleet fished in the Mediterranean, and took 900 MT albacore and 100 MT bluefin during the fourth quarter of the year.

Spanish peninsular catches for the last two years were as follows:

<i>Year</i>	<i>BFT</i>	<i>ALB</i>	<i>SWO</i>	<i>OTH</i>	<i>TOTAL</i>
1980	2,000	24,684	4,560	5,000	36,244
1981	1,904	20,733	5,134	3,721	31,767

In the above table, "OTH" includes bigeye, skipjack, frigate tuna, Atlantic little tuna and Atlantic bonito. According to these data, Spanish peninsular catches decreased in 1981 by about 4,400 MT, as compared to 1980. This decrease was due mainly to a significant reduction in albacore catches.

The 1982 Spanish peninsular fleet is similar to that of 1981, and increases are expected in albacore catches, which should reach 25,000 MT, and bluefin catches, which may exceed 2,000 MT. Increases are not expected in 1982 for the other species.

2. Research

In 1981 and 1982 Spanish research on tunas in the Gulf of Guinea was centered principally on tasks Spain has agreed to carry out for the International Skipjack Year Program. Besides, effort was made to increase statistical coverage of the Spanish fleet in this area, to separate yellowfin and bigeye statistics and to extend the port sampling network. As a result of the latter, 9,312 yellowfin, 10,912 skipjack, 1,414 bigeye and 2,244 frigate tuna and Atlantic little tuna were sampled.

Spanish scientists made several visits to ports in the Gulf of Guinea, Abidjan (Ivory Coast) and Dakar (Senegal) where the Spanish fleet frequently unloads its catches, and conducted surveys and sampling of the fleet. Five intensive sampling cruises were carried out principally to obtain information related to the Skipjack Program. During these cruises, all types of useful information were gathered, such as fishing methods, fishing areas, association of schools with floating objects, climatology, etc. Gonads, stomachs and otoliths were collected and size sampling was done on 3,686 fish. On these cruises analysis was also carried out on the percentage of yellowfin and bigeye in the catches.

Spanish scientists participated in the Regional Working Group Meeting on Skipjack held in Dakar, Senegal, in June, 1982.

In the Canary Islands considerable attention was given to activities related to the Skipjack Program. In 1981, 4,344 skipjack were sampled, 620 gonads were collected and 701 individuals were tagged. In 1982, as of the time of writing this report, 4,776 individuals were sampled, 1,231 gonads were collected and 1,829 fish were tagged. As a result of tagging cruises carried out in the last three years, 355 tags have been recovered—334 of these in the Canary Islands, 14 in Madeira and 7 in Africa.

With regard to other species, the network of data collection has been maintained in order to carry out tasks recommended by the ICCAT. In the area of size sampling, 200 bluefin, 350 yellowfin, 850 bigeye and 1,023 albacore were measured in 1982.

Research conducted by the peninsular fishery centered on bluefin tuna, due to Spain's concern for this species. In 1982, as in 1981, research and tagging cruises were carried out in the north of Spain (Bay of Biscay) as well as tagging in the south in a trap. For bluefin stock structure studies effort was made to learn more about the interchange of individuals between the eastern and western parts of the Atlantic, by means of analysis of the infestation of parasites of bluefin from one side of the Ocean or the other. These analyses involved principally infestation with *Nasicola klawey* and *Elytrophora brachiptera*.

Control and analysis of the peninsular albacore fishery continued. Considerable effort was spent on size sampling, and as a result, 11,300 individuals were sampled in 1981 and 12,700 in 1982. At present, albacore growth studies based on dorsal spines are being conducted.

A review was conducted of all the available swordfish catch and effort data for the past years. Spain participated in the 1981 Billfish Workshop, organized by ICCAT and held in Miami, U.S.A. Tagging programs continued and in 1981, 10,042 individuals in the Atlantic and 457 in the Mediterranean were sampled. An experimental swordfish tagging cruise was also undertaken and 125 fish were tagged.

Research on small tunas involved a review of the catch statistics for the years 1962 to 1968 of *Auxis thazard*, *Euthynnus alletteratus* and *Sarda sarda*. A tagging cruise for *Sarda sarda* was carried out in 1981, and studies on this species' biology, migrations, and status of the fishery are currently underway.

4. References

4.1 Documents presented to the 1982 SCRS Meeting

ANTOINE, L. and A. GONZALEZ-GARCES

Considérations sur l'état du stock de germon (*Thunnus alalunga*) de l'Atlantique Nord, d'après les données des flotilles franco-espagnoles.

CORT, J. L. and J. C. REY

Análisis de la pesquería de atunes rojos (*Thunnus thynnus*) jóvenes del Atlántico Este y comentarios acerca de la estructura del stock.

GONZALEZ-GARCES, A.

Informe sobre la investigación y pesca española de túnidos en 1981 y 1982.

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A check of traditional parameters based on fishing effort in the surface fishery of juvenile albacore in the northern Atlantic.

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Análisis de la pesquería española de pez espada (*Xiphias gladius*) entre los años 1973 y 1981.

PALLARES, P. J. M. GARCIA MAMOLAR and A. M. FERNANDEZ

- a) Composición por edades del rabil en las capturas de la flota tropical española, 1978-81.
- b) Estimación de la proporción rabil-patudo en las capturas de la flota tropical española, 1979-1981.

4.2 Documents presented to the 1982 ICCAT Symposium

CORT, J. L. and J. C. REY

Análisis de la pesquería de atunes rojos (*Thunnus thynnus*) jóvenes del Atlántico Este y comentarios acerca de la estructura del stock.

REY, J. C.

Considerations on the migration of tunas in relation to the hydrology of the Strait of Gibraltar.

NATIONAL REPORT OF SOUTH AFRICA

1. The fishery

The catch of 2,550 MT was about the same as that of the previous year and consisted of 73 percent albacore, 15 percent bigeye, 7 percent yellowfin, 4 percent skipjack and less than 1 percent bonito, southern bluefin and swordfish. Compared to the catch of the previous year, there was a decrease in the amount of yellowfin caught but an increase in the total mass of albacore.

Most of the tuna were caught by 24 boats pole fishing and longlining off the west coast.

2. Research

2.1 Biological sampling

Measurements of 2,843 albacore were taken from tuna transhipped by foreign boats in Table Bay harbour.

2.2 Environment

Biological and hydrological surveys were done at a series of stations which included areas where tuna were caught.

REVIEW OF UNITED STATES FISHERIES AND RESEARCH
ACTIVITIES ON TUNAS AND TUNA-LIKE FISHES
OF THE ATLANTIC OCEAN FOR 1981-1982

by

NATIONAL MARINE FISHERIES SERVICE*

1. The fisheries

United States commercial catches of Atlantic tunas and tuna-like species totaled approximately 18,000 metric tons (MT) in 1981, a 13 percent decrease from 1980 (Table 1). Skipjack tuna (*Katsuwonus pelamis*) catches increased by 50 percent; catches of bluefin tuna (*Thunnus thynnus*) increased by 1 percent, yellowfin tuna (*T. albacares*) and swordfish (*Xiphias gladius*) decreased by 12 percent and 41 percent, respectively.

During 1981, U.S. vessels fishing for Atlantic tropical tunas operated under a minimum size regulation of 3.2 kg for yellowfin and bigeye tunas (*T. obesus*) with a 3 percent incidental catch allowance by weight per boat landing. Also, U. S. vessels participating in the Atlantic bluefin tuna fishery were subject to size, catch and season limitations.

1.1 Tropical tunas

Catches of tropical tunas (yellowfin, skipjack and bigeye) by U. S. vessels operating in the Atlantic Ocean during 1981 were approximately 7,400 MT, a 25 percent increase over 1980. This substantial increase was due almost entirely to a catch of 2,100 MT of skipjack tuna by small purse seiners (less than 200 MT carrying capacity) fishing primarily for bluefin tuna within 323 km of the U.S. east coast. Otherwise, the overall U.S. Atlantic tropical tuna catch from the more traditional areas remained relatively unchanged from 1980 (Table 2).

During 1981, eight U.S. vessels, all class-6 purse seiners (more than 1,000 MT carrying capacity), fished in the Atlantic primarily for tropical tunas. Four of the eight vessels fished approximately 565 days in the eastern Atlantic and caught 1,472 MT of yellowfin tuna, 2,800 MT skipjack tuna and 128 MT bigeye tuna. Catch rates in the eastern

* Prepared by staff members of the Southwest Fisheries Center, La Jolla, California, and the Southeast Fisheries Center, Miami, Florida.

Atlantic for these U.S. vessels were 2.8 MT yellowfin tuna and 5.0 MT skipjack tuna per day's fishing. These rates are higher by 18 percent and 28 percent, respectively, when compared to those for 1980 (Table 2).

Five of the eight U.S. vessels fished approximately 395 days in the western tropical Atlantic during 1981 and caught 285 MT yellowfin tuna and 448 MT skipjack tuna. Western Atlantic catch rates were 0.7 MT yellowfin tuna and 1.1 MT skipjack tuna per day's fishing.

In 1981 the number of undersized (less than 3.2 kg) Atlantic yellowfin tuna in the landings of the U.S. fleet was approximately 58 percent of the total number landed. This is a 28 percent reduction from 1980. The number of Atlantic bigeye tuna below 3.2 kg in the U.S. fleet's landings was approximately 3 percent of the total, a 40 percent reduction from 1980.

U.S. participation in the Atlantic tropical tuna fishery is estimated to be four seiners in 1982. The projected catch of these vessels is 3,200 MT: 2,000 MT yellowfin tuna, 1,000 MT skipjack tuna, and 200 MT bigeye tuna. This represents a 59 percent decrease from the 1981 catch; increases of 8 percent and 32 percent, respectively, for yellowfin and bigeye tunas and a decrease of 81 percent for skipjack tuna. The skipjack tuna catch by U.S. vessels off the U.S. east coast in 1982 is projected to be 300 MT, an 85 percent decrease from that of 1981.

1.2 *Temperate tunas*

The catch of bluefin tuna by U.S. fisheries operating in the Atlantic totaled 1,530 MT in 1981. The purse seine fishery took 805 MT, while the handline, harpoon, and rod-and-reel fisheries took 285 MT, 109 MT, and 244 MT, respectively (4 MT were from unclassified gears). There was also an incidental catch of 13 MT taken by the longline fishery for swordfish in the northwestern Atlantic and 70 MT by the longline fishery for swordfish in the Gulf of Mexico.

In 1982, an allowable catch of 1,160 MT was established for western Atlantic bluefin tuna. The U.S. share of the allowable catch is 605 MT which the fisheries are expected to take by the last quarter of 1982.

1.3 *Billfishes*

Atlantic billfishes, other than swordfish, are caught by recreational fishermen off the U.S. Atlantic coast. For recent years, the U.S. recreational catch has remained fairly stable. The U.S. swordfish catch is taken primarily by commercial longline vessels whose 1981 preliminary catch was 2,074 MT.

1.4 *Miscellaneous tuna-like species*

Spanish mackerel (*Scomberomorus maculatus*) and king mackerel (*S. cavalla*) are caught in a U.S. fishery centered off Florida. Landings amounted to approximately 2,700 MT and 3,400 MT, respectively, in 1981, representing a 49 percent reduction in landings of Spanish mackerel and a 6 percent increase in king mackerel from 1980.

2. Research activities

Research on Atlantic tunas and tuna-like species in support of the United States' commitment to the International Commission for the Conservation of Atlantic Tunas is conducted at the Miami Laboratory of the Southeast Fisheries Center, and at the La Jolla Laboratory of the Southwest Fisheries Center. During 1981-1982, research continued on stock assessments and fishery evaluations in response to management needs and recommendations expressed by ICCAT's Standing Committee on Research and Statistics (SCRS). Research on Atlantic bluefin tuna and billfishes was conducted at Miami, and research on Atlantic albacore and tropical tunas was carried out at La Jolla.

2.1 *Tropical tunas*

During 1981-1982, U.S. participation in the Atlantic tropical tuna fishery was monitored and biological and fishery data were collected in cooperation with the U.S. tuna industry and various U.S. government officials. In addition, Atlantic tuna imports were sampled for biological information in Puerto Rico. Data collected through these activities were compiled and submitted to ICCAT as required of ICCAT members.

Results from import sampling in 1981 indicate that 79 percent by number of the yellowfin tuna imports were less than 55 cm fork length (or 3.2 kg), and 83 percent of the bigeye tuna imports were less than 55 cm fork length (SCRS/82/54). Sampling for species composition revealed that approximately 8 percent by weight of the mixed yellowfin/bigeye tuna import tonnage sampled consisted of bigeye tuna. No mixing of any significance of skipjack tuna with other tunas was found.

Atlantic tropical tuna research conducted during the year included a production model analysis of Atlantic yellowfin tuna that employs a different approach toward calculating vectors of catch-per-unit-effort, and considers the appropriateness of the different production curves on the basis of current population theory (SCRS/82/51).

A review of the Atlantic tropical tuna fisheries between 1975 and 1980 was conducted which focuses attention on the expansion of the surface fishery during this period (SCRS/82/55). Events affecting fishing patterns and operations subsequent to 1980 were also examined.

An analysis of single set data from the U.S. tropical tuna fleet covering the period 1968-1981 was conducted (SCRS/82/53). Changes in fishing patterns and operations were examined with respect to changes in fishing success.

Research in support of ICCAT's International Skipjack Year Program (ISYP) is continuing. Maturity-fecundity and the feeding behavior of skipjack tuna from the western Atlantic are being investigated. Gonad and stomach samples are being collected from landings in Puerto Rico and Brazil. Gonads are undergoing histological analyses to determine the temporal/spatial distribution of spawning adults, and stomachs are being analyzed for food contents with particular attention being paid to the occurrence and extent of skipjack cannibalism in the western Atlantic. A new approach for stock identification with mitochondria DNA is also being investigated. These research efforts on skipjack are planned for completion and presentation at the 1983 Skipjack Conference. In 1981, 90 ISYP tags were recovered at the U.S. tag recovery station in Puerto Rico.

2.2 Temperate tunas

Research on Atlantic albacore tuna (*T. alalunga*) consisted of an evaluation of the south Atlantic albacore tuna stock through production model analysis and Monte Carlo simulation analysis using updated data from the fisheries. The sensitivity of the results to data accuracy was investigated and the results are presented in SCRS/82/52.

Atlantic bluefin tuna research centered on stock assessment studies and sensitivity analyses of assessment analyses (SCRS/82/66, 69, 71 and 72). This research received special attention during the past year owing to the management measures imposed on the fisheries in the western Atlantic. In addition, surveys were carried out for indexing larval bluefin tuna abundance in the spawning areas of the Gulf of Mexico. A major bilateral sampling of the Gulf was executed by the U.S. and Mexico in May, 1982. Research on age determination of giant bluefin tuna using growth bands on vertebrae and otoliths was also conducted.

In February, 1982, the Miami Laboratory hosted an ICCAT meeting to develop research quotas for bluefin tuna caught in the western Atlantic. Representatives of Japan, Canada, Brazil, and the United States attended. The effects of various management measures were evaluated in preparation for the meeting.

2.3 Billfishes

Billfish research included stock assessment studies on blue marlin (*Makaira nigricans*) and white marlin (*Tetrapturus albidus*) (SCRS/82/67 and 70), and swordfish (SCRS/82/68), and age determination studies on marlins. The age determination research concentrated on the suitability of possible hardparts.

In February, 1982, the Miami Laboratory hosted an international workshop on the ageing of oceanic pelagic fishes - tunas, billfishes, and sharks. The meeting was very well attended and the proceedings are being compiled for publication in 1983.

2.4 Other tunas and tuna-like species

The U.S. National Marine Fisheries Service contracted with a commercial tuna bait-boat to determine the feasibility of developing a fishery for blackfin tuna (*Thunnus atlanticus*) in the Gulf of Mexico. The contract vessel had difficulty catching adequate bait and in locating fishable schools of tuna. Unfortunately, before the survey was completed the vessel sank.

A small amount of research effort was devoted to king and Spanish mackerels in 1981-82. Tagging studies for movements and migrations and collection of fisheries data for stock assessment purposes were the principal research activities. The data from these studies are currently undergoing analyses.

3. Documents submitted to the 1982 SCRS Meeting

AU, D.

Production model analysis of the Atlantic yellowfin tuna (*Thunnus albacares*) fishery.

BARTOO, N. W. and A. L. COAN

Production model analysis of the south Atlantic albacore stock and effects of data accuracy.

BRUNENMEISTER, S. L.

Estimation of effort vectors pertaining to western Atlantic bluefin tuna fisheries and analysis of their effects on the assessment of western Atlantic bluefin tuna stocks.

COAN, A. L. and G. T. SAKAGAWA

An examination of single set data for the U.S. tropical tuna purse seine fleet.

FARBER, M. I. and R. J. CONSER

- a) Swordfish indices of abundance from the Japanese longline fishery data for various areas of the Atlantic Ocean.
- b) An update on the status of stocks of blue marlin and white marlin in the Atlantic Ocean.

FOSTER, T. C.

Size and species compositions of Atlantic tunas from imports landed in Puerto Rico during 1981.

HERRICK, S.

A review of the tropical tuna fishery in the Atlantic Ocean, 1975-1980.

HESTER, F. J.

An assessment of Atlantic bluefin tuna resources: some technical problems with virtual population analysis.

PHARES, P. L. and M. E. CROW

Estimation of starting F values for large fish in the cohort analysis of western Atlantic bluefin tuna.

POWERS, J. E.

The relationship between average size and fishing effort for blue and white marlin in the Atlantic Ocean.

POWERS, J.E., R. J. CONSER, and M. L. PARRACK

An assessment of Atlantic bluefin tuna resources.

ANONYMOUS

Activities carried out by the United States of America for the International Skipjack Year Program.

Table 1. Catch and landing (MT) of Atlantic tunas and tuna-like fishes by American fishermen, 1967-81¹

<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
1981 ⁴	1,530	1,866	54	152	97	5,373	333	2,074	2,748	3,368	200	17,795

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 (MT/day's fishing)	Catch (MT)	Catch rate (MT/day's 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
1981	4	1,472	2.6	2,800	5.0

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.

NATIONAL REPORT OF THE U.S.S.R., 1981-1982

by

ATLANTNIRO

In 1981 U.S.S.R. catches of tunas and tuna-like fishes totaled 13,834 MT, broken down as follows: 2,832 MT bigeye tuna, 541 MT yellowfin tuna, 51 MT albacore, 3,685 MT little tuna, 1,750 MT skipjack, 407 MT frigate tuna, 40 MT swordfish, 37 MT sailfish, 2 MT marlin, and 4,559 MT bonito. In the first half of the year the total catch of tunas and swordfish amounted to 4,463 MT. The total catch for 1982 is expected to be at the 1981 level.

Tunas were taken in the east equatorial Atlantic by longline, purse seine and surface fishing gears. Purse seine catches increased and surface fishery catches decreased, as compared to 1980. Longline catches remained at the same level.

Scientific research centered on the biology of bigeye and yellowfin tunas, swordfish and skipjack, and the conditions involved in forming their commercial aggregations. This research was carried out within the framework of ICCAT.

REPORT ON THE MOROCCAN TUNA FISHERY, 1980-1981

1. Coastal fishery

Tuna fishing in Morocco is carried out by coastal purse seiners which have an average size of 50 GRT.

The major species caught, either alone or mixed with other pelagic species, are sardines and mackerels.

The total catch of this fleet landed in 1981 at Moroccan ports was 3,500 MT.

The year 1980 was an exceptional year for skipjack when catches and landings by the Moroccan coastal purse seiners reached 2,897 MT. Other species caught included bluefin, bonito, frigate tuna, Atlantic little tuna, plain bonito and swordfish.

Catches of these species during the last three years are shown in the table below:

<i>Species</i>	<i>Coastal Tuna Fishery, 1979-1981</i>			
	<i>Code</i>	<i>1979</i>	<i>1980</i>	<i>1981</i>
Bluefin	BFT	196	155	107
Bonito	BON	198	305	786
Frigate tuna	FRI	707	716	1,278
Skipjack	SKJ	192	2,897	156
Swordfish	SWO	208	136	125
Atlantic little tuna	LTA	189	16	80
Plain bonito	BOP	373	596	968
Total		2,163	4,753	3,500

2. Tropical tuna fishery

a) Tuna fleet

The present Moroccan tuna fleet is comprised of the following units:

Original report in French.

<i>Vessel</i>	<i>Type of vessel</i>	<i>Capacity (MT)</i>	<i>Power</i>
Dauphin	Freezer purse seiner	383	1,050 HP
Marsoin	" " "	384	1,050 HP
Marlin	" " "	1,105	3,000 HP
Germon	" " "	1,386	4,400 HP

b) Catches

The tropical purse seiners, which fish in the Gulf of Guinea and which are based at Dakar and Abidjan, landed 7,388 MT during 1981. The catch is comprised essentially of yellowfin and skipjack.

3. Research

Morocco undertook a skipjack sampling program in 1981 with ICCAT financing. Unfortunately, due to very low skipjack catches during 1981, the program did not achieve the results expected, as was reported in 1982.

Skipjack catches were low again in 1982 which has not allowed us to carry out the sampling as planned. Biological analysis (gonads, dorsal fins) was carried out by the laboratory of the "Centre de Recherche Océanographique", Dakar-Thiaroye.