INTERNATIONAL COMMISSION
for the
CONSERVATION of ATLANTIC TUNAS

R E P O R T
for biennial period, 1992-93
PART II (1993)
English version

MADRID, SPAIN 1994

INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

Contracting Parties (as of December 31, 1993)

Angola, Benin, Brazil, Canada, Cape Verde, Côte d'Ivoire, Equatorial Guinea, France, Gabon, Ghana, Japan, Republic of Korea, Morocco, Portugal, Republic of Guinea, Russia, Sao Tomé & Principe, South Africa, Spain, United States, Uruguay, Venezuela.

Chairman of Commission

Dr. A. RIBEIRO LIMA, Portugal

First Vice-Chairman of Commission

Mr. K. SHIMA, Japan

Second Vice-Chairman of Commission

Mr. L. G. PAMBO, Gabon

Panel Membership (as of December 31, 1993)

Panel	Contracting Parties	Chairman
1	Angola, Brazil, Canada, Cape Verde, France, Gabon, Ghana, Côte d'Ivoire, Japan, Republic of Korea, Morocco, Portugal, Russia, Sao Tomé & Principe, Spain, United States, Venezuela.	Côte d'Ivoire
2	Canada, France, Japan, Republic of Korea, Morocco, Portugal, Spain, United States.	Morocco
3	Brazil, Japan, South Africa, Spain, United States.	United States
4	Angola, Canada, France, Japan, Republic of Korea, Portugal, Russia, Spain, United States, Venezuela.	Japan (from November 12, 1993)

Council

No election was conducted for the 1994-95 biennial period.

Standing Committees

Standing Committees:	Chairman
Committee on Finance and Administration (STACFAD)	Mr. D. SILVESTRE, France
Committee on Research and Statistics (SCRS)	Dr. Z. SUZUKI, Japan (from November 12, 1993)
Infractions Committee	Mr. A. J. PENNEY, South Africa
Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures (PWG)	Mr. B. S. HALLMAN, United States

Secretariat

Príncipe de Vergara, 17, 28001 Madrid (Spain)
Executive Secretary: Dr. ANTONIO FERNÁNDEZ
Assistant Executive Secretary: Dr. PETER M. MIYAKE

FOREWORD

The Chairman of the International Commission for the Conservation of Atlantic Tunas presents his compliments to the Contracting Parties of the International Convention for the Conservation of Atlantic Tunas (signed in Rio de Janeiro, May 14, 1966), as well as to the Delegates and Advisers that represent said Contracting Parties, and has the honor to transmit to them the ***"Report for the Biennial Period, 1992-93, Part II (1993)"***, which describes the activities of the Commission during the second half of said biennial period.

This volume contains the reports of the Thirteenth Regular Meeting of the Commission, held in Madrid, in November, 1993, and the reports of all the meetings of the Panels, Standing Committees and Sub-Committees. It also includes a summary of the activities of the Secretariat and a series of National Reports of the Contracting Parties of the Commission, relative to their activities in tuna and tuna-like fisheries in the Convention Area.

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

Dr. A. Ribeiro Lima
Commission Chairman

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CHAPTER I

SECRETARIAT REPORTS

ADMINISTRATIVE REPORT 1992
COM/93/9 (Revised)*

1. Contracting Parties of the Commission

The Commission is currently comprised of 22 Contracting Parties: Angola, Benin, Brazil, Canada, Cape Verde, Côte d'Ivoire, Equatorial Guinea, France, Gabon, Ghana, Japan, Republic of Guinea, Republic of Korea, Morocco, Portugal, Russia, Sao Tomé & Principe, South Africa, Spain, Uruguay, United States, and Venezuela.

2. Bodies of the Commission

Since November 15, 1991, the officers of the Commission are as follows:

Chairman: Dr. A. Ribeiro Lima (Portugal)
First Vice-Chairman: Mr. K. Shima (Japan)
Second Vice-Chairman: Mr. L. G. Pambo (Gabon)

The Panels are comprised as follows:

Panel	*Contracting Parties*	*Chairman*
1	Angola, Brazil, Cape Verde, France, Gabon, Ghana, Côte d'Ivoire, Japan, Korea, Morocco, Portugal, Russia, Sao Tomé & Principe, Spain, United States, Venezuela	Côte d'Ivoire
2	Canada, France, Japan, Morocco, Korea, Morocco, Portugal, Spain, United States	Morocco
3	Brazil, Japan, South Africa, Spain, United States	United States
4	Angola, Canada, France, Japan, Korea, Portugal, Russia, Spain, United States, Venezuela	Russia (Russia, up to Nov. 1993)

*The Administrative Report presented at the 1993 Commission Meeting was updated to December 31, 1993.

Other bodies of the Commission are as follows:

a) Standing Committee on Finance Administration (STACFAD)
Chairman: Mr. D. Silvestre (France)

b) Standing Committee on Research and Statistics (SCRS)
Chairman: Dr. Z. Suzuki (Japan)
(Dr. J. L. Cort [Spain] up to Nov. 1993)

b.1 Sub-Committee on Statistics
Convener: Dr. S. Turner (United States)

b.2 Sub-Committee on Environment
Convener: Mr. J. Pereira (Portugal)

c) Infractions Committee
Chairman: Mr. A. J. Penney (South Africa)

d) Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures
Chairman: Mr. B. Hallman (United States)

3. Ratification or acceptance of the Paris Protocol to the ICCAT Convention

The Legal Department of FAO notified ICCAT that on January 27, 1993, the Government of Côte d'Ivoire has deposited an instrument of acceptance of the Protocol to amend the ICCAT Convention, which was adopted in Paris on July 10, 1984.

The FAO Legal Department notified ICCAT that it had received, on September 6, 1993, an instrument of acceptance of the Paris Protocol from the Government of the Republic of Guinea.

In accordance with Article III, the Protocol will enter into effect when all the Contracting Parties to the ICCAT Convention have deposited, with the Director General of FAO, instruments of ratification, approval or acceptance. The entry into force will be the thirtieth day following the deposit of the last instrument.

Of the 22 countries that are currently Contracting Parties to ICCAT, 19 countries have ratified or accepted the aforementioned Protocol. Cuba and Senegal, which are no longer Contracting Parties, had also accepted the Protocol earlier. Consequently, for the Paris Protocol to enter into effect, the ratification or acceptance by the governments of four Contracting Parties is still pending (Benin, Gabon and Morocco).

The Chairman of the Commission sent a letter on February 9, 1993, to the governments of these three countries, reminding them of the discussions on this matter which took place in November, 1992, and urging that they accelerate, inasmuch as possible, the procedures of ratification or acceptance of the Protocol. The Commission Chairman sent another letter on May 31, 1993, to the same governments, emphasizing the urgency of this matter and announcing that at the 1993 Commission Meeting in November this matter would be discussed in detail, in order to arrive at a definitive solution that would permit integration of the European Community as an ICCAT Contracting Party.

The Legal Department of FAO notified the Commission that it had received from the Government of Benin, on December 20, 1993, an instrument of withdrawal from ICCAT, which will be effective on December 31, 1994, in accordance with the provisions of Article XII, paragraph 2, of the Convention.

4. Ratification or acceptance of the Madrid Protocol to the ICCAT Convention

On June 5, 1993, upon completion of one year since the adoption of the Protocol to amend Article X, paragraph 2, of the Convention, the Chairman of ICCAT wrote to the Heads of Delegations of the Contracting Parties pointing out, with concern, that up to the aforementioned date, none of the Contracting Parties classified as developed countries with a market economy (i.e., Group A: Canada, France, Japan, Portugal, South Africa, Spain, and the United States of America) had deposited with the Director General of FAO an instrument of ratification, approval, or acceptance. However, and on a positive note, the Commission Chairman informed the Head Delegates that none of the remaining Contracting Parties had requested, during the six-month period established, (which ended on January 8, 1993) the suspension of the entry into force of said Protocol.

On June 11, 1993, the Legal Department of FAO notified ICCAT that it had received, on that same date, an instrument of acceptance of the Madrid Protocol from the Republic of Korea.

On October 4, 1993, the Legal Department of FAO notified ICCAT of having received, on September 22,

1993, an instrument of ratification of the Madrid Protocol from Canada, who signed the Protocol on that same date.

On October 4, 1993, the Legal Department of FAO notified ICCAT that it had received, on that same date, a instrument of acceptance of the Madrid Protocol from the Republic of South Africa.

The Spanish authorities have notified the Secretariat that the Madrid Protocol was published in the "Boletín Oficial de las Cortes Generales" on July 30, 1993, and is now in the process of ratification.

In order to apply the new contribution scheme established in the Protocol during the 1994-1995 fiscal period, the Protocol should enter into force during 1993, which would require, prior to September 30, 1993, the deposit of instruments of ratification, approval or acceptance by three-quarters of the Contracting Parties (currently 17 countries), including all those countries classified as developed countries with a market economy.

The Commission, at its first meeting after the entry into force of the Protocol, should introduce in its Financial Regulations and Rules of Procedure the pertinent modifications to the texts (see Document COM/93/28).

5. ICCAT Regulations/Port Inspection

On January 25, 1993, the Secretariat transmitted to the Contracting Parties the Text of the "Recommendation by ICCAT Concerning the ICCAT Bluefin Tuna Statistical Document Program", which entered into effect on July 25, 1993, since no objections were received. This Program began to be applied on September 1, 1993.

In Document COM/93/25, the Secretariat presented updated information, in accordance with the official notifications received, on the regulation schemes in effect on the four species regulated by ICCAT (bluefin, yellowfin, bigeye and swordfish), and included an indication of the historical development of these regulations adopted by the Commission.

Document COM/93/26 provided updated information on the ICCAT Port Inspection Scheme, including the list of authorized Inspectors and Correspondents.

Further to the proposals approved at the meeting of the Infractions Committee, which were reiterated by the Commission at its Eighth Special Meeting (Madrid, November 1992), the Secretariat distributed to the Heads of Delegations, on April 4, 1993, the Draft Guidelines for the national reports concerning the application of the ICCAT management recommendations. This draft was prepared by Mr. A. J. Penney, the Chairman of the Infractions Committee, as a preliminary basis for discussion.

6. Meetings organized by ICCAT

6.1 ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna

The meeting of this Working Group, approved by the Commission in November, 1992, was held on June 3-9, 1993, at the "Centro Oceanográfico de Canarias" of the Spanish Institute of Oceanography (IEO), in Tenerife (Spain), at the invitation of the Government of Spain. Dr. A. Fonteneau served as Convener of the Meting, at which 10 ICCAT Contracting Parties (Angola, France, Gabon, Japan, Portugal, Russia, Sao Tomé & Principe, Spain, the United States, and Venezuela) and two observers (Senegal and the Caribbean Community and Common Market-CARICOM) participated. The Assistant Executive Secretary and the Systems Analyst attended from the ICCAT Secretariat. The IEO also financed the participation of the Systems Analyst.

6.2 ICCAT Workshop on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age

The Workshop was held on July 6-10, 1993, at the Biological Station of the Department of Fisheries & Oceans of Canada, in St. Andrews, New Brunswick, Canada, at the invitation of the Government of Canada. The Workshop's Convener, Dr. J. Porter, presided over the meeting. Participants from Canada, Japan, Spain, and the United States attended, as well as an observer from IATTC. The ICCAT Secretariat was represented by the Assistant Executive Secretary.

The Workshop examined the methodologies used by the ICCAT scientists to convert catch-at-size tables to catch-at-age tables, for bluefin tuna, yellowfin tuna, albacore and swordfish. the advantages of the "age slicing" method, the MULTIFAN approach, the Kimura-Chikuni method, and age-key analyses were discussed together with the type of catch-at-size data available for various species. Growth equations for each species were examined, as well as the possible differences in growth, by sex.

In order to compare the applications of several methods, the Workshop decided to create some simulated catch-at-size data, using various assumptions on growth and recruitment levels. The Workshop also decided to use the haddock catch-at-size data as a test case, since a considerable amount of hard part samples have been read annually and age-key tables have been created for these species. Some preliminary analyses were made using these data, but the Workshop decided that these studies should be continued. Another Workshop was proposed by the Group for early 1994.

The Workshop participants recognized that considerable progress had been made in their studies of these methodologies. The Workshop Report was adopted by the Group (Document COM-SCRS/93/16).

6.3 Meetings of the Species Groups

These sessions were held at the Commission Headquarters, and the corresponding reports have been presented to the SCRS. The dates of the 1993 meetings were as follows:

September 24 to October 1: West Atlantic Bluefin Tuna Stock Assessment Session

October 25 to October 29: Swordfish Species Group

October 27 to October 29: Other Species Groups

6.4 Plenary Sessions of the Standing Committee on Research and Statistics (SCRS)

The Report of this Committee, whose sessions were held at the Hotel Pintor (Madrid) from November 1 to November 5, 1993, was presented to the Commission by Dr. J. L. Cort (Spain), the Chairman of the SCRS.

7. Meetings at which ICCAT was represented

7.1 FAO Informal ad hoc Meeting of Experts to Draft an Agreement on the Register of Fishing Vessels and Conditions for the Allocation of a Flag

The Assistant Executive Secretary participated in this Meeting of Experts, which was convened by FAO and held in Rome, from February 1 to 5, 1993. The Group was comprised of 12 experts.

The Group developed a proposal for an "Agreement on the Reflagging of Vessels Fishing on the High Seas to Promote Compliance with Internationally Agreed Conservation and Management Measures", which was submitted to the FAO Committee on Fisheries in March, 1993. FAO financed the participation of the ICCAT Assistant Executive Secretary.

7.2 Coordinating Working Party on Atlantic Fisheries Statistics (CWP)

At its 8th Special Meeting (November, 1992), the Commission approved the proposed of sending a formal invitation from ICCAT to host, in Madrid, the 16th Session of the Coordinating Working Party on Atlantic Fisheries Statistics (CWP), from July 6-12, 1994.

On March 12, 1993, the Executive Secretary wrote to the Secretary of CWP formalizing this invitation, and requested him to transmit it to the members of the CWP at the time of the *ad hoc* inter-agency Consultation, which was held in Dublin, September 21 and 22, 1993, and at which the ICCAT Secretariat could not be represented.

ICCAT's contribution to the 16th Session of the CWP will consist of providing an adequate meeting room and Secretariat support during the session.

7.3 FAO Committee on Fisheries

At the invitation of the Director General of FAO, the Executive Secretary attended, as an observer, at the 20th Session of the FAO Committee on Fisheries (Rome, March 15-19, 1993), and participated in the Working Group which this Committee established, to discuss the Draft of the "Agreement on the Reflagging of Vessels Fishing on the High Seas to Promote Compliance with Internationally Agreed Conservation and Management Measures", prepared by FAO, with the collaboration of the aforementioned Group of Experts, in which the Assistant Executive Secretary participated.

Among other matters, the Committee took due note of the progress made by this Working Group, even though it could not reach a consensus on the text of such an Agreement, and decided that this should be

considered a matter of priority. The Committee reiterated that the reflagging issue should form part of the subjects covered by the proposed Code of Conduct on Responsible Fishing, and emphasized the importance of developing other aspects of this Code of Conduct, such as fishing operations, management of the resources, fair commercial practices, etc.

The Committee insisted that the management of high seas fisheries should be carried out, in as much as possible, through the regional and sub-regional organizations and through agreements within the framework of UNCLOS. It emphasized the importance of operations for monitoring, surveillance and control carried out for the management of high seas fisheries, and expressed support for the development of national registrations of vessels capable of carrying out such activities.

7.4 EEC Seminar on the Analysis of Technical Measures for the Management of Stocks in the Mediterranean Sea

The Assistant Executive Secretary participated in this Seminar, organized by the Fisheries Directorate of the Commission of the EEC, held in Palma de Mallorca (Spain), May 17-19, 1993.

The Representative of the EEC explained to the participants the new regulatory measures which the Community is trying to introduce for the Mediterranean fisheries, and requested the collaboration of the non-EEC Member States that fish in this area.

The Assistant Executive Secretary gave a presentation on the overall status of highly-migratory species in the Mediterranean, the current status of the ICCAT data base, and the state of the assessments on these stocks. He also pointed out the problems relative to the collection of data on the Mediterranean fisheries and he informed the Group of the management measures adopted by ICCAT. The expenses for the participation of the Assistant Executive Secretary were borne by the EEC, through the "Centro de Baleares" of the IEO.

7.5 51st Meeting of the Inter-American Tropical Tuna Commission (IATTC)

Since it was impossible to correspond to the invitation sent by the Director of IATTC for the ICCAT Secretariat to attend, as an observer, the 51st Meeting of IATTC (Vanuatu, June 8-10, 1993), representation of ICCAT was granted to Mr. Javier Ariz, a biologist of the Spanish Institute of Oceanography in Tenerife, who attended this meeting as part of the Spanish Delegation. Mr. Ariz's report presented his report in Document COM-SCRS/93/24.

7.6 United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks

The Assistant Executive Secretary received instructions, prior to his return from the St. Andrews (Canada) Workshop, to participate, as an observer, at the first sessions of the U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, July 12-30, 1993).

In response to a request from the U.N. Under Secretary-General for Legal Affairs, the Secretariat had transmitted updated information on the state of the stocks of species under ICCAT's mandate, as well as the latest reports of Panels 1 to 4.

At the close of the Conference, a "Document from the Chairman" summarized the discussions, and will serve as a base for another session, in March, 1994, whose objective is to reach a consensus on the contents of the Final Document (see Document COM-SCRS/93/20).

7.7 Annual Meeting of the Indo-Pacific Tuna Program (ITPT)

Dr. J. L. Cort, Chairman of the Standing Committee on Research and Statistics (SCRS) represented ICCAT, as an observer, at the annual meeting of the ITPT, which was held in Seychelles in October, 1993, and presented the results of this meeting to the SCRS.

8. Coordination of research and statistics

The "Report on Statistics and Coordination of Research in 1992", included later in this Biennial Report, summarizes the Secretariat's activities during 1993 as regards the coordination of research and biostatistical activities, relative to tunas and tuna-like species in the Convention Area.

9. ICCAT prizes for tag recoveries

The annual ICCAT lottery to award prizes to participants in the ICCAT International Cooperative Tagging Program of Tunas and Tuna-like Species was held at the Commission Headquarters on June 25, 1993. A total of three US$ 500 prizes were awarded for the drawing, corresponding to the following three groups:

- Tropical tunas (268 recovered tags entered in the drawing)
- Temperate tunas (184 tags were entered)
- Billfishes (82 tags were entered)

The three prizes corresponded to fishermen from the United States (tropical tunas), Spain (temperate tunas) and Côte d'Ivoire (billfishes).

10. Cooperation with other countries and organizations

As in previous years, the Secretariat has maintained frequent contact, mainly by correspondence, with non-ICCAT member countries that are interested in tuna and tuna-like fisheries, and has exchanged information and statistical data on catch and effort, and transmitted invitations to participate in meetings organized by ICCAT, as well information on other matters relative to the Commission's activities. Among the countries that have been collaborating, at least partially, in the objectives of ICCAT, the following are noteworthy: Algeria, Argentina, Barbados, Bermuda, Croatia, Cuba, Cyprus, Dominican Republic, Greece, Italy, Libya, Malta, Mexico, St. Helena, St. Lucia, Senegal, Taiwan, Tunisia, Turkey, and the United Kingdom.

In 1993, several non-member countries demonstrated a particular interest in knowing more about ICCAT's activities, with a view to possible membership in the Commission, specifically: Argentina, Bahamas, Barbados, Cameroon, Congo, Libya, Mexico, Namibia, Senegal and Turkey.

The exchange of information and the cooperation of the fishing authorities of Taiwan continues being very positive. On June 2, 1993, the ICCAT Secretariat received a check for US$ 10,000, from the "Taiwan Deep Sea Tuna Boatowners and Exporters Association", to be applied towards improving the statistics and research activities of the Commission.

Throughout the year, information relative to the following subjects was sent to the Governments of numerous non-Contracting Parties and intergovernmental organizations:

- Recommendation by ICCAT Concerning the ICCAT Bluefin Tuna Statistical Document Program, which entered into effect on July 25, 1993
- ICCAT Resolution to Establish a Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures
- Resolution by ICCAT Regarding the Reflagging of Vessels to Avoid Compliance with Internationally Agreed Conservation and Management Measures for Living Marine Resources
- Invitation to participate, as observers, in the ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna
- Invitation to participate, as observers, in the ICCAT Workshop on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age
- The need to provide statistics on the catch and effort of tunas
- ICCAT International Cooperative Tagging Program of Tunas and Tuna-like Species
- Questionnaire on tuna by-catches (sharks, etc.)
- Invitation to participate, as observers, in the annual meetings of ICCAT and its auxiliary bodies

Document COM/93/27 provided more details on the above activities.

11. Publications

In the period from January to December, 1993, the Secretariat distributed the following publications:

Publication	*No. of Pages*	*No. of Copies*
Statistical Bulletin, Vol. 22	191	500
Collective Volume of Scientific Papers, Vol. XL (1)	487	350
Collective Volume of Scientific Papers, Vol. XL (2)	516	350
Data Record, Vol. 34	512	350
Biennial Report, 1992-93, Part I (English)	375	450
Biennial Report, 1992-93, Part I (French)	400	250
Biennial Report, 1992-93, Part I (Spanish)	374	275

In order to cut costs, all these above publications were prepared, reproduced, and published at the Secretariat, except for the covers and the binding. Distribution of the "Collective Volume" series and the "Data Record" series is limited to scientists and institutions directly involved in research on tunas and tuna-like species.

On the other hand, two issues of the ICCAT "NEWSLETTER" was published, in July and in December, 1993. The number of copies of the NEWSLETTER is about 1,000.

For reasons of economy, a study is underway to reduce to a minimum the number of copies of each publication, and distribution is usually by surface mail with reduced mail rates.

In accordance with that agreed by the Commission in November, 1992, the publication containing the results of the Second ICCAT Billfish Workshop (Miami, July, 1992), will be done by enhanced printing, since this volume will be dedicated to the previous Executive Secretary, Dr. Olegario Rodríguez Martín. Work on this publication is well advanced and it is hoped that the volume will be ready for publication in early 1994. The ICCAT Billfish Research Program has contributed towards the expenses of this volume.

12. Secretariat staff

Faced with the circumstances of the voluntary resignation of two members of the Secretariat staff (General Services) in 1991 and 1992, and with the hope that the financial situation of the Commission improves over the short-term through the receipt of member country contributions or the entry into force of the new scheme to calculate the contributions established by the Madrid Protocol (June, 1992), it was considered whether it was absolutely necessary to contract staff to fill the two vacant positions. The difficulties of cash flow has necessitated a temporary freeze on hiring, in order to guarantee the normal financing of the Secretariat's essential activities. Consequently, the necessary internal adjustments had been made to absorb the work of these two vacancies, and the activity and productivity of other members of the staff have been enhanced. These two positions have not been eliminated, but rehiring has been postponed given the current circumstances.

Therefore, as of December 31, 1993, the Secretariat staff was comprised as follows: Executive Secretary (D-1), Assistant Executive Secretary (P-5); Systems Analyst (P-2), five multi-lingual secretaries (three GS-6 and two GS-5), a statistical secretary (GS-4), a Clerk (GS-1), and four locally-contracted staff.

1993 FINANCIAL REPORT
COM/93/10 (Revised)*

1. AUDITOR'S REPORT - FOR FISCAL YEAR 1992

The Auditor examined the books and accounts of the Commission to the end of Fiscal Year 1992. In accordance with Regulations 9-3 and 12-7 of the Financial Regulations, and following a recommendation of the Council at its Second Regular Meeting, the Executive Secretary transmitted a copy of the Auditor's Report to the governments of all the Contracting Parties in April, 1993. The General Balance at the close of Fiscal Year 1992 (see attached *Statement 1*), showed a balance in Cash and Bank of 19,865.154 pesetas, corresponding to the available in the Working Capital Fund (11,728,190 pesetas), available in the Albacore Research Program Funds (1,363,609 pesetas), and the advances on future contributions at the close of Fiscal Year 1992, from Japan, Côte d'Ivoire, and Gabon (6,773,355 pesetas).

At the close of Fiscal Year 1992 there were accumulated pending contributions (corresponding to 1992 and previous years) that amounted to 99,345,289 pesetas, equivalent to 78.9 % of the 1992 total budget.

For 1992, the Commission changed the base currency of the budget from United States dollars to convertible pesetas, to avoid the effect of the fluctuations in the currency exchange rates, which were uncontrollable and difficult to foresee. The accounting records for Fiscal Year 1992 were maintained in pesetas. The differences in exchange rates resulting from those accounts which originated in U.S. dollars were adjusted at the close of the Fiscal Year based on the official U.N. exchange rate of 115 pesetas/1 US$, as of December, 1992.

In accordance with the recommendation made by the Working Group on Financial and Administration at its meeting held in Madrid on November 29-30 and December 1, 1971: "It was considered that the Working Capital Fund ... should be maintained at a level of approximately 15 % of the total annual budget". This recommendation was adopted by the Commission. At the close of Fiscal Year 1992, this percentage corresponded to 18,876,000 pesetas. However, the real balance was 11,728,190 pesetas, or 9.3 % of the annual budget.

2. FINANCIAL STATUS OF THE SECOND HALF OF THE BIENNIAL BUDGET - FISCAL YEAR 1993

Continuing with the accounting practices established for 1992, the financial operations of the Commission corresponding to Fiscal Year 1993 were maintained in pesetas. The accounting entries which originate in U.S. dollars are also registered in pesetas, applying the official monthly exchange rates facilitated by the United Nations.

The total regular Budget for 1993 (133,172,000 pesetas) was approved by the Commission at its Eighth Special Meeting (Madrid, November 1992). (See Annex 13 to the Biennial Report, 1992-93, Part I, 1992.) The General Balance Sheet (attached as *Statement 2*) reflects the assets and liabilities at the close of Fiscal Year 1993, which are shown in detail in **Tables 1** to **7**.

Table 1 shows the status of the contributions of each of the Contracting Parties at the close of Fiscal Year 1993.

Of the total budget approved for 1993, income received from contributions amounted to 101,519,509 pesetas. Only 10 of the 22 Contracting Parties have paid their total contributions corresponding to 1993 (Angola, Canada, Côte d'Ivoire, France, Japan, Korea, Portugal, South Africa, Spain, and the United States). The Russian Federation paid 99.8% of its 1993 contribution, and Uruguay has paid 92 % of its contribution

*The Financial Report presented at the 1993 Commission Meeting was updated to the close of Fiscal Year 1993.

for the same year; the part of the 1993 contribution of Gabon (31.5%) was applied from that country's 1992 positive balance.

Consequently, 9 Contracting Parties (Benin, Brazil, Cape Verde, Equatorial Guinea, Ghana, Morocco, Republic of Guinea, Sao Tomé & Principe, and Venezuela) have not paid any amount towards their 1993 contributions, and 8 of these countries also have balances pending payment from 1992 or before.

The contributions to the regular 1993 budget that are pending payment by the Contracting Parties amounted to 31,652,492 pesetas, which represents 23.7 % of the total budget. This figure is indicative of the difficulties of the Contracting Parties to honor their financial commitments to the Commission. What is even more indicative is the accumulated debt owed to the Commission, which amounted to 113,535,253 pesetas at the close of Fiscal Year 1993.

Table 2 shows the budgetary expenditures (to the close of Fiscal Year 1993), broken down by budget chapters. For some chapters, the total expenses have necessarily been less than the amount budgeted, due to the restrictions imposed by the insufficiency of cash flow.

Following herewith are some general comments by budget chapter:

Chapter 1 - Salaries: The salaries, pension and social security for 11 members of the ICCAT Secretariat staff are charged to this chapter. Faced with the voluntary resignation of one General Services staff member, and hoping that the financial situation of the Commission improves over the short-term (through the receipt of member country contributions or with the entry into force of the Madrid Protocol), it was decided to impose a temporary freeze on hiring someone to fill this position (see COM/93/11).

The total amount budgeted for Chapter 1 amounted to 71,417,000 pesetas, whereas real expenses amounted to 70,549,646 pesetas. The latter amount includes the reclassification of the Executive Secretary to Step VII of the D-1 category, effective March 1, 1993, according to the terms of his contract, the updating of the remuneration schemes to those currently in effect for staff classified in the United Nations categories, the monthly compensations for the successive increases in the US$/peseta exchange rate in 1993, and the updating (retroactive to November 1, 1990) of the pensionable remuneration base for staff in the Director and Professional U.N. categories. It also includes the adjustment of the salaries and social security of three locally-contracted staff.

Chapter 2 - Travel: Expenses pertaining the Executive Secretary's participation in the Committee on Fisheries of the Food and Agriculture Organization of the United Nations (FAO) (Rome, March 1993), per diem expenses corresponding to the Assistant Executive Secretary's participation in the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, July 1993), and home leave expenses for the Assistant Executive Secretary and the Systems Analyst.

Chapter 3 - Commission Meeting: Expenditures remained within the amount budgeted.

Chapter 4 - Publications: The costs for the Commission publications listed in the Administrative Report (COM/93/11) were charged to this budget chapter. All the work on these publications, except for the covers and binding, was done by the Secretariat staff.

In 1993, a new copy printer was purchased to replace an outdated offset machine in order to improve the quality of the copies.

In order to contribute towards the costs of publication of the Report of the Second Billfish Workshop (Miami, July, 1992), in an enhanced form, extrabudgetary funds amounting to US$ 8,000 (i.e., 1,064,000 pesetas) have been received from Billfish Program funds.

Chapter 5 - Office Equipment: Expenses charged to this chapter include the acquisition of a filing cabinet, as well as the annual leasing cost of a new photocopier (four-year leasing contract, with option to buy), to replace a machine that had been in use for 10 years.

Chapter 6 - Operating Expenses: This chapter shows the expenses incurred in the normal operation of the Secretariat offices.

Chapter 7 - Miscellaneous: This chapter includes various expenses of a minor nature. Also charged to this chapter was the cost of a Rome/Madrid/Rome airline ticket for the FAO Legal Advisor, who participated in the Conference of Plenipotentiaries in June, 1992, for which FAO presented the invoice in May, 1993.

Chapter 8 - Coordination of Statistics and Research

a) Salaries: Salaries, pension and social security for three Secretariat staff members are charged to this sub-chapter.

Whereas the amount budgeted to Chapter 8.a amounted to 20,748,000 pesetas, the real expenses for 1993 amounted to 16,347,040 pesetas. The observations made under Chapter 1 corresponding to the U.N. classified staff and locally-contracted staff, also apply to this sub-chapter.

b) Travel to improve statistics and research: Trip expenses for the Secretariat's participation in the following meetings were charged to this sub-chapter: ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna (Tenerife, Spain - June, 1993), and the ICCAT Workshop on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age (St. Andrews, Canada - July, 1993).

It should be pointed out that 79% of the trip expenses and per diem for the participation of the ICCAT Systems Analyst at the above-mentioned Yellowfin Working Group meeting were paid by the Spanish Institute of Oceanography.

c) Port Sampling: No expenses were made, due to the insufficiency of cash flow.

d) Biostatistical Work: Two prizes for the ICCAT tuna tagging lottery were charged to this sub-chapter.

e) ComputerEquipment: Following the recommendations made by the Sub-Committee on Statistics, the Secretariat purchased a 486-33 Mhz personal computer, a laser printer, as well as two automatic switch boxes for the laser printers, additional memory for one laser printer, and a Spanish dictionary program to complement existing word-processing software.

f) Data Processing: The major part of the expenditures charged to this sub-chapter correspond to the computer maintenance contracts, including expenses for the electronic mail system used for some correspondence of a scientific and statistical nature.

g) Scientific Meetings at the Headquarters: Expenditures remained within the amount budgeted for this purpose.

h) Miscellaneous: No expenses were charged to this sub-chapter in 1993.

Table 3 shows the income received by the Commission during Fiscal Year 1993, which amounted to 126,168,133 pesetas, from member country contributions paid in 1993 towards the 1993 budget, from contributions paid in 1993 towards previous budgets, other income (extra-budgetary) received in 1993, and from advances on future contributions received in 1993.

The extra-budgetary income received in 1993 included: (a) 524,000 pesetas from observers at ICCAT meetings, i.e., Sweden (for 1992) Bermuda, Mexico and the European Community; (b) US$ 10,000 (1,250,000 pesetas) received from the Taiwan Deep Sea Tuna Boatowners and Exporters Association; (c) US$ 2,000 (260,000 pesetas) foreseen in the Billfish Research Program Budget and applicable to the Secretariat's operating expenses concerning this Program; (d) US$ 8,000 (1,064,000 pesetas) from the Billfish Program to contribute towards the cost of the enhanced Billfish Workshop publication; (e) bank interest, refund of Value Added Tax, reimbursement for publications, the difference in currency exchange (3,073,381 pesetas), and the return of unused funds from the Albacore Research Program (118,909 pesetas).

Table 4 presents the composition and balance of the Working Capital Fund (to the close of Fiscal Year 1993). The Fund showed a positive balance of 25,972,093 pesetas.

Table 5 shows a summary of pending contributions (113,535,253 pesetas) as well as their origin, by year, at the close of Fiscal Year 1993.

Table 6 shows cash flow during Fiscal Year 1993, as regards generated income and expenses.

Table 7, the status of Cash and Bank (at the close of Fiscal Year 1993), shows a balance of 30,728,596 pesetas, which corresponds to the available in the Working Capital Fund and the Albacore Research Program, as well as advances towards future contributions.

3. ALBACORE RESEARCH PROGRAM

At the 1990 Commission meeting, it was decided that the balance in sub-chapter 8-i (Albacore Research Program), which amounted to US$ 15,052.51, would be used exclusively for this Program. At the start of Fiscal Year 1993, there was a balance of 1,363,609 pesetas

available for this Program. Since unused funds amounting to 118,909 pesetas, from the on-board observer activity of this Program, were returned, this sub-chapter showed a balance of 1,482,518 pesetas (at the close of Fiscal Year 1993).

4. PROGRAM FOR ENHANCED RESEARCH FOR BILLFISH

In 1987, a special fund (in U.S. dollars) was established to administer the Program for Enhanced Research for Billfish. For accounting purposes, the Program funds are shown in pesetas within the General Balance of the Commission, in accordance with accepted accounting procedures, although the deposits and expenditures are made in U.S. dollars. The status of these funds during Fiscal Year 1993 was as follows:

Balance start of Fiscal Year 1993	US$ 6,005.04
Deposits to the close of FY 1993	75,472.00
	US$ 81,477.04
Expenditures (including bank charges) to the close of FY 1993	36,852.23
Balance (at the close of FY 1993)	US$ 44,624.81

The balance of US$ 44,624.81 was adjusted at the close of the Fiscal Year to pesetas, based on the official exchange rate of the United Nations of 138 pesetas/1 US$, in December, 1993.

5. BLUEFIN YEAR PROGRAM (BYP)

This Program was approved by the Commission in 1991 and started in 1992. However, the Commission did not budget funds for this Program in 1993, nor was a special fund established, as was the case for the Billfish Program.

6. OTHER COMMENTS

All the member country contributions to the 1993 Budget, except one, were received in convertible pesetas. The amount of the only contribution received in U.S. dollars was not enough to meet the expenditures that are made in that currency, for which it was necessary to acquire U.S. dollars on the foreign exchange market at rates that were considerably higher than those anticipated in November, 1992. The three official devaluations of the peseta (5% in September, 1992; 6% in November, 1992; and 8% in May, 1993) have contributed to the considerable increase, since last year, in the U.S. dollar/peseta exchange rate and have considerably distorted the budgetary forecasts, based in pesetas, as concerns salaries and pension for staff in the D and P categories, that are established in U.S. dollars. Such is not the case of staff in the General Services categories, whose salaries and pensions are paid in pesetas, in accordance with salary scales established by the United Nations for Madrid.

The information contained in this Report clearly shows that the financial status of the Commission has not improved with respect to the previous Fiscal Year. It is somewhat difficult to implement all the instructions given by the Contracting Parties, when the countries do not comply in a timely and responsible fashion as regards their financial commitments to the Commission, thereby assuring that the necessary funds are available to carry out those instructions. As of October 31, 1993, more than half of the Contracting Parties still had not paid their contributions to the 1993 budget (i.e., 34.8% of the total amount budgeted for 1993 had not yet been received). Therefore, in order to maintain at a minimum the activities of the Secretariat, it was necessary to use the funds available in the Working Capital Fund, including the extrabudgetary income. Just before the close of Fiscal Year 1993, contributions were received from Portugal, Russia, and Angola, which permitted a replenishment of the Working Capital Fund. However, if these contributions had been received earlier, other budgetary objectives could have been attained during 1993.

Because only three of the minimum required 17 Contracting Parties, including all those classified as developed countries with a market economy, have proceeded with acceptance or ratification of the Madrid Protocol that was signed in June, 1992, this possible course of solution of the financial crisis did not come about in 1993. According to the aforementioned Protocol, in order that the new contribution

scheme could be applied to finance the 1994 budget, the Protocol should have entered into force in 1993.

Consequently, the financing of the 1994 budget will have to be done by the present contribution scheme. In order to avoid resorting to the Working Capital as a "bridging" mechanism, it will be absolutely essential that the member countries pay their 1994 contributions in a timely fashion, if possible early in the year, as indicated in Article X, paragraph 4, of the Convention.

During 1993, a line of credit was not opened, according to the terms of the authorization given by the Commission at its Eight Special Meeting (Madrid, November 1992), since due to the reduction of expenses and to the receipt of some extrabudgetary funds, it was not necessary to resort to a bank loan. The evolution of the U.S. dollar/peseta exchange rate is another reason why resorting to this extraordinary means of financing has not been advisable. Should it be necessary to do so in the future, the Executive Secretary requested and was granted authorization from the Commission to solicit credit in the future either in U.S. dollars or in pesetas, whichever would prove beneficial to the Commission for this type of short-term loan should the U.S. dollar revaluate appreciably with respect to the peseta, as occurred in 1993.

STATEMENT 1
GENERAL BALANCE (AT CLOSE OF FISCAL YEAR 1992) (PESETAS)

ASSETS			*LIABILITIES*	
Available:		Pts.		Pts.
			Acquired holdings (net)	10,070,501
-- Banco Exterior de España:				
Acct. 030-31279.43-E (US$)	$542.68	62,408	Guaranty deposit	81,564
Acct. 030-17672.60A (Pts.)		2,619,026		
Acct. 030-17329.75-F (Conv.Pts.)		16,140,300	Available in the Working Capital Fund	11,728,190
-- Bankinter:			Available in Albacore Research Program Funds	1,363,609
Acct. 16.10096.2 (Pts.)		986,586		
Acct. 15.030009.7 (US$)	$51.46	5,918	Available in Billfish Trust Fund	690,580
Cash on hand (Pts.)		50,916	Advances on future contributions	6,773,355
Total Available (Pts.)		19,865,154	Accumulated pending contributions	99,345,289
(Exchange rate: 1US$ = 115 Pts.)				
Available in Billfish Trust Fund:				
Acct. 030-31555.90-B (US$)	$6,005.04	690,580		
Receivables:				
Overdue contributions		99,345,289		
Fixed Assets:				
Acquired before 1992	37,694,600			
Acquired during 1992	764,240			
Retired during 1992	- 6,209,189			
Total Fixed Assets, in use	32,249,651			
Accumulated depreciation	- 22,179,150			
Fixed Assets (net)		10,070,501		
Guaranty deposit		81,564		
TOTAL ASSETS		**130,053,088**	**TOTAL LIABILITIES**	**130,053,088**

STATEMENT 2
GENERAL BALANCE (AT CLOSE OF FISCAL YEAR 1993) (PESETAS)

ASSETS		Pts.	*LIABILITIES*	Pts.
Available:				
-- Banco Exterior de España:			Acquired holdings (net)	8,747,689
Ckg. Acct. 030-31279.43-E (US$)	$36,116.17	4,984,031	Guaranty deposit	81,564
Ckg. Acct. 030-17672.60A (Pts.)		1,050,897		
Ckg. Acct. 030-17329.75-F (Conv.Pts.)		23,258,765	Available in the Working Capital Fund	25,972,093
-- Bankinter:			Available in Albacore Research Program Funds	1,482,518
Ckg. Acct. 16.10096.2 (Pts.)		1,004,748		
Ckg. Acct. 15.030009.7 (US$)	$2,643.31	364,777	Available in Billfish Trust Fund	6,158,224
Dep. Acct. 16.10096.2 (Pts.)		14,462		
Cash on hand (Pts.)		50,916	Advances on future contributions	3,273,985
Total Available (Pts.)		30,728,596	Accumulated pending contributions	113,535,253
(Exchange rate: 1US$ = 138 Pts.)				
Available in Billfish Trust Fund:				
Ckg. Acct. 030-31555.90-B (US$)	$44,624.81	6,158,224		
Receivables:				
Overdue contributions		113,535,253		
Fixed Assets:				
Acquired before 1993	32,249,651			
Acquired during 1993	1,296,833			
Retired during 1993	- 0			
Total Fixed Assets, in use	33,546,484			
Accumulated depreciation	- 24,798,795			
Fixed Assets (net)		8,747,689		
Guaranty deposit		81,564		
TOTAL ASSETS		**159,251,326**	**TOTAL LIABILITIES**	**159,251,326**

TABLE 1
STATUS OF MEMBER COUNTRY CONRIBUTIONS TO THE REGULAR BUDGET (PESETAS) (AT THE CLOSE OF FISCAL YEAR 1993)

Country	*Past due at the start of Fiscal Year 1993*	*1993 Member Country contributions*	*Contributions paid in 1993 and applied towards the 1993 Budget*		*Contributions paid in 1993 towards previous budgets*	*Balance due at the close of Fiscal Year 1993*
Angola	4,894,983	2,510,817	2,510,817	(1)	4,894,983	0
Benin	6,639,354	859,339	0		0	7,498,693
Brasil	5,190,248	5,547,441	0		4,708,908	6,028,781
Canada	0	3,361,128	3,361,128		0	0
Cap Vert	7,373,193	2,274,796	0		0	9,647,989
Côte d'Ivoire	0	3,434,732	3,434,732	(2)	0	0
España	0	30,978,025	30,978,025		0	0
France	0	14,479,333	14,479,333		0	0
Gabon	0	1,594,098	501,580	(3)	0	1,092,518
Ghana	35,303,007	8,200,598	0		0	43,503,605
Guinea Ecuatorial	3,136,863	853,166	0		0	3,990,029
Guinea, Rep. of	800,000	797,049	0		0	1,597,049
Japan	0	12,873,458	12,873,458	(4)	0	0
Korea	0	4,943,533	4,943,533		0	0
Maroc	2,774,341	2,886,379	0		2,772,341	2,888,379
Portugal	0	6,905,519	6,905,519		0	0
Russia	5,052,610	5,304,455	5,299,151		5,047,558	10,356
Sao Tomé & Principe	1,580,547	1,640,395	0		0	3,220,942
South Africa	0	2,539,247	2,539,247		0	0
United States	0	12,894,221	12,894,221		0	0
Uruguay	38,738	870,282	798,765		38,738	71,517
Venezuela	7,941,017	7,423,990	0		0	15,365,007
Sub-total	80,724,901	133,172,001	101,519,509		17,462,528	94,914,865
Cuba (5)	11,034,300	0	0		0	11,034,300
Senegal (6)	7,586,088	0	0		0	7,586,088
TOTAL	99,345,289	133,172,001	101,519,509		17,462,528	113,535,253

(1) There is an advance from Angola (150,092 Pts.), which will be applied to future contributions of Angola.
(2) Of the advance from Côte d'Ivoire (5,124,245 Pts.), 3,434,732 Pts. were applied in 1993, and the remainder (1,689,513 Pts.) will be applied towards future contributions of Côte d'Ivoire.
(3) The advance from Gabon at the close of Fiscal Year 1992 (501,580 Pts.) has been applied towards the 1993 contibution of Gabon.
(4) The advance from Japan (1,147,530 Pts.) at the close of Fiscal Year 1992 has been applied to 1993. There is also an advance from Japan in 1993 (1,434,380 Pts.), which will be applied towards future contributions of Japan.
(5) Cuba's withdrawal from the Commission was effective December 31, 1991.
(6) Senegal's withdrawal from the Commission was effective December 31, 1988.

TABLE 2
LIQUIDATION OF BUDGETARY EXPENDITURES (PESETAS) (AT THE CLOSE OF FISCAL YEAR 1993)

Chapters		*1993 Budget*	*Expenditures at the close of Fiscal Year 1993*
Chapter 1.	Salaries	71,417,000	70,549,646
Chapter 2.	Travel	3,121,000	2,632,122
Chapter 3.	Commission Meeting	5,564,000	4,846,450
Chapter 4.	Publications	3,276,000	2,840,069
Chapter 5.	Office Equipment	764,000	537,854
Chapter 6.	Operating Expenses	10,237,000	6,730,480
Chapter 7.	Miscellaneous	1,254,000	593,456
Sub-total Chapters 1-7		95,633,000	88,730,077
Chapter 8.	Statistics and Research:		
	8A Salaries	20,748,000	16,347,040
	8B Travel to improve statistics	1,113,000	430,640
	8C Port Sampling	1,638,000	0
	8D Biostatistical Work	1,310,000	127,500
	8E Computer Equipment	1,638,000	631,574
	8F Data Processing	4,149,000	3,458,859
	8G Scientific Meetings (including SCRS)	6,343,000	5,579,001
	8H Miscellaneous	600,000	0
	8I Albacore Research Program	0	0
Sub-total Chapter 8		37,539,000	26,574,614
TOTAL EXPENDITURES		133,172,000	115,304,691

TABLE 3
BUDGETARY & EXTRABUDGETARY INCOME (PESETAS) (AT THE CLOSE OF FISCAL YEAR 1993)

1.1	*Contributions paid in 1993 towards the 1993 Budget:*				
	Uruguay	(January 18, 1993)		798,765	
	United States	(February 2, 1993)		12,894,221	
	Japan	(February 5, 1993)		11,725,928	
	Korea	(February 16, 1993)		4,943,533	
	France	(March 9, 1993)		14,479,333	
	South Africa	(April 23, 1993)		2,539,247	
	Canada	(April 26, 1993)		3,361,128	
	España	(June 28, 1993)		30,978,025	
	Portugal	(November 15, 1993)		6,905,519	
	Angola	(November 18, 1993)		2,510,817	
	Russia	(November 18, 1993)		5,299,151	96,435,667
1.2	*Contributions paid in 1993 towards previous budgets:*				
	Maroc	(January 7, 1993)		2,772,341	
	Uruguay	(January 18, 1993)		38,738	
	Brasil	(January 22, 1993)		4,708,908	
	Angola	(November 18, 1993)		4,894,983	
	Russia	(November 18, 1993)		5,047,558	17,462,528
1.3	*Other income (extrabudgetary) received in 1993:*				
	Voluntary Contributions:				
	– Observers at ICCAT annual meetings		524,000		
	– Taiwan Deep Sea Tuna Boatowners & Exporters Assoc.		1,250,000		
	– Billfish Program-towards enhanced billfish publication		1,064,000	2,838,000	
	Bank interest			2,691,359	
	Refund from VAT			1,648,842	
	Reimbursement for publications			54,975	
	Billfish Program-towards operating expenses			260,000	
	Difference in currency exchange			3,073,381	
	Refund from the IEO Santander to the Albacore Research Program			118,909	10,685,466
1.4	*Advances on future contributions received in 1993:*				
	Angola	(November 18, 1993)		150,092	
	Japan	(February 5, 1993)		1,434,380	1,584,472
TOTAL INCOME RECEIVED IN 1993:					126,168,133

TABLE 4
COMPOSITION & BALANCE OF THE WORKING CAPITAL FUND (PESETAS) (FISCAL YEAR 1993)

Balance available in the Working Capital Fund (at start of Fiscal Year 1993)			11,728,190
Deposits:	Contributions paid in 1993 towards previous budgets	17,462,528	
	Other income (extrabudgetary) received in 1993 *	10,566,557	28,029,085
			39,757,275
Less:	Amount to cover the difference between contributions paid in 1993 and applied towards the 1993 Budget (101,519,509 Ptas.) ** and real expenditures (Chapters 1-8) at the close of Fiscal Year 1993 (115,304,691 Ptas.)		- 13,785,182
Balance available in Working Capital Fund (at the close of Fiscal Year 1993)			25,972,093

* Does not include the refund from the Spanish Institute of Oceanography of Santander to the Albacore Research Program.

** Includes the advances applied in 1993 from Japan (1,147,530 Pts.), Côte d'Ivoire (3,434,732 Pts.), and Gabon (501,580 Pts.).

TABLE 5

SUMMARY OF PENDING CONTRIBUTIONS & THEIR ORIGIN, BY YEAR, AT THE CLOSE OF FISCAL YEAR 1993 (PESETAS)

PENDING CONTRIBUTIONS		*ORIGIN OF THE DEBT*	
Benin	7,498,693	a) from 1986 and before	11,324,085
Brasil	6,028,781	b) from 1987	7,086,900
Cape Verde	9,647,989	c) from 1988	9,587,400
Gabon	1,092,518	d) from 1989	8,894,100
Ghana	43,503,605	e) from 1990	9,768,100
Guinea Ecuatorial	3,990,029	f) from 1991	13,707,666
Guinea (Rep. of)	1,597,049	g) from 1992	21,514,510
Maroc	2,888,379	h) from 1993	31,652,492
Russia	10,356		
Sao Tomé & Principe	3,220,942		
Uruguay	71,517		
Venezuela	15,365,007		
Cuba *	11,034,300		
Senegal **	7,586,088		
TOTAL PENDING CONTRIBUTIONS	113,535,253	TOTAL PENDING DEBT	113,535,253

* Cuba's withdrawal from the Commission was effective December 31, 1991.

** Senegal's withdrawal from the Commission was effective December 31, 1988.

TABLE 6
CASH FLOW (DURING FISCAL YEAR 1993) (PESETAS)

INCOME & ORIGIN		*EXPENSES & APPLICATION*	
Balance in Cash and Bank (at the start of Fiscal Year 1993)	19,865,154	Total expenditures to the close of Fiscal Year 1993 (Chapters 1 - 9)	115,304,691
Income:			
Contributions paid in 1993 towards the 1993 Budget	96,435,667	Available in Working Capital Fund at close of Fiscal Year 1993	25,972,093
Contributions paid in 1993 towards previous budgets	17,462,528	Available in Albacore Research Program Funds at close of Fiscal Year 1993	1,482,518
Other income (extrabudgetary) received in 1993	10,685,466		
Advances on future contributions received in 1993 *	1,584,472	Advances on future contributions at close of Fiscal Year 1993	3,273,985
TOTAL INCOME & ORIGIN	146,033,287	TOTAL EXPENSES & APPLICATION	146,033,287

* Includes the remainder of 1,689,513 Pts. which were not applied in 1993 from the advance by Côte d'Ivoire received in 1992, and the advances received in 1993 from Angola (150,092 Pts.) and Japan (1,434,380 Pts.).

TABLE 7
STATUS OF CASH & BANK (TO THE CLOSE OF FISCAL YEAR 1993) (PESETAS)

SUMMARY		*BREAKDOWN*	
Balance in Cash and Bank	30,728,596	Available in the Working Capital Fund	25,972,093
		Available in Albacore Research Program Funds	1,482,518
		Advances on future contributions	3,273,985
TOTAL CASH IN CASH & BANK	30,728,596	TOTAL AVAILABLE & ADVANCES	30,728,596

REPORT ON STATISTICS AND COORDINATION OF RESEARCH IN 1993

COM-SCRS/93/12 *

I. DATA COLLECTION AND SAMPLING

1. Collection of 1992 statistics through national offices

Table 1 of the Report of the Sub-Committee on Statistics (Appendix 4 to Annex 22) shows the progress made by the national offices and by the Secretariat in the collection of 1992 statistics on tuna and tuna-like fishes. As of October 20, 1993, data from the following major tuna fishing countries had not yet been received by the Secretariat, despite having sent several reminders by fax and E-mail:

Task I data (total nominal catches):

Argentina, Cuba, France (Atlantic BFT), Greece, Japan (LL except bluefin and swordfish), Mexico, Tunisia, Turkey and Venezuela.

Task II catch and effort data:

Angola, Argentina, Croatia, Cuba, France (Atlantic BFT), Japan (LL), Mexico, Morocco (PS), Russia, Turkey, and Uruguay.

Task II size data:

Angola, Argentina, Cape Verde, China-Taiwan (SWO), Croatia, Cuba, Morocco, Japan (LL except for bluefin, swordfish and albacore) and Russia.

2. Improvements and pending difficulties

a) Major improvements made in 1993

a-1) Timeliness of reporting Task I data. Some Task I data from national sources were received in a more timely manner in 1993 than in previous years.

a-2) Italy officially presented for the first time, detailed statistics for bluefin, albacore and swordfish for last three years (1990-1992). However, Adriatic Sea data are still completely lacking.

a-3) Caribbean Island statistics. Catch statistics for many Caribbean Island countries became available, mainly due to the collaboration of CARICOM.

a-4) When preparing *catch-at-size data* for various scientific intersession meetings, many countries collaborated and sent in their data early enough for the Secretariat to update or create the catch-at-size tables before the meetings. Because of this collaboration, it was possible to send the albacore data to the scientists concerned prior to the stock assessment session, so that they could convert the size frequencies to age before the meeting.

a-5) For the first time, albacore catch-at-size data since 1985 became available for *South African* fisheries by the national scientists.

b) Pending difficulties

b-1) Submission of catch-at-size data. Most of the major fishing countries for east Atlantic bluefin, north Atlantic swordfish, and north Atlantic albacore presented catch-at-size data. However, the late

* The Report presented at the 1993 Commission Meeting was edited, but not updated.

submission of swordfish catch-at-size data by some countries delayed the updating of the files.

b-2) Lack of detailed catch-and-effort data. Task II catch and effort data have been reported for many fisheries; however, a lot of these data are not in the precise form or units established by ICCAT, which has created some difficulties for scientists in standardizing the CPUE series (e.g., most of the Mediterranean catch and effort series including French bluefin purse seine data). In particular, there are no series of reliable abundance indices available for Mediterranean bluefin or swordfish.

b-3) Lack of reporting Task I catch data in proper forms. Some countries did not submit their catch data in the appropriate format, but requested the Secretariat to process the Task II files (catch and effort or size) to extract Task I catch data. This added to the Secretariat's work load and resulted in some errors in compiling Task I statistics. Such calculations should be best made by the national scientists, prior to the submission of data. In several instances, Task I catch data have been sent in bits and pieces and/or on illegible forms (poor copies, etc.), and the Secretariat has had to spend considerable time in identifying the latest data to be extracted. If Task I catch data are submitted on different dates for different fisheries, then each time it should include all the Task I data, even that submitted previously.

b-4) Discrepancies between data. Very often there have been discrepancies in data, particularly between Task I and Task II catch data (e.g., Task II catches are higher than the figures that were reported for Task I). Therefore, the national scientists should verify the data before submission to the Commission.

b-5) Mediterranean statistics. Even though there have been major improvements in the collection of tuna statistics from Mediterranean countries, there are still major problem of lack of data (catch, effort and size) for various Mediterranean fisheries. The Secretariat has maintained continuous contact with GFCM Secretary. The proposal of establishing an ad hoc Joint Working Group has also been accepted by GFCM and the first Working Group meeting is expected to be held in 1994.

b-6) Catch by boats flying flags of convenience. This problem still represents the major obstacle for the collection of statistics on tunas and tuna-like fishes, particularly the temperate tuna species, although there have been some indications that the countries to which these boats are registered (e.g. Panama, Bermuda, Libya, etc.) are now more aware of the problem. This awareness is most likely due to the results of the numerous constant contacts that ICCAT has maintained with these countries, to the implementation of the ICCAT Bluefin Tuna Statistical Document Program, and to a series of United Nations and FAO meetings to discuss this problem.

3. Port sampling by the Secretariat

Routine sampling from longliners at various transshipment ports was carried out as usual by ICCAT, but the sampling rate remained very low at ports in the Canary Islands and at St. Maarten (Netherlands Antilles). The low sampling rate is due to the withdrawal of many Oriental longliners from these base ports, and to increased transshipment at sea to deep freeze cargo ships.

II. SECRETARIAT DATA PROCESSING AND BIO-STATISTICAL WORK

1. Computer facilities

Among the computer needs identified by the SCRS in 1992, the following items have been purchased since the last SCRS:

- a 486 DX 33 Mhz PC, with 8 MB RAM, a 120 MB hard disc, and two diskette drives (3-1/2" and 5-1/4"), SVGA color monitor.
- a laser printer with 1 MB memory
- Expansion of memory up to 1.5 MB for one of the older laser printers.
- Spanish dictionary for WORDPERFECT 5.1.
- two automatic switch boxes for the laser printers.
- a new power stabilizer for the Micro-VAX, to replace an old one.

The purchase of a notebook-type PC is also under consideration, but this purchase has not yet been made.

Since the PC market is developing very quickly, and the speed, capacity and efficiency have improved considerably, the Secretariat is currently studying the possibility of doing all the Secretariat's data processing work using a powerful PC system, and phasing out the Micro-VAX mainframe computer system, because of the slow processing speed of this system and the high maintenance costs. (The current cost to the Commission for maintenance and updating of VAX software amounts to about US$ 30,000 per year.)

It should be noted, however, that one of the significant drawbacks of shifting to a PC data processing system is the lack of availability of good sorting software for the FORTRAN files, in which most of the ICCAT data base has been kept.

2. Data processing and biostatistical work

The biostatistician position has not yet been filled, due to the restrictions imposed by the insufficiency of cash flow. Because of a crowded intersessional meeting schedule throughout the year and the ever-increasing statistical assignments, the reduced Secretariat staff worked under strenuous conditions and time constraints, and was only able to complete the priority items.

a) Extra statistical work and data processing

The Secretariat prepared the data bases for all the intersessional meetings held in 1993 (see list in Chapter III of this Report). These tasks included:

- preparation of catch tables
- preparation of data catalogues
- preparation of various reports on the status of statistics, data base, etc.
- preparation catch, catch and effort and size data bases and updating of these during the sessions
- creation of catch-at-size bases by substitutions and raising
- preparation of catch-at-age data
- providing computer support during the meetings
- preparation of catch and effort indices
- preparation of graphics and tables for the analysis and meeting reports
- checking of the analyses after the sessions, and editing of the reports (this was particularly time consuming with the Report of the Yellowfin Working Group)

b) Routine work

The volume of routine work increased as the volume of data increased. Such work included entering, verifying and processing all the catch, catch and effort and biological data, updating the data catalogue and tagging file for recent years, and making copies of data files for scientists who request certain data. Also, data processing for statistical publications was done.

c) Coordination of the Program of Enhanced Research for Billfish, the Albacore Research Program and the Bluefin Year Program

The Secretariat, in collaboration with the Coordinators of these Programs, was involved in coordinating, administering of funds, and preparing data for the research activities.

d) The 1993 tuna tagging lottery (for tag recoveries reported in 1992)

The tagging data files have been updated and a tagging lottery was held.

e) Developing a purse seine logbook

A new purse seine logbook has been developed for the use of the Ghana-based fleet. For details see document SCRS/93/11.

4. Information on by-catches of the tuna fisheries

A general questionnaire soliciting information on the by-catches of the tuna fisheries has been circulated and a compendium of all the responses has been prepared (See Documents SCRS/93/10 and COM-SCRS/93/19 for details.)

III. MEETINGS AND OTHER ASSIGNMENTS

The intersessional meetings relative to SCRS activities and for which data preparation, control of working papers for these meetings, preparation/editing/distribution of meeting reports, etc. are reported in the Administrative Report. Those meetings included:

-- Working Group to Evaluate Atlantic Yellowfin Tuna (see COM-SCRS/93/16)

-- Consultation on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age (see COM-SCRS/93/17)

-- Rapporteur's group to draft the Bluefin species section of the 1993 SCRS Report

Other meetings relative to research and coordination, at which a member of the Secretariat staff participated, included the following:

-- FAO Informal Meeting of Experts to Draft an Agreement on the Register of Fishing Vessels and Conditions for the Allocation of a Flag (Rome, February, 1993).

-- Seminar on Biology, Statistical Base and Stock Assessment of Tuna and Tuna-like Fishes (Istanbul, February, 1993).

- Seminaire CEE sur l'analyse des mesures techniques pour la gestion des stocks partagés en Mediterranée (Palma de Mallorca, May 1993)

- U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, July, 1993).

The recommendation made by Sub-Committee on Environment to solicit the possibility of logging on to the oceanographic data bases of various institutes was completed in October.

IV. PUBLICATIONS

In the January-October, 1993 period, the Secretariat distributed the following publications:

-- Statistical Bulletin, Vol. 22
-- Collective Volume of Scientific Papers, Vol. XL (1)
-- Collective Volume of Scientific Papers, Vol. XL (2)
-- Data Record, Vol. 34
-- 1993 SCRS Report, contained in the "Biennial Report, 1992-93, Part I"

CHAPTER II

RECORDS OF MEETINGS

PROCEEDINGS OF THE THIRTEENTH REGULAR MEETING OF THE COMMISSION

Madrid, November 8-12, 1993

FIRST PLENARY SESSION
November 8, 1993

Item 1. Opening of the meeting

1.1. The Thirteenth Regular Meeting of the Commission was held in Madrid, Spain, at the Hotel Pintor on November 8-12, 1993, and was presided over by the Commission Chairman, Dr. A. Ribeiro Lima (Portugal).

1.2. The meeting was formally opened by Dr. Lima. He briefly reviewed the numerous meetings in which ICCAT had participated in 1993. He referred to the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, July 1993), and two ICCAT intersessional meetings, the Working Group to Evaluate Atlantic Yellowfin Tuna (Tenerife, Canary Islands, Spain - June 1993) and the Workshop on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age (St. Andrews, New Brunswick, Canada - July 1993). He referred to ICCAT's collaboration with the General Fisheries Council for the Mediterranean (GFCM) concerning joint work on the stock evaluation of highly migratory fish in the Mediterranean. He referred to other activities of the Commission, such as the adoption of regulatory measures and the Protocol signed in Paris (1984) for the accession of the European Community (EC) to the ICCAT Convention. Dr. Lima noted the difficulties the Commission is facing as regards its financial aspect and hoped that the Protocol signed in Madrid in 1992 will be ratified soon so that the new scheme to calculate the country contributions can be implemented as soon as possible.

1.3. The Commission Chairman commented on the development of the new criteria to list species in the CITES Appendices, and expressed his concern about the effect that such changes in the criteria may have on ICCAT's work. He also insisted on the importance of securing the collaboration of non-Contracting Parties in implementing and complying with the regulatory measures recommended by the Commission. Dr. Lima's opening address is included in **Annex 4.**

1.4. The Delegate of Spain regretted that Mr. J. Loira, Secretary General of Maritime Fisheries of Spain could not attend the opening session and deliver his address of welcome, due to other obligations. He anticipated, however, that Mr. Loira would address the Commission at the Final Plenary Session.

Item 2. Adoption of Agenda, arrangements for the meeting and appointment of subsidiary bodies

2.1 Dr. A. Fernández, the Executive Secretary, reviewed the Tentative Agenda of the Commission item by item, and pointed out those items that were included in accordance with the decisions adopted by the Commission in 1992, and those that were proposed later for inclusion, as needs warranted. He also referred to the Japanese proposal concerning

regulations on the east Atlantic bluefin tuna fishery and surveillance and catch reporting through a satellite system. Dr. Fernández also referred to the proposal made by Japan to expand Item 16 of the Agenda. He referred briefly to the documentation prepared for this meeting by the Secretariat, and the meeting schedule. It was noted that the Permanent Working Group for the Improvement of ICCAT Statistics would hold its first meeting on Tuesday, November 9, 1993.

2.2 The Agenda was adopted, including the changes to Agenda Item 16 proposed by Japan. The revised Agenda, as adopted, is attached as **Annex 1.** The Chairman referred to the proposal concerning regulations for east Atlantic bluefin tuna fisheries to be discussed in Panel 2, satellite surveillance and catch reporting, to be discussed by the Infractions Committee, and decided that both these subjects would be discussed by the Commission under Agenda Item 15.

2.3 The Chairman reviewed the tentative schedule for the meeting and discussed the meeting arrangements. He also referred to the numerous Commission documents and requested the Delegates to review these for later discussion. The List of Commission Documents is attached as **Annex 3.**

Item 3. Introduction of delegations

3.1 The Head Delegate of each Contracting Party present at this year's meeting introduced his respective delegation. The names and addresses of all the members of the delegations are found in the List of Participants, attached as **Annex 2.**

Item 4. Admission of observers (non-member countries, intergovernmental organizations, and non-governmental organizations)

4.1 The Executive Secretary commented that several non-Contracting Parties and international organizations had been invited to attend this session of the Commission meeting, in an observer capacity, in accordance with the current "Criteria for the Invitation and Admission of Observers" adopted by the Commission at its 1988 Meeting. At the same time, he informed the Commission that the Working Group, which was established to review the current criteria for inviting and admitting observers, had worked during the year through correspondence and that a first draft of new observer criteria had been circulated among the Group in early 1993. However, he indicated that no new criteria had yet been agreed upon. Dr. Fernández further noted that a request for an invitation to attend the 1993 Commission meeting in an observer capacity was received from TRAFFIC USA (a non-governmental organization). This request was distributed to the Head Delegates of the Contracting Parties. Since some countries expressed reservations, mostly of a procedural nature, about admitting this organization, according to the current criteria, the request was not accepted and the organization was duly informed to this effect.

4.2 Noting that the Working Group had not completed a conclusive draft of new observer criteria, the Chairman proposed that a meeting of the Group be held during this year's meeting period and he asked that the Group complete its work and present the results to the Commission for final approval at this meeting.

4.3 The Delegate of the U.S., in agreeing with the Chairman's proposal, commented that two basic points were still pending agreement: (1) whether the admission of observers should be decided by open or secret ballot and (2) whether a single country's objection should be able to block a NGO's participation. The U.S. Delegate stated that his country preferred an open ballot and a minimum of one-third of the votes needed to reject an application for participation.

4.4 The Commission asked the Working Group to complete its work at their meeting, under the guidance of the Commission Chairman. (This was further discussed at the Final Plenary Session under Agenda Item 21 and new Observer Criteria adopted by the Commission.)

4.5 The Observers present at the 1993 Meeting, all of whom had been duly invited by the Commission, were introduced and admitted in accordance with the current criteria. The list of observers is included in **Annex 2,** the List of Participants.

Item 5. Review of Commission membership

5.1 The Executive Secretary, referring to the Administrative Report (COM/93/9), informed the Commission that the Secretariat had received on September 22, 1993, a telex from the authorities of Benin, indicating their intention to withdraw as a member of ICCAT. The Executive Secretary notified the Government of Benin that the Director General of

FAO, the Depository of the ICCAT Convention, had to be informed of such a withdrawal from the Commission. According to Article XII of the Convention, this withdrawal will be effective on the final day of 1994, if the withdrawal is presented to FAO in 1993.

Item 6. Ratification or acceptance of the Protocol of amendment to the Convention (adopted in Paris in 1984)

6.1 The Executive Secretary referred to Item 3 of the Administrative Report (COM/93/9), concerning the status of the Protocol signed in Paris in 1984 to permit the accession of the EC to ICCAT and noted that as of today, three countries have not yet ratified. He indicated that Cote d'Ivoire and the Republic of Guinea had deposited instruments of acceptance in 1993. Consequently, only Benin, Gabon and Morocco have yet to ratify. The Chairman emphasized that the entry into effect of this Protocol is very important to ICCAT and urged these countries to take prompt action in this regard.

6.2 The Delegate of Gabon informed the Commission that action is being taken to ratify and hopefully the procedure would be completed in early 1994.

6.3 The Delegate of Morocco informed the Commission that every effort had been made and that there were administrative delays. He pointed out that he, as Commissioner, had urged his Government to take prompt action, and this effort is still continuing. He indicated that the matter could be resolved in 1994.

6.4 The Representative of the EC reiterated the keen interest of the Community to be able to participate in ICCAT in full capacity as a member and expressed particular appreciation to Côte d'Ivoire and the Republic of Guinea for having accepted the Protocol this year. The EC Representative also thanked the Commission Chairman and the Secretariat for their efforts to solve this problem and expressed the hope that the remaining countries would ratify the Protocol as quickly as possible.

Item 7. Ratification or acceptance of the Protocol of amendment to the Convention (adopted in Madrid in 1992)

7.1 The Executive Secretary, referred to Item 4 of the Administrative Report (COM/93/9), concerning the Madrid Protocol to amend the scheme of calculating the member country contributions. He informed the Commission that Korea, Canada and South Africa had ratified or accepted the Protocol in 1993. He also noted that Spain had published the Protocol in its Official Parliamentary Bulletin. Dr. Fernández indicated that none of the developing Contracting Parties had objected to the Protocol within the six-months period after the Protocol was opened for signature, which ended on January 5, 1993. Since the necessary number of ratification or acceptances has not yet been obtained, the 1994 budget will be financed according to the current contribution scheme. Document COM/93/28 presents a draft of the modifications to be introduced in the Financial Regulations at the appropriate time.

7.2 The Chairman urged the Commission to make stronger efforts to approve this Protocol, so as to alleviate the present financial difficulties.

Item 8. Report of the Standing Committee on Research and Statistics (SCRS)

8.1 Dr. J. L. Cort (Spain), Chairman of the SCRS, presented the Committee's Report to the Commission and summarized the scientific findings. The SCRS Report is attached as **Annex 23**. Dr. Cort referred to various scientific meetings which the Commission held during the intersessional period and those meetings at which ICCAT was represented.

8.2 The SCRS Chairman reported on the results of the assessments carried out by the Committee on the stocks of yellowfin, bigeye, skipjack, albacore, southern bluefin and bluefin tunas, billfishes, swordfish, as well as small tunas (Item 10 of the 1993 SCRS Report). The recommendations for statistics, research and management are included in each species section of the Report and the Chairman asked the Panels and the Commission to refer to these recommendations when considering stock management measures. He called the attention of Panel 2 to the recommendations made this year by the SCRS concerning bluefin tuna, which are included in the section on west bluefin recommendations for management (BFT-W.4C). He also referred to the special section attached to the SCRS Report, which was prepared by his Committee to respond to questions raised by the Commissioners of three Contracting Parties.

8.3 Dr. Cort also requested the Standing Committee on Finance and Administration (STACFAD) to give due attention to those

recommendations made by the Committee which required funding, in particular the recommendations in the Report under Agenda Item 16, concerning the proposals of several inter-sessional meetings that require funding arrangements, those recommendations in the report of the Sub-Committee on Statistics concerning the hiring of a biostatistician, and the Sub-Committee's recommendations regarding computer facilities.

8.4 Dr. Cort noted that the Sub-Committee on Statistics had also met during the SCRS Meeting, with Dr. S. Turner (U.S.A.) as Convener. The Report of this Sub-Committee is attached as **Appendix 4** to the SCRS Report.

8.5 The SCRS Chairman also referred to the Bluefin Year Program, (**Appendix 7** to the SCRS Report), which was proposed and approved in 1991, the Program for Enhanced Research for Billfish (**Appendices 5 and 6** to the SCRS Report), which has been carried out since 1987, and the Albacore Research Program, which was initiated in 1990.

8.6 The SCRS Chairman further informed the Commission that the Sub-Committee on Environment had met during this year's SCRS Session, with Mr. J. Pereira (Portugal) as Convener, and that its report and recommendations are included as **Appendix 8** to the SCRS Report.

8.7 The SCRS Chairman explained that several meetings have been proposed for the coming inter-sessional period, including the Second Workshop on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age, a meeting to culminate the Albacore Program in June, 1994, the Ad-hoc GFCM/ICCAT Joint Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea (which could be jointly held with the 1994 ICCAT SCRS stock assessment session of east Atlantic bluefin and Mediterranean swordfish), and a Workshop on the development of Abundance Indices for South Atlantic Tunas and Tuna-like Fishes. Dr. Cort also indicated that the swordfish stock assessment session will be held for a one-week period immediately prior to the 1994 SCRS Plenary Sessions, and that the other species groups will meet for a three-day period during the week prior to the SCRS meeting. The SCRS requested that the Plenary Sessions be held one week before the Commission meeting in 1994.

8.8 The SCRS Chairman and all the scientists participating in this year's meeting and research activities were highly commended for the high quality of their research for the Commission.

8.9 The Commission decided that more detailed discussion on the SCRS findings would be carried out during the Panel Meetings.

SECOND PLENARY SESSION
November 9, 1993

Item 9. Collaboration of Non-Contracting Parties in the Objectives of ICCAT

9.1 The Executive Secretary introduced document COM/93/27 which provides details on the various contacts the Secretariat had made with various non-Contracting Parties and international organizations during the year. He commented that several countries had expressed an interest in becoming Contracting Parties of the Commission and had even inquired about the conditions and obligations of Commission membership.

9.2 Dr. Fernández reported that all the regulatory measures recommended by the Commission, the Resolution by ICCAT regarding the Reflagging of Vessels to Avoid Compliance with Internationally Agreed Conservation and Management Measures for Living Marine Resources, and the Resolution on the ICCAT Bluefin Tuna Statistical Document Program that entered into effect on July 25, 1993, had also been transmitted to all the non- Contracting Parties fishing tuna and tuna-like species in the Convention area,a s well as to international fisheries organizations.

9.3 Dr. Fernández thanked Taiwan Fisheries for their donation of US$ 10,000 in 1993 to the Commission as well as for their collaboration with ICCAT, particularly in providing statistics and exchanging research information.

9.4 The Executive Secretary stated that the Secretariat reinforced its contacts with non-Contracting Parties that fish tuna to secure their tuna statistics and he thanked those countries which have collaborated with ICCAT in this respect. Dr. Fernández further referred to the questionnaire on tuna fishery by-catches circulated by the Secretariat in 1993, to which many non-Contracting Parties have responded.

9.5 Dr. Fernández referred to ICCAT's relations with other international organizations, including the United Nations (UN), the Food and Agriculture Organization of the United Nations (FAO), North Atlantic Salmon Commission (NASCO), and the Secretariat of the Convention on International Trade in Endangered Species of Fauna and Flora (CITES). He noted that the last two organizations were represented at this year's ICCAT meeting by the Secretary and the Deputy Secretary General, respectively. Dr. Fernández specifically referred to the new Protocol drafted by NASCO to apply the regulatory measures to non-Contracting Parties. He also mentioned that the CITES Secretariat had mailed ICCAT the latest draft text of the new criteria of listing species in the Appendices to its Convention.

9.6 The Delegate of Spain noted that this Agenda Item was particularly important, since the Commission must consider, in depth, how the conservation measures recommended by the Commission can be implemented by all the concerned countries. He pointed out that while the ICCAT Contracting Parties are bound by the recommendations made by the Commission, the non-Contracting Parties are not officially, and thus some of them do not accept the responsibility of complying with these international regulations. The Delegate of Spain considered that the Commission has to solve this problem in a two-fold way, by collecting all the necessary statistics to carry out stock assessments, and by ensuring adequate management measures which, while binding on the Contracting Parties, will also be complied by non-Contracting Parties.

9.7 The Delegate of Spain was encouraged by the results derived from the U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. The United Nations plans to hold a series of consultations concerning the elaboration of an international Code of Conduct for Responsible Fishing. The Delegate of Spain indicated that the solution must be realistic and that fishing nations have to be responsible. He further proposed that the SCRS study the statistics available with great care and report to the Commission, regarding which fisheries and countries are lacking statistics that are essential for the stock evaluations.

9.8 The U.S. Delegate referred to the fact that, while there is a right to freedom of fishing on the high seas, such activity carried with it the obligation to fish responsibly and to cooperate with regional authorities. The Commission and the United States have been trying to communicate with those countries whose vessels are not complying with the regulations recommended by the Commission, in an effort to bring those countries to the Commission. However, this may cause another problem to the Commission, as to the quorum and financial aspects of the Commission. A solution could be that these countries participate in the Commission as observers and provide the Commission with data. The Commission should continue in its effort to ensure that those countries participate and/or collaborate in the work of the Commission. However, in the event that such efforts are not successful, some strategy might have to be developed, so that those countries could realize the graveness of the problem. Some countries took the initiative and made diplomatic missions to those countries which do not comply with the ICCAT regulations, to solve the problem. Some of these missions were successful and these countries started collaboration with ICCAT, but some others are still not complying with the regulatory measures of the Commission.

9.9 The Delegate of South Africa supported these efforts of ICCAT and welcomed the interest shown by Namibia in the activities of ICCAT. He also mentioned that his country will invite Namibia to become a member of ICCAT. He indicated that South Africa is also interested in the development of the new Convention for the Conservation of Southern Bluefin Tuna and supports this.

9.10 The Observer from NASCO expressed his pleasure in having had the opportunity to comment on the problem which his Commission has faced. He indicated that non-Contracting Parties are a great problem for NASCO. Fishing salmon beyond the jurisdictional waters of coastal countries is prohibited by NASCO, but he noted that in the northeastern Atlantic many vessels of the non-NASCO Contracting Parties have been observed fishing in international waters since 1990 by the Coast Guard. Reports of airborne surveillance by the Norwegian Coast Guard, port authorities and at-sea inspection revealed that vessels previously engaged in the salmon fishery have been re-flagged to Panama or Poland. He noted that these vessels do no comply with the strict regulations established for the salmon stocks which are at a low abundance level. In 1991 and 1992, NASCO carried out extensive diplomatic effort to call the attention of these countries, but to no avail, since they continue to fish. He indicated that the Government of Poland had responded that these vessels were not registered under Polish flag.

9.11 The Observer from NASCO further informed the Commission that a Protocol to the NASCO Convention was drafted in 1992 (COM/93/33) which extends the NASCO regulations to non-Contracting Parties. He stated that NASCO is trying, through diplomatic channels, to allow the Protocol to be adopted by those countries flying flags of convenience. He added that NASCO is also considering intensive high seas surveillance, including military planes (AWAC) and satellite surveillance. The Observer from NASCO stated that collaboration of all the regional agencies such as NASCO and ICCAT, which share the same type of problems, is essential to solve these problems through the exchange of information, and by joint action, such as diplomatic demarches.

9.12 The Observer from the European Community expressed concern about this problem and supported collective solutions by all the international organizations.

9.13 The Delegate of Japan, in fully sharing the concern expressed by previous speakers, stated that the Commission should review instruments, ways and means to solve this problem. He was of the opinion that finding a solution to this problem is very urgent. He proposed that since the Permanent Working for the Improvement of ICCAT Statistics and Conservation Measures was meeting during this session, that this issue be further dealt with by the session of Working Group and that specific solutions rather than conceptual ones be developed, so that tangible results can be obtained.

9.14 The Delegate of Japan further referred to the ICCAT Bluefin Tuna Statistical Document Program as a very meaningful way to draw the attention and secure the collaboration of non-Contracting Parties which do not comply with the Regulations established by the Commission. He indicated that since Japan started implementing this Program, many meaningful contacts were made and responses received from the countries in question, that had not previously responded to diplomatic actions.

9.15 The Delegate of Japan also stated that another point is the importance of good relationships with neighboring countries and authorities as already commented by the Delegate of South Africa in relation to Namibia. He noted that Japan has been in contact

with the Taiwanese authorities and has made Japanese import statistics available to the Taiwanese authorities to improve their catch statistics.

9.16 The Delegate of France, while noting that Japan stressed a need to adopt a realistic approach rather than a theoretical one, emphasized that all the work should be done within the framework of the U.N. Convention on the Law of the Sea. He added that this theoretical framework does not oblige the non-Contracting Parties to comply with the regulations, but only obliges cooperation. On the other hand, as a practical solution, he indicated that NASCO's approach through a Protocol might not be adequate for ICCAT's purposes.

9.17 The Delegate of France expressed his interest in the new Convention for the Conservation of Southern Bluefin Tuna which is open for any countries to join. While recognizing the importance of such a Convention, he wondered if there was any merit in having so many organizations monitoring one stock, which is already under ICCAT competence.

9.18 The Chairman, referring to all the discussions concerning freedom of fishing on the high seas and responsible fishing to secure the collaboration of non-Contracting Parties, emphasized that it was of the foremost importance to define a pragmatic strategy which ICCAT can take to solve this problem. He added that this strategy needs specific actions and specific measures. He suggested direct contact with non-Contracting Parties through a bilateral approach may be constructive, and indicated that the major task should be realistic and prompt approached aimed at acquiring as much information as possible.

9.19 The Delegate of the U.S., agreeing with the Chair, presented a few realistic alternative strategies. He noted that even strong diplomatic persuasion might not solve the problem. He indicated that some stocks are in a serious state of depletion, such as west Atlantic bluefin, and that non-Contracting Parties were taking as much as 80% above the ICCAT catch limit a few years ago. He added that, in such a situation, the solution must be sought in a rapid, timely manner and the Commission cannot solely depend on diplomatic persuasion, if it does not bring the desired results on the part of the non-Contracting Parties. The U.S. Delegate pointed out that specific measures may then have to be taken, such as the ICCAT Bluefin Tuna Statistic Document Program. He further stated that there are some other measures that may be taken. The U.S. Delegate stated that some countries believe that there exists the right to prevent the entry of those products, if the proper statistical document is not delivered with transshipment, and that it may be interesting to look at such a possibility again, because without such a type of control, the Statistical Document Program may not be effective.

9.20 The U.S. Delegate cited other possibilities, including a review of foreign aids programs which one Contracting Party may have with those countries who do not comply with the regulations, and imposing economic sanctions in an extreme case.

9.21 The Delegate of Canada mentioned a similar type of problem which Canada has been experiencing with respect to other species (i.e. ground fish in the northwestern Atlantic). He noted that Canada has had to take various measures, such as those being discussed, and indicated that diplomatic demarche brought only limited success, and did not work as well or as fast as desired. He added that Canada agreed with the proposal made by the Delegate of Japan to discuss specific measures to solve the problem of non-Contracting Parties during the meeting of the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures.

9.22 The Delegate of Canada observed that the approach taken by NASCO contained some excellent ideas and that the ICCAT may wish to explore further such measures.

9.23 The Chairman, reiterated the importance of this matter, and decided to refer this Agenda Item also to the Permanent Working Group. At the same time, he decided to leave the Item open for further discussion at a later Plenary Session.

Item 10. Large-scale driftnet fishing and its effects on tuna stocks

10.1 The Executive Secretary referred to the Commission Document COM/93/21, which summarized Secretariat actions taken in 1993 concerning the large-scale pelagic driftnet issue, and made specific reference to correspondence with the U.N. about resolutions concerning this subject.

10.2 The Delegate of Spain expressed the grave concern of his government on this issue. Spain prohibited the use of this type of fishing by its fleet. Such prohibition was justified by ecological and environmental reasons, the danger to navigation, and by the lack of selectivity of driftnets. He also noted

that driftnet fishing results in unnecessary mortality and it is difficult to control. The Delegate of Spain pointed out that his country is very concerned about the rapid proliferation of this type of gear by fleets which did not use them until very recently. He noted that this type of gear has had an adverse impact on traditional Spanish fisheries. He considered that ICCAT should follow this mater very closely and give it attention because fishing effort has increased in the driftnet fishery, as indicated in the SCRS Report (albacore section).

10.3 The Delegate of Spain noted that one of the SCRS stock assessments indicated that albacore is being exploited at a level close to MSY and that the impact of the rapid increase in the use of this new gear on the state of stock is a matter of concern. He indicated that the lack of some data on this new fishery added uncertainty to the stock assessments. He pointed out that the Sub-Committee on Environment had reported the existence of incidental catches of marine mammals in the use of this gear which increase Spain's concern about the use of driftnets. He stressed the need for very strict control and monitoring by ICCAT on the use of this gear.

10.4. The Delegate of France also expressed concern about the development of driftnet fishing. He also recalled that the United Nations moratorium only applied to large-scale driftnets and that the activity of the French fishermen is perfectly controlled and is carried out within the framework of an appropriate European Community regulation. The Delegate of France also noted that the other conclusions of the SCRS Report indicated the north Atlantic albacore stocks were moderately exploited.

10.5 The Delegate of France further observed that the mortality rates of dolphins in the albacore driftnet fishery is very low, as indicated in the Report of the Sub-Committee on Environment. He noted that this rate is comparable to that of the intergovernmental program adopted in 1991 to limit the catches of dolphins associated with yellowfin in the eastern tropical Pacific. He pointed out that this intergovernmental program, put into effect by the Inter-American Tropical Tuna Commission, has been approved by Spain. The Delegate of France added that unfortunately there does not exist a fishing gear that is directed only at the target species and that this was particularly the case for longline.

10.6 The Delegate of Spain informed the Commission that there are additional studies being conducted on these issues which will be submitted shortly. He noted that such additional information will facilitate subsequent studies of the SCRS.

10.7 The Delegate of U.S.A. stated that his country has been supporting over the past few years all the U.N. Resolutions relative to large-scale pelagic high seas driftnet fishing, i.e. U.N. Resolutions 44/225, 45/197 and 46/215. In view of those concerns and the fact that the international community is at least committed to a moratorium on large-scale pelagic driftnet on the high seas, the U.S. Delegate proposed that the Commission consider adopting another resolution supporting the UN Resolutions, and encouraging all members of the international community to prohibit large scale driftnet fishing on the high seas.

10.8 The SCRS Chairman informed the Commission that this item was not specifically discussed at his Committee but that some reference was made in the stock evaluations of albacore as well as in the Sub-Committee on Environment. He noted that there are a few large driftnet fisheries for albacore, which are developing very rapidly in the north Atlantic, and that catch information for only a part of these fisheries is available. He also noted that the SCRS is interested in the impact of this gear on the stocks.

10.9 The Delegate of Japan noted that his country had a large fleet of driftnet fishing vessels. He added that in respect and support of the U.N. Resolutions, his country had prohibited large-scale high seas driftnet fisheries as of 1992. However, he doubted that one fishing method can be discriminated against without a sound scientific basis and if the impact on the natural environment is found to be acceptable, then the high seas driftnet fishery can be resumed as provided by the U.N. Resolutions. He emphasized that all decisions should be based on a sound scientific basis and that the countries conducting driftnet fishing should be responsible and collect all the scientific data on the fishery.

10.10 The Chairman considered that this subject was a matter for discussion by the Commission Plenary rather than by the Panel and that the Commission was the organization entrusted with the conservation of tunas based on scientific advice. Therefore, the possible effects of driftnet fishing on the stocks of tunas must be analyzed in depth by the Commission. Recognizing that U.S. was preparing a draft Resolution on this subject, the Chairman decided to continue the discussions of this Agenda Item at the next Plenary Session.

Item 11. United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks

11.1 The Executive Secretary, referring to the document COM/93/20, reported that ICCAT could not be represented for the entire time at this UN Conference due to economical reasons, but that the Commission had received the Chairman's Text of Negotiation from the UN. He further informed the Commission that FAO will be holding *an Ad Hoc* Consultation on the Role of Regional Fishery Agencies in Relation to High Seas Fishery Statistics in December, 1993. He noted that the ICCAT Assistant Executive Secretary has been invited to participate in this meeting and that his trip expenses will be fully covered by FAO.

11.2 The Delegate of France considered that this U.N. Conference is one of the most significant meetings, since the outcome of the Conference will influence the content of the Code of Conduct for Responsible Fishing. Noting that two more sessions of this Conference are scheduled in 1994, and deal mainly with migratory species and since ICCAT is one of the most important tuna commissions along with the IATTC, the Delegate of France considered that it was absolutely necessary for the Commission to be represented and to convey a message of support to this Conference.

11.3 The Delegate of France submitted a draft declaration in support of this Conference for consideration by the Commission.

11.4 The Delegate of the U.S. supported the French statement and appreciated the initiative taken by France in forwarding this draft to the Commission.

11.5 The Draft Declaration in Support of the U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks was reviewed by the Commission, and after minor modifications, was adopted. The Declaration adopted is attached as **Annex 6.**

Item 12. Convention for the Conservation of Southern Bluefin Tuna (signed in Canberra on May 10, 1993)

12.1 The Chairman stated that at the 1992 Commission meeting, the Delegation of Japan had informed the Commission of the progress made by the Tripartite Meetings in the constitution of a forum for the management of southern bluefin tuna, which would be open to all interested nations, and which would establish adequate coordination with ICCAT.

12.2 The Chairman further noted that the Governments of Australia, New Zealand and Japan had signed a Convention for the Conservation of Southern Bluefin Tuna in May, 1993. The ICCAT Secretariat was informed of this in June, 1993, and invited a Representative of the provisional Secretariat of the future managing organization of the new Convention to attend the 1993 ICCAT meetings. However, no observer from that organization has come. Concerning this point, the Chair pointed out the following:

1) ICCAT is the only regional organization responsible for the conservation and management of all tunas and tuna-like fishes in the Convention Area, that is, in the entire Atlantic Ocean and adjacent seas.

2) As far as southern bluefin tuna is found in some areas of the Atlantic, its conservation and management pertains exclusively to ICCAT.

3) The institutions interested in achieving the same ends as ICCAT for southern bluefin tuna should coordinate their activities under the jurisdiction of ICCAT, with the object of avoiding overlapping or appropriation of responsibilities already internationally attributed, and in any case to avoid duplication of activities and resources directed towards the same goal.

4) The Governments that signed the new Tripartite Convention are urged to establish the opportune contacts with the Commission, with the object of clarifying the undetermined aspects that may arise in the development of the competencies that correspond to both organizations, and to establish the opportune cooperation to avoid unnecessary duplications.

12.3 The Delegate of France stated that he shared the comments made by the Chairman. He believed that the southern bluefin tuna stock is being taken care under the competence of ICCAT and that adding another organization for the management of the same stock may cause problems as well as duplication of effort.

12.4 The Delegate of Japan responded that the three countries (Japan, Australia and New Zealand) drafted this Convention and were in the process of ratifying it. He commented that southern bluefin tuna is a very unique species that is distributed and migrates throughout the three oceans (Atlantic, Pacific and Indian Oceans). Therefore, one organization, whose Convention area is limited to one ocean cannot carry out effective management on this stock. Referring to

the Convention, he stated that the Convention does not intervene in the activities of other existing international organizations but that it requests the best collaboration with them. Since Japan is a member of both organizations, it will assume the role of bridging the two organizations.

12.5 The Chairman stated that ICCAT is exclusively responsible for the management of this species in the Atlantic. Otherwise there will be totally unnecessary duplication of effort for management and research.

12.6 The Delegate of South Africa, while sharing the concern of the French Delegation, noted that this species is rather different from other species for which ICCAT has full competence, since southern bluefin tuna is commonly distributed in the Indian Ocean and Pacific as well as in the Atlantic. He emphasized the importance of exchanging all the information pertinent to the work of both Commissions.

12.7 The Delegate of France noted that southern bluefin tuna is indeed a stock distributed in the three oceans. However, he believed that ICCAT has competence on this stock in the Atlantic. He noted that Article 15, paragraph 2 of the Convention for the Conservation of Southern Bluefin Tuna indicated that: "Each Party shall encourage its nationals not to associate with the southern bluefin tuna fishery of any State or entity not party to this Convention, where such association could affect adversely the attainment of the objective of this Convention". He further noted that many ICCAT Contracting Parties are not Contracting Parties of the new Convention and that there could be a potential problem, if the new Commission takes action which is contradictory to ICCAT measures.

12.8 The Delegate of the U.S., noting that this new Convention is applicable to all the Oceans, expressed his concern on the competence of stock management of southern bluefin tuna in the Atlantic Ocean.

12.9 The Delegate of Japan drew the attention of the Commission to Article 12 of the Convention, which clearly states that this new Commission will make arrangements with other international organizations. While agreeing that the ICCAT has principal responsibility for the management of Atlantic tunas, the Delegate of Japan questioned whether it was an exclusive responsibility. He insisted that good coordination is necessary between the two organizations and assured the Commission again that Japan will make every effort to achieve such collaboration.

12.10 The Chairman reiterated that ICCAT has exclusive responsibility as far as tunas in the Atlantic are concerned.

12.11 The Delegate of the U.S. noted that Article 12 of the Convention for the Conservation of Southern Bluefin Tuna was drafted to establish collaborations with international organizations in general, but that no specific reference is made to ICCAT. Since ICCAT has competence over southern bluefin tuna in the Atlantic, it is different from other organizations which have no specific competence on this species. Therefore, the U.S. Delegate believed that the new organization should give special consideration to collaboration with ICCAT. The Commission should have priority in its contacts because it is different from the other organizations which have no specific competence on southern bluefin tuna.

THIRD PLENARY SESSION
November 11, 1993

Item 16. Matters concerning CITES

a) ICCAT position regarding the development of new criteria for listing species in the CITES Appendices

16a.1 In addressing the Commission, the Observer from the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) indicated that he was representing the CITES Secretariat, rather than the Parties to the Convention. He explained that the criteria for listing species on the Appendices to the CITES Convention have been under review. He noted that a number of drafts have been prepared, the most recent being the product of a meeting in Brussels at the end of August of the Standing Committee and the Plants and Animals Committee. He noted that the draft from this meeting was very different from the earlier draft and indicated that it had been sent to the Parties with the request for comments by the end of December, 1993. He also indicated that such comments will be taken into account in the preparation of a proposal to the Ninth Conference of the Parties, which is scheduled for November 13 to 19, 1994, in Fort Lauderdale, Florida (U.S.A.).

16a.2 The Observer from CITES regretted that a lapse in communications had resulted in ICCAT not receiving the most recent draft. He reiterated that this draft of the new criteria had been distributed to all members of CITES for comments and that any comments from ICCAT on the draft were welcome. He noted that such comments should be received before the end of 1993, so that they can be included in the documents prepared for the March Meeting of the CITES Standing Committee. Once final review is made, the final draft will be distributed by June 30, 1994, for consideration at the Ninth Conference of the Parties. The Observer from CITES stated that ICCAT will have the opportunity to send its representatives to the meeting. Moreover, since practically all the Contracting Parties of ICCAT are also Contracting Parties of CITES, he recommended coordination between the national agencies responsible for ICCAT matters and national agencies responsible for CITES matters.

16a.3 The Observer from CITES pointed out that the criteria currently in effect will be applied at the Conference to be held in 1994. Any new criteria approved at the Ninth Conference of CITES will be effective thereafter.

16a.4 The Chairman thanked the Observer from CITES for his introduction and welcomed comments from the floor.

16a.5 Mr. J. S. Beckett, of the Canadian Delegation, who led the Scientific Advisory Group that was formed by the SCRS, explained that his Group was asked to formulate some scientific comments which ICCAT might wish to present to the CITES Secretariat concerning the draft of the new criteria for listing species in the Appendices of CITES. He reported that the main points noted by the Group concerned the definition of terms used in the Appendices of the draft criteria. Mr. Beckett pointed out that the draft text must be interpreted in the context of the definition of terms that is included in Annex 5 to the draft criteria, which might be easily ignored. He noted that the definition of terms given in this Annex does include a provision for marine animals, regarding their special biological nature. He referred to the normal fluctuations in stock size of marine fish, mostly due to environmental changes, which should be recognized.

16a.6 Mr. Beckett also pointed out the concept of "fishing down", as it applies to marine fish, is recognized in the current draft. He noted that a virgin stock would be reduced to half the initial stock size by the time it reaches equilibrium with maximum sustainable yield (MSY). Mr. Beckett pointed out that many fish stocks are at levels much below those which support maximum sustainable yield and yet they can continue to support major fisheries indefinitely.

16a.7 Mr. Beckett proposed that the comments to CITES should consider all these points and should also include the suggestion that each criterion be preceded by a statement to the effect that the Criteria must be read together with the footnotes.

16a.8 Mr. Beckett introduced a Draft Resolution on Cooperation between ICCAT and CITES that had been prepared by an Ad Hoc Contact Group, with

considerable assistance from the Observer of European Community.

16a.9 The Delegate of Japan expressed her appreciation for the explanation provided by the Observer from the CITES Secretariat. She noted that his country was interested in the development of new CITES criteria for listing species in its Appendices.

16a.10 The Delegate of Japan referred to the draft criteria for amendment of Appendices I and II circulated to all the CITES Contracting Parties as of October 15, 1993. She noted some of the important paragraphs in the Draft Criteria which are directly related to the Commission's work. She welcomed CITES's recognition that intergovernmental bodies, such as ICCAT, whose work relates to species subject to an amendment proposal should be consulted with by the proposers. She also appreciated that CITES noted the competence of ICCAT over the management of marine species. He expressed support for the provision in the draft criteria, whereby when considering proposals to amend Appendices I and II of the CITES Convention, the views of intergovernmental organizations, like ICCAT, with competence for the management of those species should be taken fully into account by the CITES Contracting Parties.

16a.11 The Delegate of Japan stressed the importance that these paragraphs relating to ICCAT would be maintained during the course of CITES's review process for finalizing its new criteria. She was of the opinion that ICCAT should send its message to CITES on the draft criteria based along the lines mentioned above, as well as the point mentioned by Mr. Beckett.

16a.12 The Delegate of Japan fully supported the Resolution introduced by Mr. Beckett.

16a.13 The Delegate of the United Stated also voiced support for the Resolution, and stated that he believed cooperation with CITES was of mutual interest.

16a.14 The Delegate of Spain also supported the Resolution. He asked for some clarification on the provision for consultation by CITES on marine species. He suggested a modification to this effect, while recalling that CITES should always consult with the Commission on species within the ICCAT's terms of reference.

16a.15 The Delegate of Portugal supported the proposed Resolution as presented by Mr. Beckett, but including the modification proposed by the Delegate of Spain.

16a.16 The Delegate of France mentioned that he also agreed with the proposed Resolution. However, he wished to include a reference to the Declaration on Responsible Fishing adopted in May 1992 by the Conference which met in Cancun, Mexico, to this effect. The Delegate of France provided the reference to this Declaration to be included in the Resolution, and mentioned that with this addition, France then fully endorsed the proposed Resolution.

16a.17 The Delegate of Spain expressed an interest in hearing the opinions of Canada, the EC and CITES as to the proposed modifications.

16a.18 Mr. Beckett reminded the Commission Participants that the Resolution was not a proposal by Canada, but was the product of a working group. He stated that he agreed with the modification suggested by Spain.

16a.19 The Observer from the EC also agreed with the proposed modification by the Delegate of Spain.

16a.20 The Commission adopted the Draft Resolution on Cooperation with CITES, which is attached as **Annex 17.**

16a.21 The Observer from the CITES Secretariat reminded the participants that he did not intend to propose any amendment to the Resolution, since this was an ICCAT matter. He described several of the procedures followed by CITES concerning the listing of species in its Appendices. He mentioned that the CITES Secretariat is under the obligation to consult with pertinent intergovernmental organizations, when a proposal to list a marine species is received. He stated that the CITES Secretariat would certainly follow this procedure in the case of ICCAT. He pointed out that practically all members of ICCAT are also members of CITES. He stressed that ICCAT be represented at the Ninth Conference of CITES, but that the Commission, like CITES, is only the sum of its Parties. He therefore recommended consultations at the national level within ICCAT, and that the final decision be made at the level of the Parties.

16a.22 The Chairman thanked the Observer from CITES for his comments and explanations. The Chairman announced that the Commission will continue discussion on the other points concerning this Agenda item on the CITES issue at the Final Plenary Session.

FINAL PLENARY SESSION
November 12, 1993

Item 9. Collaboration of Non-Contracting Parties in the objectives of ICCAT - (Continued)

9.23 At the Second Plenary Session, discussions were made under this Agenda Item and the Chairman referred further discussions to the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures. The Commission noted that this matter has been adequately studied in the Working Group, Panels and even in the Infractions Committee. No further discussions were made.

Item 10. Large-scale driftnet fishing and its effects on tuna stocks - (Continued)

10.11 Further to the discussions of this Agenda Item at the Second Plenary Session, the Delegate of the U.S. introduced a Draft Resolution on Large-scale Pelagic Driftnet Fishing. The proposal was seconded by Cape Verde.

10.12 The Delegate of France proposed some minor modifications to the draft text, which were accepted by the Commission.

10.13 The Commission adopted the Resolution with these modifications and it is attached as **Annex 5.**

10.14 The Delegate of Korea informed the Commission that his country had totally prohibited large-scale pelagic driftnet fishing in the North Pacific, starting on January 1, 1993, with respect to the United Nations Resolutions. He indicated that all of the 105 fishing vessels equipped with large-scale pelagic driftnets in the North Pacific had removed their driftnets. He further mentioned that 58 of those fishing vessels have been already equipped with another type of fishing gear (squid jigging gear) and that the rest of the vessels will be equipped with proper fishing gears by the end of 1993.

10.15 The Delegate of Korea further stated that his government had appropriated about 60 million dollars (US) in the 1993 government budget to support the re-equipping of these ex-large-scale driftnet fishing vessels with new fishing gears. He also noted that no fishing vessels of Korea are engaged in driftnet fishing at this time.

10.16 Additional comments were made by the Delegates of France and Spain on driftnet fishing, which were related to the deliberations during the Second Plenary Session. The Commission agreed to add these comments to the Proceedings of the Second Plenary Session (i.e., paragraphs 10.4 to 10.6), so as to maintain continuity of the discussions.

Item 13. Report of the Infractions Committee

13.1 The Report of the Infractions Committee was presented to the Commission by the Chairman of the Committee, Mr. A. J. Penney (South Africa). The Commission appreciated the very thorough work carried out by the Committee. After the Commission reviewed the Report, it was adopted and is attached as **Annex 16.** All the recommendations made by the Infractions Committee were also endorsed by the Commission.

Item 14. Report of the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures

14.1 The Chairman of the Working Group, Mr. B. Hallman (U.S.A.) presented the Report of the Group. He stressed that a wide range of tasks was given to the Group with very limited time in which to carry them out. He indicated that major progress had been made by the Working Group, but that the Group requested that an intersessional meeting be held in 1994 to continue working on its assignments.

14.2 The Working Group Chairman, in summarizing the Group's Report, drew the attention of the Commission to the proposed ICCAT Resolution on the Validation by a Government Official of the Bluefin Statistical Document (**Annex 9**), and to the proposed Recommendation by ICCAT Concerning the Implementation of the ICCAT Bluefin Tuna Statistical Document Program on Fresh Products (**Annex 10**).

14.3 The Permanent Working Group also studied the problems relative to bluefin tuna catches made by the non-contracting countries which do not comply with the ICCAT regulatory measures, and the possibility of adopting a satellite monitoring and information reporting system for bluefin tuna fisheries. The Chairman reported that the Group intended to carry out more studies on these subjects at the proposed intersessional meeting.

14.4 The Commission thanked the Chairman and the members of the Permanent Working Group for the excellent progress made during the limited time available to the Group.

14.5 The Delegate of France commended the work done by the Group and proposed adoption of the Group's Report.

14.6 The Delegate of the U.S., in thanking the Working Group, noted with satisfaction that the Group had explored the possible implementation of trade measures to assure the compliance with ICCAT conservation measures.

14.7 The Delegate of Spain expressed his appreciation for the work carried out by the Permanent Working Group and noted the efforts by FAO in creating the "FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas", which should be supported by the Commission. He also noted that there are a broader range of options for this Working Group to study relating to catches by non-Contracting Parties.

14.8 The Delegate of Spain presented a Draft Resolution to support the elaboration of a Code of Conduct for Responsible Fishing, and proposed its adoption by the Commission.

14.9 After reviewing the proposed Draft, and introducing some minor modifications, the Commission adopted the Resolution, which is attached as **Annex 7.**

14.10 The Delegate of Japan also supported adoption of the Permanent Working Group's Report. He stated that his country has been making great efforts to implement effectively the ICCAT Bluefin Statistical Document Program. He thanked the Chairman and the Permanent Working Group as a whole for producing such a meaningful outcome for the further smooth implementation of this Program. The Delegate of Japan, however, pointed out that this Program is only the first step in dealing with the problem related to the non-Contracting Parties. He believed that as a result of the implementation of this Program, the Commission will have a much clearer view of the problem and which countries are undermining the effectiveness of the conservation measures adopted by this Commission. The Japanese Delegate pointed out that his country accepted again this year severe conservation measures on bluefin tuna, but that the fruit of this painful conservation effort would be taken away very easily by irresponsible fishing activities by non-contracting nations. Thus, he strongly emphasized the necessity of having a clear future strategy to confront this problem.

14.11 The Delegate of Japan promised to work very hard, both at the intersessional meeting of the Permanent Working Group, which his country intends to host, and at the next annual meeting of the Commission, with other concerned members of the Group, such as the U.S., towards the establishment of further steps, or counter-measures, including appropriate trade-related measures, to control effectively the fishing activities being conducted that are inconsistent with ICCAT conservation measures. The Delegate of Japan therefore proposed that this subject be included in the Agenda of the next meeting of the Permanent Working Group.

14.12 The Commission adopted the Report of the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures, which is attached as **Annex 8.** At the same time, the Commission adopted the Recommendation Concerning the Implementation of the ICCAT Bluefin Tuna Statistical Document Program on Fresh Products (**Annex 10**) and the Resolution on the Validation by a Government Official of the Bluefin Statistical Document (**Annex 9**), proposed by the Working Group, including holding its next meeting during the intersessional period of 1994 in Japan.

Item 15. Reports of Panels 1 to 4, and possible new regulations to be considered

15.1 The Reports of Panels 1, 2, 3 and 4 were presented to the Commission. The Commission

thanked all the Chairmen and the members of the Panels for the excellent work carried out.

15.2 The Panel Reports were reviewed and adopted by the Commission. They are attached as **Annex 11** to the Proceedings.

15.3 The Commission reviewed the Recommendation by ICCAT for Supplemental Regulatory Measures on Atlantic Yellowfin Tuna submitted by Panel 1. The Recommendation was adopted and attached as **Annex 12.**

15.4 The Commission also studied three Recommendations for regulatory measures on Atlantic bluefin tuna which were submitted by Panel 2: (1) the Recommendation by ICCAT on the Management of Bluefin Tuna Fishing in the Western Atlantic (attached as **Annex 13**); (2) the Recommendation by ICCAT on the Management of Bluefin Tuna Fishing in the Central North Atlantic Ocean (attached as **Annex 14**); and (3) the Recommendation by ICCAT on Supplemental Regulatory Measures for the Management of Eastern Atlantic Bluefin Tuna (attached as **Annex 15**). All these Recommendations were adopted by the Commission.

Item 16. Matters concerning CITES - (Continued)

b) Communication with CITES on bluefin stock conditions and ICCAT management measures

16b.1 The Commission expressed its satisfaction that the Secretariat has kept the CITES Secretariat informed of all the scientific findings of the Commission concerning Atlantic bluefin tuna stock conditions, as well as all the management measures adopted by the Commission on the same species.

c) Action to be taken by ICCAT in relation to any proposal on CITES listing of species which is under ICCAT competence

16c.1 The Commission Chairman proposed that similar procedures be taken as in the past, should any stocks or species under ICCAT competence be proposed for inclusion in the Appendices of the Conference on International Trade in Endangered Species of Wild Flora and Fauna (CITES). In such an event, the Chairman suggested that the Secretariat inform the SCRS Chairman and the scientists involved in research on the species in question of such a proposal, and after the ICCAT scientific position on said species is drafted, that it be distributed among the scientists and Commissioners, and it should be transmitted to the General Secretary of CITES (**Annex 22**).

16c.2 The Chairman also reiterated the previous discussions on this subject with respect to the importance of communication between the ICCAT Commissioners and the national authorities of their countries, to assure that such authorities are kept duly informed of the existence of and responsibilities to ICCAT. The Chairman also considered that the inclusion of persons acquainted with ICCAT's work in the Delegations of the ICCAT Contracting Parties to CITES Conferences would be most appropriate.

16c.3 The Delegate of Japan, in expressing his full support of the proposal made by the Chairman, and reiterated that when a proposal to list tuna or tuna-like species which are under ICCAT competence is made, the Commission should send its comments and views to CITES. He pointed out that in addition to the comments from the Commission, all the ICCAT Contracting Parties which are also Parties to CITES are encouraged to send their national comments to the CITES Secretariat.

16c.4 The Delegate of Japan explained that from their experience at the CITES Conference in Kyoto in March, 1992, the participants at the CITES Conference numbered 1,500, including about 500 government representatives, 500 NGO people, and 500 press people. Out of the 500 government representatives, there were only about 10 people with a fisheries background, which was an extreme minority.

16c.5 The Delegate of Japan noted that in Kyoto, his country had hosted an ICCAT member countries' meeting to coordinate the ICCAT position. He pointed out that most of the participants from the ICCAT Contracting Parties were not fisheries officials and that, even worse, some of them did not recognize that their country was a member of ICCAT. He also indicated that it was very difficult to contact the members of the delegations from the ICCAT member countries in the very large conference hall.

16c.6 The Delegate of Japan stated that, based on these experiences, his country fully supports the second suggestion by the Chairman in that officials who are familiar with ICCAT be included on the national delegations to the CITES Conference. He pointed out that most CITES Contracting Parties are not directly involved in the Atlantic bluefin tuna issue, so that a

thorough explanation of the ICCAT position to the CITES Contracting Parties in the conference hall was essential to obtain support of the ICCAT position from non-ICCAT countries attending the Conference.

16c.7 The Delegate of Japan stressed the importance of representation from the Commission to the 1994 CITES Conference. He noted that the Commission should send it representatives and members of the Secretariat. He also proposed that ICCAT open a booth at the Conference to explain and propagate the ICCAT position.

16c.8 The Delegate of Japan was of the opinion that the Commission should request CITES to grant special status of the representatives from ICCAT, since the Commission is an intergovernmental organization.

16c.9 The Delegate of Japan introduced a Draft Resolution concerning the makeup of the delegations from the ICCAT Contracting Parties to the CITES Conference, i.e. that such delegations include members who are familiar with ICCAT and that a contact point in their CITES delegates be identified and informed to the other ICCAT Contracting Parties.

16c.10 The Delegate of the U.S. commented that a close working relation between ICCAT and CITES was very important. The U.S. Delegate also observed that the U.S. proposal to deal with the ICCAT-inconsistent activities of non-Contracting Parties had not been totally accepted by the Commission, and he hoped that this would be given full consideration at the next Commission meeting.

16c.11 The Delegate of Japan also considered that trade measures might be a practical solution to the problem of catches by non-Contracting Parties that do not comply with ICCAT regulatory measures. He further noted, however, that the CITES procedure for trade restriction on species listed in its Appendix II was very complicated and application of such procedures for any transaction involving fresh fish products would be unrealistic.

16c.12 The Delegate of Spain stated that any approach to be taken by the Commission on this Agenda Item should be a realistic one.

16c.13 The Delegate of Uruguay regretted that there had been a lack of collaboration between the people involved in the fishery and those involved in CITES in her country. The Delegate of Uruguay requested that the Secretariat circulate a letter suggesting that the national authorities of an ICCAT Contracting Party include in its Delegation to CITES a person who is acquainted with ICCAT matters.

16c.14 A Draft Resolution Concerning the Composition of the Delegations of ICCAT Contracting Parties to CITES was introduced. After making some editorial modifications to the text, the Resolution was adopted and is attached as **Annex 18.**

Item 17. Recommendations concerning research and statistics

17.1 The Commission noted that several recommendations concerning research and statistics had been forwarded by the SCRS Chairman, Dr. J. L. Cort, during his presentation of the Committee's Report. The Commission also noted that the recommendations concerning stock management had been carefully studied and reiterated by the Panels, whereas the STACFAD reviewed those recommendations that have financial implications. The Commission endorsed all the recommendations made by the SCRS.

17.2 The SCRS Chairman expressed his appreciation to the Commission for its support to the Committee over which he has presided for the past few years. The Commission thanked Dr. Cort for the excellent leadership demonstrated during his term as SCRS Chairman.

Item 18. Report of the Standing Committee on Finance and Administration (STACFAD)

18.1 The Report of the Standing Committee on Finance and Administration (STACFAD) was presented by its Chairman, Mr. D. Silvestre (France). The Commission appreciated the efforts of the Committee Chairman and members to solve the financial constraints currently being experienced by the Commission, as well as by many Contracting Parties.

18.2 The Commission adopted the Report and approved all the recommendations included therein. The STACFAD Report is attached as **Annex 20.**

Item 19. Adoption of the 1994-1995 biennial budget and member country contributions

19.1 The Commission approved the 1994-1995 Biennial Budget of the Commission (**Table 1** of the STACFAD Report) proposed by STACFAD, with the understanding that the second half of the budget (1995)

will be subject to review at the 1994 Special Meeting of the Commission.

19.2 The Commission also reviewed and approved the country contributions to the above biennial budget (**Table 2** of the STACFAD Report), also with the understanding that the 1995 contributions will be subject to review of the 1995 Budget. The Chairman pointed out that the calculation of the contributions for the 1994-1995 biennial period were carried out in accordance with the current Article X of the Convention.

Item 20. Staff Regulations and Rules

20.1 The Commission noted that STACFAD had reviewed the revision of the Staff Regulations and Rules, proposed by the Executive Secretary, and recommended that they go into effect in 1994 on a provisional basis for a one-year period, with the condition that they not result in any increase in the 1994 Budget approved by the Commission.

Item 21. Reports of subsidiary bodies appointed by the Commission for the meeting

21.1 The Working Group to Consider New Criteria for the Admission of Observers presented its Draft Guidelines and Criteria for Granting Observer Status to the Commission. The Executive Secretary proposed that the application for observer status be presented at least 90 days in advance of the meeting rather than 120 days as proposed by the Group. He indicated that this change would avoid possible criticism and facilitate application for observer status. This proposed modification was approved by the Commission.

21.2 Minor editorial modifications were also introduced to the Guidelines to clarify as to the participation of observers at subsidiary meetings and their right to address Commission meetings.

21.3 The Delegate of the U.S. pointed out that a decision had to be made by the Commission as to whether the vote for acceptance or non-acceptance of observers should be open or secret ballot. The Delegate of the U.S. indicated his preference for the open voting procedure, although he was ready to follow the decision made by the majority of the Commissions members.

21.4 Some discussions ensued as to whether the Commission would accept the Working Group's proposal for a secret ballot, or whether the Commission would take a vote on this issue.

21.5 The Commission Chairman asked which of the Contracting Parties present preferred the open vote procedure to decide the acceptance of applications of observers. Two countries (South Africa and the U.S.A.) responded affirmatively, hence it was decided that the secret voting procedure will be applied.

21.6 The Guidelines and Criteria for Grating Observer Status were adopted by the Commission and are attached as **Annex 19.**

Item 22. Date and place of the next regular meeting of the Council or special meeting of the Commission

22.1 In view of the various important decisions to be made by the Commission in 1994, such as regulatory measures on tunas and tuna-like fishes and the review of the 1995 Budget and contributions, the Commission decided to hold a Special Commission meeting in 1994 rather than a Council meeting.

22.2 The Chairman proposed that the Ninth Special Meeting of the Commission be held from November 14 to 18, 1994, in Madrid.

22.3 The Delegate of Japan inquired whether there was a possibility to avoid an overlapping of the ICCAT meeting dates with those of the CITES Conference (November 7 to 18, 1994, in Fort Lauderdale, Florida). The Chairman stated that the proposed dates for the 1994 ICCAT meeting cannot be changed since they were chosen after consulting with several Delegates and were found to be most convenient dates for the Commission.

22.4 The Commission decided to hold its Ninth Special Meeting of the Commission from November 14 to 18, 1994 and the SCRS meeting during the preceding week (November 7 to 11), both in Madrid, Spain.

Item 23. Items to be discussed by the Council at its next meeting

23.1 This item was not discussed since the Commission decided not to hold a Council meeting in 1994.

Item 24. Date and place of the next regular meeting of the Commission

24.1 The Delegate of South Africa extended a tentative invitation to the Commission to hold the Fourteenth Regular Meeting in 1995, in Cape Town. The Delegate of South Africa stated that this invitation will be formalized after confirmation with his new Government in May, 1994.

24.2 In thanking the Delegate of South Africa for the invitation extended to the Commission, it was agreed to take a decision at the next meeting of the Commission in 1994. The Executive Secretary was asked to study the repercussions which holding the meeting outside Madrid may have on the Commission's budget.

Item 25. Election of the Chairman of the Commission

25.1 The Delegate of the U.S., in commending the excellent leadership demonstrated by Dr. Lima, and in particular in leading the last tow years' Commission sessions, where several important ICCAT Recommendations and Resolutions were adopted and important decisions were made concerning the Commission's work and finances, proposed the re-election of Dr. Lima as Chairman of the Commission for another biennial period, 1994-1995.

25.2 This proposal was unanimously supported by the Commission and Dr. A. Lima was re-elected Chairman of the Commission for the 1994-1995 biennial period.

Item 26. Election of the Vice-Chairmen of the Commission

26.1 The Chairman of the Commission proposed the re-election of Mr. K. Shima (Japan) and Mr. G. Pambo (Gabon) as First and Second Vice-Chairmen of the Commission, respectively. This proposal was unanimously supported.

Item 27. Election of the members of the Council

27.1 This item was not discussed since the Commission decided not to hold a Council meeting in 1994.

Item 28. Other matters

28.1 The Delegate of Japan noted that the Commission, at its Opening Plenary Session, had decided to discuss the Japanese proposal to initiate a feasibility study on vessel tracking and catch reporting through a satellite system under this Agenda Item. However, the Delegate noted that this matter had been amply discussed by the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures and that the Working Group had decided to discuss this subject further, particularly in relation to the technical aspects, at its proposed intersessional meeting. Hence, the Delegate of Japan proposed that an item on this subject be included in the Agenda for the next meeting of the Commission.

28.2 The Delegate of Canada supported this proposal and the Commission Chairman considered the proposal appropriate.

Item 29. Adoption of Report

29.1 The Commission reviewed the Draft Proceedings of the First and Second Plenary Sessions and adopted them with some modifications. It was agreed that the Proceedings of the Third and Final Plenary Sessions would be adopted by mail, as well as the 1993 Proceedings in their entirety.*

Item 30. Adjournment

30.1 The Executive Secretary, on behalf of the Secretariat, thanked the Chairman and Delegates and all the meeting participants for their constructive spirit of cooperation.

30.2 The Delegate of France congratulated the Chairman for his leadership and the Executive Secretary and all the Secretariat staff for their excellent

* On February 28, 1994, the Proceedings of the Thirteenth Regular Meeting of the Commission were adopted in their entirety.

efficient work during the year and particularly during the Commission meetings.

30.3 At the closing of the meeting, the Commission Chairman referred to several key issues discussed during the Commission sessions and commended the meeting participants for the excellent progress made on all of these issues. The Chairman thanked the participants, Secretariat staff and the interpreters for their excellent collaboration, which contributed to the success of the meeting. Dr. Lima's closing speech is included in its entirety in **Annex 4.**

30.4 Dr. J. Loira Rua, General Secretary of Maritime Fisheries of Spain, addressed the Commission at its closing ceremony. He congratulated the delegates for their spirit of constructiveness and their solidarity throughout the deliberations of this meeting. He emphasized the social and economic importance of the fishing sector, which involves the exercise of responsible fishing and referred to the elaboration of a Code of Conduct for Responsible Fishing. Mr. Loira also reiterated the relevant role of international fishery organizations, such as ICCAT, in the conservation and management of the resources. He also reiterated the Resolutions and Recommendations that were adopted by the Commission at this year's meeting. In his final comments, Mr. Loira also urged the Contracting Parties to ratify as soon as possible the Madrid Protocol to amend the scheme to calculate the contributions. Mr. Loira's speech is included in **Annex 4** to the Proceedings.

30.5 The Thirteenth Regular Meeting of the Commission was adjourned on November 12, 1993.

ANNEX 1

COMMISSION AGENDA

1. Opening of the meeting
2. Adoption of Agenda, arrangements for the meeting and appointment of subsidiary bodies
3. Introduction of delegations
4. Admission of observers (non-member countries, intergovernmental organizations, and non-governmental organizations)
5. Review of Commission membership
6. Ratification or acceptance of the Protocol of amendment to the Convention (adopted in Paris in 1984)
7. Ratification or acceptance of the Protocol of amendment to the Convention (adopted in Madrid in 1992)
8. Report of the Standing Committee on Research and Statistics (SCRS)
9. Collaboration of Non-Contracting Parties in the objectives of ICCAT
10. Large-scale driftnet fishing and its effects on tuna stocks
11. United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks
12. Convention for the Conservation of Southern Bluefin tuna (signed in Canberra on May 10, 1993)
13. Report of the Infractions Committee
14. Report of the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures
15. Reports of Panels 1 to 4, and possible new regulations to be considered
16. ICCAT position on the development of new criteria for listing species in the CITES Appendices
    a. ICCAT position regarding the development of new criteria for listing species in the CITES Appendices
    b. Communication with CITES on the bluefin stock condition and ICCAT management measures
    c. Action to be taken by ICCAT in relation to any proposal on CITES listing of species which is under ICCAT competence
17. Recommendations concerning research and statistics
18. Report of the Standing Committee on Finance and Administration (STACFAD)
19. Adoption of the 1994-1995 biennial budget and member country contributions
20. Staff Regulations and Rules
21. Reports of subsidiary bodies appointed by the Commission for the meeting
22. Date and place of the next regular meeting of the Council or special meting of the Commission
23. Items to be discussed by the Council at its next meeting
24. Date and place of the next regular meeting of the Commission
25. Election of the Chairman of the Commission
26. Election of the Vice-Chairmen of the Commission
27. Election of the members of the Council
28. Other matters
29. Adoption of Report
30. Adjournment

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ANNEX 3

LIST OF COMMISSION DOCUMENTS

COM/93/ 1	Tentative Commission Agenda
COM/93/ 2	Annotated Tentative Commission Agenda
COM/93/ 3	*(SCRS/93/1)* Tentative Agenda of the Standing Committee on Research and Statistics (SCRS)
COM/93/ 4	Tentative Agenda of the Standing Committee on Finance and Administration (STACFAD)
COM/93/ 5	Tentative Agenda for Panels 1-4
COM/93/ 6	Tentative Agenda of the Infractions Committee
COM/93/ 7	Tentative Agenda of the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures
COM/93/ 8	Panels - Mandate and Membership
COM/93/ 9	1993 Administrative Report
COM/93/10	1993 Financial Report
COM/93/11	Estimated Budget and Member Country Contributions for Biennial Period 1994-95
COM/93/12	*(SCRS/93/12)* Report on Statistics and Coordination of Research in 1993
COM/93/13	*(SCRS/93/13)* 1993 Meeting Report of the Standing Committee on Research and Statistics (SCRS)
COM/93/14	*(SCRS/93/14)* Report of the Contributions/Expenditures of the ICCAT Enhanced Billfish Research Program in 1993
COM/93/15	*(SCRS/93/15)* **Rev.** Review of the Progress made in the Bluefin Year Program (BYP) in 1993
COM/93/16	*(SCRS/93/16)* Meeting of the ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna (Tenerife, Canary Islands, Spain, June 3-9) - Modifications to Document COM-SCRS/93/16 introduced at the time of adoption of the Working Group Report
COM/93/17	*(SCRS/93/17)* ICCAT Workshop on the Technical Aspects of Methodologies which account for Individual Growth Variability by Age (St. Andrews, N.B., Canada, July 6-10, 1993)
COM/93/18	*(SCRS/93/18)* Convention for the Conservation of Southern Bluefin Tuna
COM/93/19	*(SCRS/93/19)* Collection of Information on Tuna Fisheries By-catches
COM/93/20	*(SCRS/93/20)* United Nations Conference on Sraddling Fish Stocks and Highly Migratory Fish Stocks (New York, July 12-30, 1993)

COM/93/21 *(SCRS/93/21)* Information Relative to High Seas Driftnet Fishing

COM/93/22 *(SCRS/93/22)* Creation of an ad hoc GFCM/ICCAT Working Group on Large Pelagic Fishes in the Mediterranean

COM/93/23 *(SCRS/93/23)* Development of New Criteria for Listing Species in the CITES Appendices and Supplement No. 1 to Document COM-SCRS/93/23

COM/93/24 *(SCRS/93/24)* Informe al SCRS de la LI Reunión de la Comisión Interamericana del Atún Tropical - Ariz, J.

COM/93/25 Status of the Regulatory Measures Recommended by ICCAT for the Conservation of Yellowfin Tuna, Bigeye Tuna, Bluefin Tuna and Swordfish

COM/93/26 ICCAT Port Inspection

COM/93/27 Collaboration of Non Contracting Parties in the Objectives of ICCAT

COM/93/28 Modifications to Introduce in the ICCAT Financial Regulations & Rules of Procedure Ppon the Entry into Force of the Protocol Adopted in Madrid in 1992

COM/93/29 Draft of the ICCAT Staff Regulations and Rules

COM/93/30 Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures

COM/93/31 ICCAT Bluefin Tuna Statistical Document Program

COM/93/32 Guidelines and Criteria for the Admission of Observers

COM/93/33 Resolution of the Council of NASCO Regarding the Adoption of a Protocol for States Not Party to the NASCO Convention

COM/93/34 Draft Guidelines for National Reports to the Infractions Committee

COM/93/35 Degree of Compliance of the ICCAT Management Recommendations and

- Supplement No. 1 to Document COM/93/35
- Supplement No. 2 to Document COM/93/35

ANNEX 4

SPEECHES

Opening Speech by Dr. A. Ribeiro Lima
Chairman of the Commission

Distinguished Delegates, good morning to all of you.

It is my honor to declare open the sessions of this Thirteenth Regular Meeting of ICCAT. I appreciate the presence of so many Delegates of the Member Countries of the Commission, and the Observers from other countries, entities and organizations, whose presence confirms the growing interest of the international community in ICCAT's activities, particularly this year, in which the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks was held this past July.

As for the Commission in 1993, in addition to the usual stock assessment sessions, ICCAT organized two important meetings: one in Tenerife (Spain) concerning the status of the Atlantic yellowfin stock, convened by Dr. Alain Fonteneau, and another in St. Andrews (Canada), convened by Dr. Julie Porter, concerning the methodologies to determine the relationships between growth and age of fish. In order to improve our data bases on the status of the tuna and tuna-like fisheries in the Mediterranean, contacts with the General Fisheries Council of the Mediterranean (GFCM) have resulted in the establishment of a permanent, joint, ad hoc GFCM/ICCAT Group for research and statistics on large pelagic fishes in the Mediterranean.

One matter which I believe we should try to solve in a decisive manner during this meeting is relative to the ratification or acceptance of the Protocol signed in Paris in 1984 by all the Member Countries of this Commission. During this past year, I sent successive communications to the Governments of the Contracting Parties that have not yet ratified or accepted. Because of the lack of justifications or explanations from these Governments, I believe it is necessary to adopt a firm decision, so as not to delay further the accession of the European Economic Community as a Contracting Party to the ICCAT Convention.

Another matter related to the amendment of the Convention concerns the ratification or acceptance of the Protocol signed in Madrid in 1992 to implement the new method of financing our budget, thereby facilitating the contributions of the less developed countries. At this late date it would now be impossible to finance the next budget by the new method. Therefore, it will be necessary to continue with the current financing system for the budget that we will be adopting during this Regular Meeting. In this sense, I would appreciate your giving due consideration to the proposals presented by the Executive Secretary to carry out the activities of the 1994-1995 biennial period.

The financial situation of the Commission continues to be extremely precarious, due to the non-payment of contributions by a growing number of Contracting Parties. Consequently, it will be essential during the next year that these Contracting Parties satisfy their financial responsibilities, in order to assure the continuity of the activities of this international Commission until the entry into force of the Madrid Protocol. If this occurs in the course of 1994, as I hope it will, the Commission could decide at its next special meeting that the financing of the 1995 budget be done by the new system.

Among the administrative matters on our Agenda is one concerning the new Regulations and Rules for the Secretariat staff. Last June, I sent a letter to you reminding you that this matter was pending discussion from our meeting in November, 1992. I am confident that during this entire year the distinguished delegates have had sufficient time to study these proposals, with a view to their adoption.

As you will have observed, I have decided to include in our Agenda the subject of CITES. In August, I sent a letter to you indicating my concern

about the possible development of new criteria for the inclusion of living species in the Appendices of the CITES Convention. The Executive Secretary also intervened in this sense before the Secretary General of CITES. I consider that the Commission should study carefully the possible consequences of this initiative, which has also been discussed by the SCRS, and prepare some type of response with a view towards the next meeting of CITES, scheduled to be held in the United States at the end of 1994.

As regards the collaboration of non-Contracting Parties in the objectives of ICCAT, tomorrow the first meeting will be held of the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures, which we established last year, with particular reference to the catches and exports of bluefin tuna. I would like to reiterate the important task which this new Working Group should carry out, which is in charge, among other matters, of reviewing and monitoring the development of the ICCAT Bluefin Tuna Statistical Document Program, in effect since July 25, 1993. We should all be very conscious that the incompliance of internationally-agreed conservation measures reduces the credibility and efficiency of ICCAT, and hampers the joint action with the non-Contracting Parties so that they cooperate decidedly in the carrying out of our responsibilities.

I have cited only a few of the important items on our Agenda. I am confident that we will be able to discuss adequately all of them in the course of this meeting. In December, 1994, the Commission will celebrate the 25th anniversary of the start of its activities. As you know, international fishing community eagerly awaits the extremely important agreements which will signify a fortification of the objectives of a regional Organization such as ours. From this moment on, I would appreciate your continuing with your already proven spirit of consensus in order to confirm and improve, if possible, the international esteem that ICCAT has earned over the years. For this, you can all rely on my full dedication and support.

Thank you for your attention.

Closing Remarks by Dr. A. Ribeiro Lima
Chairman of the Commission

Mr. General Secretary of Maritime Fisheries of Spain, Distinguished Delegates:

We have arrived at the close of the sessions of this Thirteenth Regular Meeting of the Commission. I would like to acknowledge, first of all, the presence of Dr. Loira, which signifies the importance which the Spanish authorities give to our work and concerns.

I am not going to summarize our discussions in detail. But yes, I want to make reference to the important results which are due to a firm willingness to reach a consensus among the representatives of the Contracting Parties. It is sufficient to cite, as an example, the Recommendations adopted concerning bluefin tuna, for the eastern and western zone, as well as for the central north Atlantic, where for the first time a precautionary catch limit has been established.

I sincerely appreciate the great spirit of work and continued collaboration of the Delegates and Observers. We have reached numerous compromises, based on realism, although some of them can be transitory. I believe that in this life the idea of "time phasing" is very important and often it is not enough that an objective be reasonably desired. It is also essential to know how to organize its gradual implementation. It is not to the world of the sea to whom I am going to describe at this time the virtues of patience and the hope of better days ahead.

The high seas fisheries today face problems which cannot be resolved within the framework of traditional schemes. Now, more than ever, a decided political will is necessary to face these problems in a internationally concerted manner. These political impulses should be accompanied by impulses of a scientific and technical nature, in order to clear the path and present alternative actions that are soundly based.

In this respect I would like to point out the extreme importance to ICCAT of the meetings called by the United Nations on high seas fishing, and the CITES Conference. I can say with a sound basis that great effort has been made by our Commission in order to study thoroughly the documentation and

decision adopted for the conservation and management of bluefin tuna.

I am confident that next year we can rely on the ratification of the Paris Protocol by Gabon and Morocco, which will permit the entry of the European Community as a full member of ICCAT. I would also like to point out our Resolution in the sense of assuring a rapid ratification of the Madrid Protocol, in order to resolve the recurring problem of the financing of our budget.

I would like to dedicate special regards to those of you who do have the intention or the possibility to return as Delegates in 1994. These are true friends who, without a doubt, we will all miss next year, especially me. Many thanks for your collaboration during all these years.

I would also like to thank all the staff of the Secretariat, the interpreters and auxiliary personnel for their constant dedication and their help in facilitating our work. I would like to personally thank the Executive Secretary for the honorable manner with which he has accepted budgetary levels which are distinct from those he presented yesterday with so much interest, and for the constant help and advice which he has afforded me as Chairman of ICCAT since he was named to head the Secretariat.

Distinguished Secretary General of Maritime Fisheries of Spain: Permit me to take advantage of your presence here to transmit to you the Commission's appreciation for the facilities granted by the Spanish Government for our Headquarters. Permit me also to transmit to your our wish, which I suppose you share as well, to assure that the installations of our Headquarters are at the height of the noble and important objectives established in the ICCAT Convention. I am sure that you will be an excellent defender of ICCAT's itnerests before the Spanish authorities to obtain offices that are more in accord with the intergovernmental nature of our activities.

Delegates, friends: In the assurance of having met our difficult aims, within a few moments I am going to adjourn the Sessions of this Thirteenth Regular Meeting of the Commission.

Many thanks to all of you for your renewed confidence in my duties as Chairman, and I hope that at the next meeting in 1994 we can celebrate the twenty-fifth anniversary of ICCAT with optimum results.

Closing Speech by Mr. Jose Loira Rua
Secretary General of Maritime Fisheries of Spain

Mr. Chairman, Mr. Executive Secretary, Delegates, Representative of the European Community, Observers:

Due to other obligations of my office, it was impossible for me to attend, as would have been my desire, the opening of the Thirteenth Regular Meeting of the Commission, to welcome you, as in other years, and to wish you success in the difficult work facing you.

However, I have followed very closely all that has been developing in the Commission during these days and I am aware of the difficulties presented in some items, of the decisions adopted, which were difficult ones in many cases, for the socio-economic repercussions that their applications entails for the fishing sector of different countries. But I am also well aware of the efforts of all who have participated in this meeting, and of the spirit of constructiveness and solidarity to try and reach agreements which result in the exercise of responsible fishing.

The fishing activity, whose social and economic importance is unquestionable, has never been trouble-free, both at the conservation and management level as well as the updating of structures and correct management of the fishery markets.

Currently, these problems, rather than isolated occurrences, have coincided in time, thus resulting in a negative interaction which has aggravated the situation even more. This situation requires an analysis and an overall approach to the problems in order to be able then to find global solutions.

For this reason, Spain, as a country with a long fishing tradition, has always supported the role of the international fishery organizations to form a new

international mentality, based on the collective conscience that the sustainment of fishing activities is only possible within the framework of common and responsible efforts, by means of international, honest, compromising and efficient cooperation.

In this context, I would like to transmit to you the tremendous satisfaction which the Spanish Fishery Administration for the conclusion of the agreement reached in the framework of FAO, to promote the compliance of the international conservation and management measures by the fishing vessels that operate on the high seas.

This agreement was agreed upon at the 104th FAO Council and on November 18 it will be reviewed at the Meeting of the 27th Conference for adoption.

In our opinion, this important achievement represents a big step forward in the elaboration of a Code of Code which constitutes the first instrument of this Code.

But we cannot forget the long road that still lies ahead before having all the elements that will form part of the Code of Conduct for the exercise of responsible fishing, which will permit conservation and effective management of the resources as well as the sustainment of fishing activities.

Thus, it is essential to continue with the impulse that Spain started during its Chairmanship of the FAO Committee on Fisheries, in March of this year, for the drafting of the Code of Conduct and accelerating this work.

To this end, Spain has proposed both to the Director General of FAO and to the Council at its 104th Session, that a "fast track" be applied to the discussion and formulation of the General Principles of the Code, bearing in mind the success obtained with this methodology for the conclusion of the aforementioned agreement.

For the satisfaction of all those interested and involved in the exercise of responsible fishing, I can give you the advance news that FAO Council has unanimously supported this initiative and that we hope that the Conference also supports this decision.

For these reasons, and coherently with the position which we have taken in all the international and regional fora in which we participate, we are very satisfied that this Commission has adopted a Resolution so that the FAO Conference supports the utilization of the "fast track" in the drafting of the General Principles of the Code of Conduct and so that the Member States of ICCAT adhere to the "Agreement to promote compliance of international conservation and management measures by fishing vessels that fish on the high seas", as soon as this is sent by FAO to your Governments.

The relevant role which the international fisheries organizations have in the conservation and management of the resources has been expressed and included int he Cancún Declaration, in the Agenda 21 of the United Nations Conference on the Environment and Development, at the FAO Technical Consultation on high seas fishing, as well as at the United Nations Conference on straddling fish stocks and highly migratory fish stocks.

In this context, I would like to point out the fundamental role that ICCAT plays in the monitoring and study of the populations of tuna and tuna-like species in the Atlantic Ocean and the research, studies, programs and cruises that the scientific committee carried out and which with its recommendations it orients our work at the time of adopting decisions.

Therefore, I encourage each and every one of you here present to continue working within our Commission, with the renewed hope day to day that our efforts will not be in vain in attaining the objectives proposed: the conservation of tuna resources in the Atlantic Ocean.

As regards the subjects discussed at the Meeting we are bringing to a close now, I would like to point out first of all the important decisions adopted in relation to bluefin tuna, relative to the conservation measures taken, with special relevance of the establishing of a 3,195 MT quota for the next two years in the Atlantic Ocean.

Secondly, I want to express my satisfaction for the new Resolution adopted by the Commission in support of the United Nations Resolutions on the use of large-scale driftnets, whose ultimate objective is the application of a global moratorium on the use of these gears on the high seas in all the oceans and seas of the world.

Special recognition is also afforded to the scientific progress reached with respect to yellowfin, which advised a freeze of the effort exerted on this resource.

Another important Resolution is that relative to this Commission's cooperation with CITES so that the scientific work of ICCAT is taken into account before including bluefin tuna and tuna-like fishes in its appendices.

As regards the status of the swordfish stock, I would like to manifest my grave concern, because the

great effort that Spain has made to apply the recommended measures for the conservation of this resource may not be effective due to the development of the fleets of other countries.

I do not want to end this speech without first appealing to the Member Countries of this Commission to ratify, as soon as possible, the Protocol of Amendment in order to change the scheme of calculating the contributions. The conclusion of this process could serve as an example to other fora as a model of cooperation and solidarity among countries.

I have taken due note, Mr. Chairman, of your request to improve, inasmuch as possible, the offices of the Commission Headquarters, and I can assure you that my authorities will give this matter their maximum attention, and I will do whatever is in my power to see that this is accomplished.

Finally, I would like to thank all of you for your participation and for your efforts in the work carried out at this Thirteenth Regular Meeting of ICCAT. I hope your stay in Madrid has been pleasant and I wish you all a pleasant and safe return to your respective countries.

ANNEX 5

ICCAT RESOLUTION ON LARGE-SCALE PELAGIC DRIFTNET FISHING

WHEREAS ICCAT adopted a Resolution in November 1990 endorsing U.N. General Assembly Resolution 44/225 regarding large-scale pelagic driftnet fishing on the high seas and calling upon all of its member nations to support the Resolution;

WHEREAS Resolution 45/197 adopted by the United Nations General Assembly on 21 December 1990 on large-scale pelagic driftnet fishing and its impacts on the living marine resources of the world's oceans and seas reaffirmed Resolution 44/225 and called for its full implementation;

WHEREAS Resolution 46/215 adopted by the United Nations General Assembly on 20 December 1991 on large-scale pelagic driftnet fishing and its impacts on the living marine resources of the world's oceans and seas called upon all members of the international community to ensure that a global moratorium on all large-scale pelagic driftnet fishing be fully implemented on the high seas of the world's oceans and seas, including enclosed seas and semi-enclosed seas by 31 December, 1992.

WHEREAS the Commission is aware of the difficulty in ensuring that no vessels fish contrary to the U.N. Resolution calling for the global moratorium;

WHEREAS it has come to the attention of the Commission that large-scale pelagic driftnet fishing on the high seas has taken place in waters under the purview of ICCAT since 31 December 1991;

WHEREAS the Commission is concerned over the possibility that certain stocks of fish under the purview of ICCAT and other marine resources could be adversely affected by such fishing;

WHEREAS the Commission is concerned over the possibility that driftnet fishing contrary to the intent of U.N. Resolutions 44/215, 45/197, and 46/215 could take place in the future in waters under the purview of ICCAT;

WHEREAS the Commission emphasizes its commitment to the concept of responsible fishing, as developed in the framework of the FAO Code of Conduct;

Now therefore, the

INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT):

ENDORSES U.N. General Assembly Resolutions 44/225, 45/197, and 46/215;

REAFFIRMS the importance it attaches to compliance with these Resolutions.

EXPRESSES its serious concern over the potential negative impact that large-scale pelagic driftnet fishing could have on the marine resources of the Atlantic Ocean and Mediterranean Sea, and its intention to closely monitor the effect of driftnet fishing on these resources;

CALLS UPON all of its member nations to ensure that the global moratorium called for in the U.N. Resolutions is fully implemented and to report to the Commission the regulatory measures taken in order to assure their implementation.

ENCOURAGES all members of the international community to take measures individually and collectively to prevent all large-scale pelagic driftnet fishing on the high seas.

ANNEX 6

DECLARATION BY ICCAT IN SUPPORT OF THE U.N. CONFERENCE ON STRADDLING FISH STOCKS AND HIGHLY MIGRATORY FISH STOCKS

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT):

EXPRESSES its keen support for the work carried out by the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks;

HOPES that this work concludes quickly and successfully, while respecting the rights and obligations of all the States concerned;

BELIEVES that its role can only be strengthened by the positive result of the work of the Conference, and that this will result in a reinforcement of the conservation measures and the management of the stocks of tunas and tuna-like species of the Atlantic;

URGENTLY REQUESTS the Conference, in respect of the dispositions of the U.N. Convention on the Law of the Sea, to consider urgently the necessity of managing the stocks of highly migratory species throughout their entire migratory range;

AFFIRMS its willingness to participate in a constructive way in the work of the Conference.

ANNEX 7

RESOLUTION BY ICCAT IN SUPPORT OF THE ELABORATION OF A CODE OF CONDUCT FOR RESPONSIBLE FISHING

RECOGNIZING the concern expressed by the countries at the FAO Committee on Fisheries in 1991 on the change of the flag of the fishing vessels to avoid conservation measures internationally adopted;

RECALLING the concern expressed by ICCAT on this same problem at its Twelfth Regular Meeting in 1991, reiterated at its Eighth Special Meeting in 1992;

BEARING IN MIND that under Agenda 21, States commit themselves to the conservation and sustainable use of living marine resources;

BEARING IN MIND the conclusions of the FAO Technical Consultation on High Seas Fishing held in September, 1992, which recommend the establishment of an International Agreement to avoid the continuation of the undermining of the effectiveness of the conservation measures agreed upon internationally;

RECOGNIZING the need to exercise responsible fishing, demonstrated at all the international fora and the recommendation made to FAO to elaborate a Code of Conduct for responsible fishing;

BEARING IN MIND the excellent work carried out by FAO in the elaboration of an Agreement to promote compliance, by fishing vessels that fish on the high seas, of conservation measures internationally agreed upon, and the great success achieved by the quickness of its conclusions and approval by the FAO Council, of the text of the Agreement and the recommendation for its adoption at the 27th Conference (November 6-25, 1993);

BEARING IN MIND that the "Agreement" is an essential part of the Code of Conduct;

CONSCIOUS of the urgent need to have available a Code of Conduct for the exercise of responsible fishing that allows the conservation of the resources and the maintenance of the activity and that it is not advisable to delay further the implementation of the pertinent action for its finalization;

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT)

1. *SUPPORTS* that the "Agreement", once adopted by the FAO Conference, be adopted as soon as possible by the ICCAT Contracting Parties, with the object that the flag states assume the responsibility that corresponds to them in relation with the activity of their fishing vessels.

2. *RECOMMENDS* that the FAO Conference take into account the support shown by the FAO Council so that the general principles of the Code of Conduct be developed by FAO using the same "fast track" system used in drafting the "Agreement", and which has attained such commendable results.

ANNEX 8

REPORT OF THE PERMANENT WORKING GROUP FOR THE IMPROVEMENT OF ICCAT STATISTICS AND CONSERVATION MEASURES

1. Opening of the Meeting

The Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures met for the first time during the Thirteenth Regular Meeting of the Commission. The following countries, nominated by the Commission Chairman as members of the Group, were present: Canada, France, Japan, Portugal, Spain, and the United States. The Secretariat also participated and the EC attended as an Observer.

2. Election of Officers

Mr. B. Hallman (United States) was elected Chairman. Mr. K. Chu (United States) served as Rapporteur.

3. Adoption of Agenda

After some discussion, the Agenda, attached as **Appendix 1 to Annex 8**, was adopted.

4. Study of Terms of Reference of the Group

The Secretariat reminded the Working Group that the Agenda was originally drafted up to reflect the terms of reference of the Working Group, which were established in the 1992 Resolution which established the Group.

5. Review of the effectiveness and practical aspects of the implementation of the ICCAT Bluefin Tuna Statistical Document Program

The Delegate of Japan reviewed the results of Japan's implementation of the Bluefin Tuna Statistical Document Program (**Appendix 2 to Annex 8**). A total of 1,069 MT of bluefin tuna were imported into Japan between September 1 and October 31, 1993. This amount is estimated to correspond to 1,787 MT live weight. Of this amount, 858 MT (live weight) were imported from non-Contracting Parties (48%). These non-Contracting Parties were Italy, Malta, Panama and Taiwan. All bluefin tuna accompanied by the Statistical Document was reported to have been caught in the Mediterranean Sea.

Imports from Taiwan and Panama were accompanied by Statistical Documents validated by government officials. Imports from Italy, Malta, and Spain were accompanied by documents validated by Chambers of Commerce of the point of export.

The Delegate of Japan recommended that all exporting countries arrange their internal procedures to provide validation of the Statistical Document by government officials or other methods mentioned in the Appendix to the Recommendation Concerning the ICCAT Bluefin Tuna Statistical Document Program adopted in 1992.

The Delegate of Spain provided a document which contained an overview of its administrative requirements for implementing the Statistical Document Program, in effect as of September 1, 1993. He noted that instructions had been issued to the Customs officials which include greater discrimination in the classification nomenclature in order to distinguish better the types of tuna being imported. If a bluefin tuna is imported from a Contracting Party, then it must be accompanied by a Statistical Document which is issued by the exporter, i.e., a private issue. If bluefin tuna is imported from a non-Contracting Party, the Statistical Document must be validated by a government officials of the exporting country. If bluefin tuna is landed from a non-Spanish vessel, one ICCAT Statistical Document must be filled out for every four tunas. If the tunas are landed in Spain from vessels harvesting traps, then one Statistical Document is required for each trap, regardless of the

number of fish. Similar requirements apply for Spanish vessels. If a bluefin tuna is in transit through Spain to another country, each tuna must be accompanied by a Statistical Document. The Delegate of Spain stated that it would reevaluate the effectiveness of having four tunas per Statistical Document vs one per Document once the Program had been in place long enough to evaluate it properly.

The Delegate of Spain reported further that the Spanish Ministry of Agriculture and Fisheries would receive copies of all export and import Statistical Documents in order to assist in bilateral consultations with regard to shipments of bluefin tuna. He noted that Statistical Documents required for export and issued by fishermen in Spain would be validated by the appropriate Chamber of Commerce, which has a long history in Spain of notarizing commercial transactions.

There was considerable discussion of the circumstances in which a government validation would be required on the Statistical Document. The Delegates of Canada, the United States, and Japan expressed the view that there was no automatic exemption for Contracting Parties and that ICCAT needed to develop an acceptable logbook or information retrieval system in order to exempt exporters from a country from needing to obtain a governmental validation. The Delegates of Spain, France and Portugal argued that the objective of the Statistical Document was to complement the data already being provided by the Contracting Parties. While agreeing that the 1992 Recommendation establishing the Statistical Document Program does not discriminate between Contracting Parties and non-Contracting Parties, these countries pointed out the Recommendation also contained exemptions. They felt that because the information they have provided to ICCAT in the past has been accepted, they have an ICCAT-accepted information retrieval system.

The Delegate of the United States suggested that the Working Group look into developing specific criteria which all Parties should meet in providing data to ICCAT. The Delegates of Canada, Japan, and the United States had been working on developing draft criteria for the Working Group to review. The Delegate of Portugal pointed out that the mandate of the Working Group is, among other things, to consider developing a framework for providing statistics to ICCAT regarding Atlantic bluefin tuna catches in light of trade data and related information. The Delegate of Spain, while recognizing Portugal's point, noted the need to distinguish between a general discussion on improvements and the specific discussion related to the Statistical Document.

As a result of its discussions, the Working Group developed a proposed Resolution Concerning Validation by a Government Official of the Bluefin Statistical Document (Annex 9). This Resolution clarified the understanding of the Working Group that members of the Commission in good standing which over the preceding 36 month period regularly provided to ICCAT statistical information consistent with ICCAT requirements may meet the requirement for validation of the ICCAT Statistical Document by a government official by accrediting a recognized institution, for example a national Chamber of Commerce, to validate the Statistical Documents for bluefin tuna. The Working Group agreed that Contracting Parties should accept such validation when bluefin tuna are imported into their countries. There was agreement that this provision was consistent with the 1992 Recommendation Concerning the ICCAT Bluefin Tuna Statistical Document Program. The term "good standing" was considered to mean a country whose voting rights have not been suspended for non-payment of contributions.

The Resolution also contained an Appendix with criteria for acceptance by ICCAT of logbooks and information retrieval systems called for in the 1992 Recommendation establishing the ICCAT Bluefin Tuna Statistical Document Program. It was agreed that these criteria would apply to future applications by any nation seeking a waiver or exemption of the validation requirement and that the criteria did not affect the current functioning system of Contracting Parties. It was further agreed that the establishment of these criteria did not imply that current data reporting by Contracting Parties was not acceptable, but that there was room for future improvements, if necessary, to both the Statistical Document system and the criteria for waivers. The Working Group recommended that ICCAT adopt this Resolution.

The Working Group then reviewed the timing of the implementation of the Statistical Document requirements for fresh bluefin tuna. The Delegate of Japan explained the importance of minimizing delays in the importation of fresh and chilled bluefin tuna by arranging for smooth preparation of the Statistical Document at the point of export. He also noted that there were still some technical difficulties to be worked out in use of the Statistical Document with frozen

bluefin tuna, which it implemented as of September 1, 1993. These difficulties were not a problem for the handling of frozen fish, which could be stored until questions about a document were resolved, but delaying the entry of fresh/chilled bluefin could substantially affect the quality of the fish.

The Working Group recognized this difficulty. It therefore developed a Draft Recommendation Concerning the Implementation of the ICCAT Bluefin Tuna Statistical Document Program on Fresh Products (see Annex 10), which the Working Group recommended to the Commission for adoption. The Draft Recommendation proposes that Contracting Parties, not later than June 1, 1994, require all imported fresh bluefin tuna to be accompanied by an ICCAT Bluefin Tuna Statistical Document. In order to allow time for the smooth implementation of the system as it applies to fresh products and to avoid the deterioration of fresh products, however, if a government official is unable to validate the document, when such validation is required, the Document may be accepted if properly prepared by the exporter, but only until December 1, 1994. After that time, all Statistical Documents must comply with the validation process as agreed by the Working Group.

The Working Group reviewed the proposed modifications by Japan to the Statistical Document developed by Japan, Canada, and the United States. The Delegate of Spain pointed out several points which might be further modified based on the discussions within the Working Group. The Group also reviewed the Statistical Document drafted by Spain. It was recognized that there would need to be continual review of the format of the Documents developed by all Parties, especially in the initial stages of implementation and that further modifications might be necessary.

6. Review of Fishing Activities of non-Contracting Parties in the Convention Area

The Working Group discussed fishing activities of non-Contracting Parties in the Convention Area, although time did not permit an extensive review of such activities. The Delegate of Japan called attention to photographs which it had distributed of vessels from non-Contracting Parties fishing for tuna and tuna-like species in the Mediterranean. The Delegate of Spain thanked Japan for supplying the pictures, noting that ICCAT needs hard evidence such as these photographs to document the non-Party fishing. He suggested that ICCAT should request the SCRS to make a more precise estimate of the effect of fishing by non-Contracting Parties on its conservation efforts.

The Delegate of Spain also noted that the issue of compliance with ICCAT recommendations by non-Contracting Parties has been raised in other fora, not only at ICCAT, but in other international agreements, such as the recently completed FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, which was designed specifically to improve flag-state responsibility. The Working Group took note of a request by Spain for support of a proposed Resolution it would put before the Commission on this issue. Delegations expressed their support for the proposal, but time did not permit a thorough review of the Resolution.

The Delegate of Canada agreed that there were other opportunities and other instruments to deal with non-Contracting Party fishing, but called attention, to illustrate the types of initiatives that might be considered, to the North Atlantic Salmon Convention (NASCO) which directs Parties to seek agreement by non-Parties to keep vessels from fishing in the NASCO Convention Area. He urged ICCAT to consider taking such measures in the future. At this, the Delegate of France expressed the view that NASCO, which deals with anadromous species, is quite different than ICCAT, which deals with highly migratory pelagic species. Therefore, it is difficult to relate the experiences in NASCO to the ICCAT situation. France expressed the view that for ICCAT to reopen debate on the matters covered by the FAO Agreement to Promote Compliance would weaken this text which was a very important part of the Code of Conduct for Responsible Fishing and which FAO had put on the fast track for acceptance.

The U. S. Delegate expressed the view that ICCAT had considerable work to do regarding fishing by non-Contracting Parties. He drew the Group's attention to recommendation proposed by the U.S. concerning the use of trade measures to enforce ICCAT objectives, which had been circulated for discussion (Appendix 3 to Annex 8). Although there was not sufficient time during this meeting to discuss this proposal in depth, the U. S. Delegate wished to discuss the proposal further at a proposed intersessional meeting (see Agenda Items 11 and 13).

The Delegate of Japan called attention to the proposal which had been circulated earlier for an

action plan on non-Contracting Parties (Appendix 4 to Annex 8). He agreed with the United States that the intersessional meeting would be a more appropriate time to discuss its proposal. The Working Group agreed to append the proposals by the United States and Japan to the report of its meeting, with the understanding that the documents were attached for information purposes and that this did not imply any commitment by the Working Group to agree to the proposals.

7. Review of ICCAT Statistics

The Delegate of Japan submitted as a working paper for the meeting a report of estimates of bluefin tuna imports into Japan from non-Contracting Parties. He noted that such imports were increasing. He further drew attention to a comparison of catch data provided to the SCRS from some non-Contracting Parties with the import statistics from Japan. It felt that it was useful to identify apparent discrepancies between the catch data reported by these countries to ICCAT and the amounts being imported.

The Delegate of France raised some questions as to how the working paper was prepared. He asked how the estimates were made and how it was established where the tuna came from. The Secretariat pointed out that the SCRS had reviewed the same document and had also questioned some figures. The SCRS figures, because of this critical review, probably represent minimum estimates of the catches by non-Contracting Parties.

Despite the questions raised about how the Japanese estimates were made, all delegations felt that the Japanese report was very useful and urged Japan to continue to compile and provide this information to the Working Group as well as to the SCRS. There was agreement that this kind of information was needed to be able to evaluate and highlight the effect of fishing by non-Contracting Parties on ICCAT conservation efforts.

As a final matter under this Agenda item, the Delegate of Spain suggested that ICCAT might wish to require the vessel name to be recorded on the Bluefin Tuna Statistical Document. Due to the lack of time, however, he suggested that this should be a matter for future consideration.

8. Develop recommendations for improvement of ICCAT statistics

Under this Agenda Item the Working Group initiated a discussion of the proposal by Japan to establish a working group to study the establishment of effective satellite tracking and catch reporting systems for vessels of Contracting Parties fishing outside areas of national jurisdiction. The Delegates of France and Spain expressed some skepticism about the need for satellite transmitters as an adjunct to ICCAT's current conservation measures, although there could be some use for requiring transmitters if the Commission agreed to closed areas or, perhaps, to closed seasons in some areas. The Delegate of Spain expressed the view that the greater problem was the fishing by non-Contracting Parties, and that an ICCAT program to require satellite transmitters on vessels of Contracting Parties would not help to solve the problem of non-Contracting Parties' fishing.

The Working Group agreed that an exchange of technical information would be useful and asked the Secretariat to facilitate this exchange. The Delegates of Japan and the United States requested that some time be devoted to an exchange of views on the subject of satellite transmitters at the intersessional meeting. The Working Group agreed to recommend that ICCAT include this on the Agenda of the intersessional meeting provided that it did not detract from matters of higher priority and, provided that such technical discussions did not imply that the Working Group agreed that ICCAT should require satellite transmitters on vessels.

The Delegate of Japan called attention to the apparent discrepancy between the statistics provided by Taiwan and Panama to the SCRS and the Japanese import statistics for these countries. Based on two months of experience with the Statistical Document Program, both countries have provided reports of zero catch in the Convention Area, although Statistical Documents report catches from the Mediterranean have been imported into Japan. The Working Group recommended that ICCAT Contracting Parties agree to develop at the intersessional meeting joint diplomatic demarches to non-Contracting Parties identified from import statistics of the Contracting Parties and by the Bluefin Tuna Statistical Document when such significant discrepancies are found.

9. Improvement of ICCAT conservation measures

There were three sub-items under this Agenda Item. It was recognized that all three sub-items have been addressed to some degree through the new FAO Agreement to Promote Compliance with International Conservation and Management Measures by fishing Vessels on the High Seas. There was an exchange of views on the degree to which the new Agreement would solve the problems of transshipment and reflagging, about which delegations have expressed considerable concern. The Working Group agreed that it would be useful to keep this as a broad agenda item for future discussion.

10. Recommended measures to the Commission based upon the findings of the Working Group's activities

The Working Group made the following recommendations to the Commission, which are also referred to elsewhere in this Report:

1. That ICCAT adopt a Resolution which the Working Group has prepared concerning validation by a government official of the Bluefin Tuna Statistical Document (Agenda Item 5 and **Annex 9**).

2. That ICCAT adopt a Recommendation which the Working Group had prepared concerning the implementation of the ICCAT Bluefin Tuna Statistical Document Program (Agenda Item 5 and **Annex 10**).

3. That ICCAT convene an intersessional meeting of the Working Group in order to allow it time for an in-depth review of the subjects which it has been assigned (Agenda Item 11).

4. That ICCAT include on the Agenda of the intersessional meeting an exchange of views on the subject of a satellite vessel tracking and catch reporting system, provided that the discussion of this issue does not detract from matters of higher priority and provided that such technical discussions do not imply that the Working Group agreed that ICCAT should require satellite vessel tracking and catch reporting system (Agenda Item 8).

5. That ICCAT agree to develop at the intersessional meeting joint diplomatic demarches to non-Contracting Parties identified from import statistics of the Contracting Parties and by the Bluefin Tuna Statistical Document when significant discrepancies are found (Agenda Item 8).

11. Future Work of the Working Group

The Working Group recognized that it was only able to give a cursory review of a number of agenda items and that extensive time and effort might be required to carry out its mandate in a satisfactory manner. It therefore agreed to recommend that ICCAT convene an intersessional meeting of the Working Group in order to allow it time for an in depth review of the subjects it has been assigned.

12. Any other matters

The Working Group thanked the Chairman for his skillful handling of a complex discussion on several difficult issues. The Group also thanked the Secretariat and the rapporteur for their assistance.

13. Date and place of the next meeting

The Delegate of Japan, on behalf of his country, offered to host the proposed intersessional meeting of the Working Group. Although no date was set for the meeting, it is expected to be convened some time after April 1, 1994. It was understood that invitations to the intersessional meeting would be issued by the Secretariat to the members of the Working Group and that it would be useful if the Secretariat could also participate in the intersessional meeting.

14. Adoption of the Report

The Report of the Permanent Working Group was adopted on November 12, 1993.

15. Adjournment

The Meeting of the Permanent Working Group for the Improvement of ICCAT Statistics & Conser- vation Measures adjourned on November 12, 1993.

Appendix 1 to Annex 8

Agenda of the
Permanent Working Group for the Improvement
of ICCAT Statistics and Conservation Measures

1. Opening of the session
2. Election of Officers
3. Adoption of the Agenda and arrangements for the meeting
4. Study of the Terms of Reference of the Group
5. Review of the effectiveness and practical aspects of the implementation of the ICCAT Bluefin Tuna Statistical Document Program
6. Review of fishing activities of non-Contracting Parties in the Convention Area
7. Review of ICCAT statistics (with particular reference to the Bluefin Tuna Statistical Document Program)
   a) Landing statistics
   b) Transshipment of bluefin tuna
   c) Trade data on bluefin tuna
8. Develop recommendations for improvement of ICCAT statistics
9. Improvement of ICCAT conservation measures
   a) Develop recommendations to control the transfer at sea of Atlantic bluefin tuna between vessels from different countries
   b) Consideration of measures to prevent re-flagging of vessels of the Contracting Parties for the purpose of avoiding the fisheries management measures established by ICCAT
   c) Measures to ensure compliance with ICCAT management recommendations
10. Recommended measures to the Commission based upon the findings of the Working Group's activities
11. Future work of the Working Group
12. Any other matters
13. Date and place of the next meeting
14. Adoption of Report
15. Adjournment

Appendix 2 to Annex 8

Report by Japan
on the Implementation of the
ICCAT Bluefin Tuna Statistical Document Program

1. Introduction

Japan implemented its domestic regulation for the ICCAT Bluefin Tuna Statistical Document Program as of September 1, 1993. Before implementing the regulation, Japan informed and explained its regulation, through diplomatic and other available channels, to 32 countries which have records of exporting bluefin tuna to Japan in the past three years, including to non-Contracting Parties.

2. Results

A total of 1,069 MT (product weight) of bluefin tuna was imported to Japan between September 1 and October 31, 1993. This amount is estimated to correspond to 1,787 MT of live weight. Of these, 858 MT (live weight), 48%, were imported from non-Contracting Parties. These non-Contracting Parties were Italy, Malta, Panama and Taiwan. All bluefin tuna was reported to be caught in the Mediterranean Sea. Import figures by country and detailed information are shown in **Tables 1 and 2.**

Imports from Taiwan and Panama were accompanied by the Statistical Documents validated by government officials. Imports from Italy, Malta and Spain were accompanied by documents validated by the Chamber of Commerce of the point of exports using a sample format of the Document which was drafted by Canada, the United States and Japan. All cargo was shipped before September 1, 1993, the date that the ICCAT Bluefin Tuna Statistical Document Program was started.

3. Recommended actions to be taken by the Commission

Currently no bluefin tuna shipped after September 1, 1993, has yet arrived in Japan.

However, it is strongly recommended that all the exporting countries arrange their internal procedures to provide validation of the Statistical Document by government officials or other methods mentioned in the Appendix of the Recommendation concerning the ICCAT Bluefin Tuna Statistical Document Program adopted at the Eighth Special Meeting in November, 1992. In this connection, the Commission should urge all the countries exporting bluefin tuna to ICCAT Contracting Parties to expedite the necessary procedures to provide the appropriate validation of the Statistical Document.

Table 1. Imports of bluefin tuna to Japan, by country (1-IX-93 to 31-X-93) (data obtained from the ICCAT Bluefin Tuna Statistical Document Program)

Country/area	*Product weight (Kg)*	*Live weight (Kg)*	*Statistical Doc. validated by a govt. official*
Non-Contracting Party			
Italy	44,841	86,691	No
Malta	73,000	97,333	No
Panama	376,092	530,681	Yes
Taiwan	90,000	143,333	Yes
Sub-total	583,933	858,038	
Contracting Party			
Spain	485,360	928,730	No
TOTAL	1,069,293	1,786,768	

NOTE: Live weight is converted by applying the following factors:
0.85 RD = Round weight (gilled and gutted)
0.75 DW = Dressed weight
0.5 FL = Filleted weight

Table 2. Bluefin tuna imported in Japan (1-IX-93 to 31-X-93)
(Data collected by the ICCAT Bluefin Tuna Statistical Document Program)

Date	*Country*	*Area of harvest*	*Fishing gear*	*Point of export*	*Product type*	*Weight (Kg)*
				Spain	DW	105,016
14-IX-93	Spain	Medit.	Trap	Barbate	FL	268,189
				Italy		
14-IX-93	Italy	Medit.	PS	Palermo	DW	4,487
				Italy		
14-IX-93	Italy	Medit.	PS	Palermo	FL	1,010
				Italy		
14-IX-93	Italy	Medit.	PS	Palermo	FL	39,344
				Spain	DW	55,000
21-IX-93	Taiwan	Medit.	LL	Las Palmas	FL	35,000
				Spain	DW	11,969
28-IX-93	Spain	Medit.	PS	Cartagena	FL	100,186
				Spain	RD	93,594
21-X-93	Panama	Medit.	LL	Las Palmas	FL	45,079
				Spain	RD	105,747
21-X-93	Panama	Medit.	LL	Las Palmas	FL	36,039
				Spain	RD	69,627
21-X-93	Panama	Medit.	LL	Las Palmas	FL	26,006
				Spain		
28-X-93	Malta	Medit.	LL	Cartagena	DW	73,000
					DW	249,472
					RD	268,968
					FL	550,853
					Tot.wt.	1,069,293

Appendix 3 to Annex 8

Proposal by the United States
Concerning the Use of Trade Measures
to Enforce ICCAT Objectives

RECOGNIZING that the goal of ICCAT is to maintain populations of tuna and tuna-like fishes in the Atlantic at levels which will permit harvesting maximum sustainable yield;

RECALLING the Resolution Concerning Catches of Bluefin Tuna by non-Contracting Parties adopted at the Twelfth Regular Meeting of the Commission (Madrid, 1991);

RECALLING further the 1992 Recommendation Concerning the ICCAT Bluefin Tuna Statistical Document Program, which requires that all bluefin tuna, when imported into the territory of a Contracting Party or at the first entry into a Regional Economic Organization, be accompanied by an ICCAT Bluefin Tuna Statistical Document;

TAKING INTO ACCOUNT the stringent ICCAT management regime for certain stocks and the need to adopt complementary measures to ensure the effectiveness of those recommendations;

CONSIDERING the Recommendation adopted in 1974 setting the minimum size requirements for bluefin tuna catches;

CONSIDERING the urgency for action to ensure the effectiveness of ICCAT objectives in light of potential listing of certain Atlantic tunas under the Convention on International Trade in Endangered Species of Wild Fauna and Flora;

RECOGNIZING that a considerable number of vessels fishing for Atlantic tunas and tuna-like species are registered to nations which are not members of ICCAT;

BEING AWARE of the strenuous efforts which have been undertaken by Contracting Parties to ensure that ICCAT's conservation and management measures are adhered to by both member and non-member nations;

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT):

DECLARES tunas and tuna-like species to be an exhaustible natural resource, and recommends:

1. that Contracting Parties prohibit the import of all bluefin tuna which is not accompanied by an ICCAT Statistical Document, and

2. that the Commission convene a Working Group to consider ways, including quotas, trade measures and non-trade measures, to ensure that members and non-members do not take tuna and tuna-like species in a manner inconsistent with ICCAT recommendations.

Appendix 4 to Annex 8

Proposal by Japan
on an ICCAT Action Plan on Non-Contracting Parties

1. *Before the next Commission Meeting in 1994*

a) Joint diplomatic demarches

-- That joint diplomatic demarches to the non-Contracting Parties identified from import statistics of the Contracting Party and by the Bluefin Tuna Statistical Document Program be made at capitals of these non-Contracting Parties.

b) Request from the Commission

-- That the Executive Secretary send letters again to all the non-Contracting Parties fishing tunas in the Convention Area requesting their cooperation in ICCAT conservation and management measures and drawing their attention to the Bluefin Tuna Statistical Document Program.

-- That the Executive Secretary invite all non-Contracting Parties fishing tunas in the Atlantic Ocean to facilitate, during the following year, catch statistics of their fleets of tuna and tuna-like species.

c) Intersessional meeting

-- That an intersessional meeting of the Permanent Working Group be held to review actions taken by non-Contracting Parties responding to the demarches mentioned above (a) and (b), as well as a further review of data obtained by the Program. Arrange further joint diplomatic demarches when imports from new non-Contracting Parties are revealed.

2. Ninth Special Meeting (1994)

a) Review data obtained by the Program and identify those non-Contracting Parties which are non-cooperative to ICCAT.

b) Consider and develop measures including trade measures to deter fishing activities of the non-Contracting Parties mentioned in 2.a above, with the date of implementation (a certain date in 1995).

c) Notify the non-Contracting Parties mentioned in 2.a above of the measures developed in 2.b and request further cooperation.

ANNEX 9

ICCAT RESOLUTION CONCERNING VALIDATION BY A GOVERNMENT OFFICIAL OF THE BLUEFIN TUNA STATISTICAL DOCUMENT

RECALLING the Recommendation concerning the ICCAT Bluefin Tuna Statistical Document adopted by ICCAT at its Eighth Special Meeting held in November 1992;

RECALLING ALSO the Resolution to Establish a Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures;

RECOGNIZING the need to establish procedures, guidelines and criteria pursuant to which ICCAT may make recommendations for the effective operation of the Statistical Document Program;

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RESOLVES:

A. that the requirement for validation of the ICCAT statistical document by a government official of the flag state of the vessel that harvested the tuna, with respect to any member of the Commission in good standing which over the preceding 36 month period regularly provided to ICCAT statistical information consistent with ICCAT requirements, may be met by validation by a recognized institution accredited by it to validate documents, for example, a national Chamber of Commerce so recognized;

B. that it may rescind the arrangement referred to in Paragraph A with respect to any Contracting Party that ceases to provide statistical information required by ICCAT for a period of 12 months or for such other period as may be specified by the Commission from time to time;

C. to facilitate communications among Contracting Parties in respect of the operation of the arrangement referred to in Paragraph A.

D. to review annually the status of the arrangement referred to in Paragraph A with a view to its smooth operation and to recommend improvements as appropriate;

E. to instruct the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures, in cooperation with the SCRS and the ICCAT Secretariat, to review and make recommendations concerning ICCAT requirements for statistical information in a standard format and time frame, in line with modern statistical data analysis;

F. to use the interim criteria as set out in the Addendum hereto for future acceptance by ICCAT of logbooks and information retrieval systems; and

G. to instruct the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures to review the appended criteria with a view to their early finalization.

Addendum

Criteria for ICCAT Acceptance of Logbooks and Information Retrieval Systems

PURPOSE

Provide a mechanism for ICCAT to determine if a flag state has a logbook system or statistical information retrieval system that is consistent with the needs of the Commission.

CRITERIA

Any flag state applying for acceptance of its logbook or statistical information retrieval system must provide to ICCAT the following information for all fish harvested by vessels flying its flag. All of the following criteria must be met before ICCAT can accept either system.

A. Information Retrieval System

The following must be provided:

I. Copies of all pertinent government regulations requiring routine provision to the competent government authority of accurate information related to all bluefin tuna harvests. At a minimum this information must include the weight of fish harvested, the date of harvesting, the area of harvest, the gear and the name of vessel or trap. Such regulations are essential to a statistical information retrieval system.

II. Copies of all pertinent regulations respecting penalties for non-compliance with the regulations referred to in Paragraph A.I. Penalties should be sufficient to deter non-compliance.

III. Copies of all policies and procedures respecting enforcement of the regulations referred to in paragraph A.I and examples of sales slips or other similar tracking documents.

IV. Penalties that have been imposed in cases of non-compliance.

V. An outline of means the flag state would use to provide evidence of the origin of exported fish if requested to do so by authorities at the final point of import.

B. Logbooks

The following must be provided:

I. Copies of all pertinent government regulations requiring all fishermen to complete and submit logbooks. Such regulations are essential to a logbook system which must include requirements to provide the weight of fish harvested, the data of harvesting, the area of harvest, the gear and the name of vessel or trap.

II. Copies of all pertinent regulations respecting penalties of sufficient gravity to deter compliance with the regulations referred to in Paragraph B.I.

III. Copies of all policies and procedures respecting enforcement of the regulations referred to in Paragraph B.I and samples of logbooks and any other relevant documentation.

IV. Penalties that have been levied in cases of non-compliance.

V. An outline of how the flag state would use the logbook system to determine the origin of exported fish if requested to do so by authorities at the final point of import.

PROCEDURES

Requests for acceptance of a statistical information retrieval system or logbook system should be directed to the Executive Secretary. The Executive Secretary will review the documentation submitted in support of the request and, if satisfied that the criteria have been met, will provide interim acceptance of the logbook system or statistical information retrieval system pending a formal review by the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures. To grant interim acceptance the Executive Secretary should, on the basis of the information submitted and responses to any request for further information he may have made, be satisfied that the information retrieval system or the logbook submitted for acceptance, meet the foregoing criteria and constitute an effective system for provision of relevant data to ICCAT. The Executive Secretary shall inform the Contracting Parties of applications and of their disposition.

The Permanent Working Group for the Improvement of Statistics and Conservation Measures will, as appropriate, review all acceptances and may, if it considers that an information retrieval system or logbook that has been accepted by the Executive Secretary will not provide the information required by ICCAT in an effective and timely manner, rescind the acceptance with effect from a date it specifies. The Executive Secretary will thereupon notify the flag state of the decision of the Permanent Working Group, of the reasons and of the conditions, if any, under which permanent acceptance may be granted.

ANNEX 10

RECOMMENDATION BY ICCAT CONCERNING THE IMPLEMENTATION OF THE ICCAT BLUEFIN TUNA STATISTICAL DOCUMENT PROGRAM ON FRESH PRODUCTS

RECALLING the Recommendation concerning the ICCAT Bluefin Tuna Statistical Document Program adopted at the Eighth Special Meeting of the Commission (Madrid, November 1992);

NOTING that at the initial stage of the Program, the document has been required for frozen bluefin products tuna;

RECOGNIZING that the inclusion of fresh bluefin tuna products in implementing the Program is essential to collect all bluefin trade data by this Program;

RECOGNIZING that fresh bluefin tuna products require prompt handling to avoid deterioration of their quality;

NOTING that many countries which export fresh bluefin tuna to ICCAT Contracting Parties do not apply a tagging system, an ICCAT-accepted logbook or an information retrieval system which grants a waiver of government validation of the bluefin statistical document;

NOTING that arrangements in such exporting countries to meet the Criteria which are appended to the ICCAT Resolution Concerning Validation by a Government Official of the Bluefin Tuna Statistical Document, which was adopted by the Commission at its Thirteenth Regular Meeting (Madrid, November 1993) are indispensable to avoid deterioration of the quality of the bluefin tuna products, while providing statistics to the Commission;

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RECOMMENDS THAT:

1. The Contracting Parties, no later than June 1, 1994, require all fresh bluefin tuna, when imported into the territory of a Contracting Party or at the first entry into a regional economic organization, be accompanied by an ICCAT Bluefin Tuna Statistical Document, which meets the requirements described in the "Recommendation by ICCAT Concerning the ICCAT Bluefin Tuna Statistical Document Program", and supplemented by the "ICCAT Resolution Concerning Validation by a Government Official of the Bluefin Tuna Statistical Document". If, whenever required, a government official is unable to validate the Document, the Document may be accepted if properly prepared by the exporter;

2. The special provision for exception of government validation of the Statistical Document, as provided in paragraph 1 above, shall terminate on December 1, 1994.

3. Notwithstanding the provisions of Article VIII, paragraph 2 of the ICCAT Convention, the Executive Secretary shall immediately transmit the above to those non-Contracting Parties who have a recent record of export of fresh bluefin tuna to the Contracting Parties, and urge them to make the necessary arrangements so that government validation is provided to the Document or make the necessary arrangements to obtain ICCAT acceptance of an ICCAT-accepted logbook or ICCAT-accepted information retrieval system according to the Criteria that are appended to the "ICCAT Resolution Concerning Validation by a Government Official of the Bluefin Tuna Statistical Document".

ANNEX 11

REPORT OF THE MEETINGS OF PANELS 1 -4

Report of the Meeting of Panel 1

1. Opening

Dr. L. Koffi (Côte d'Ivoire), Chairman of the Panel, opened the meeting of Panel 1.

2. Adoption of Agenda

The Agenda was adopted without change (**Appendix 1 to Annex 11**).

3. Election of Rapporteur

Dr. A. Fonteneau (France) was designated Rapporteur.

4. Review of Panel Membership

The Panel is currently comprised of 16 countries: Angola, Brazil, Cap Vert, Korea, Côte d'Ivoire, Spain, U.S.A., France, Gabon, Ghana, Japan, Morocco, Portugal, Russia, Sao Tomé and Principe and Venezuela. One country (Ghana) was absent from the meeting. Uruguay indicated an interest in participating in an observer capacity in the Panel meeting.

5. Report of the Standing Committee on Research and Statistics (SCRS)

The SCRS Chairman, Dr. J.L. Cort (Spain), summarized the conclusions of the Committee concerning yellowfin and skipjack.

5.a Yellowfin tuna

As for yellowfin tuna, a complete revision of the knowledge of the biology of the species and the state of the stocks has been carried out by the Working Group to Evaluate Yellowfin Tuna, which was held in June, 1993, at the Laboratory of the Spanish Institute of Oceanography (IEO) in Tenerife. The main conclusions of this Working Group, updated by the SCRS, are as follows: The hypothesis held previously by the SCRS that there exist two stocks of yellowfin in the Atlantic, east and west, is no longer accepted, and the hypothesis of a single stock of Atlantic yellowfin is now held. This new hypothesis of a single stock rests, as much on the analysis of transatlantic recoveries (from west to east) of tagged fish, as on the analysis of size frequencies of the catches (dominance of juveniles and of spawners in the east, and of medium-sized fish in the west). The stock analyses of yellowfin have been carried out using several production models and analytical methods (virtual population analysis). All these analyses concluded that since 1991-1992, the fishery has returned to levels of full exploitation, or of slight over-exploitation (effort corresponding to the MSY, or slightly above that level). The catches of small yellowfin weighing less than 3.2 kg, continue to be significant, and have had a considerable negative effect (estimated at 15% loss) on the yield per recruit of yellowfin. The SCRS consequently recommended that fishing effort on yellowfin not exceed the levels of effort currently observed.

5.b Skipjack

The SCRS has only carried out a few analyses on the state of the stock(s) of Atlantic skipjack. The hypothesis held by the SCRS on the stock is that there are two stocks of skipjack in the Atlantic, east and

west. In 1991, the skipjack fisheries reached an historic level of 193,600 MT. In 1992, the catches fell to a level of 145,200 MT, but are still at a high level. The SCRS has not been able to estimate the effective fishing effort targeting skipjack, nor the changes in abundance of this species.

It is noted that, in the eastern Atlantic, even if the carrying capacity of the baitboat and purse seine fleets which fish skipjack remains below the levels observed at the beginning of the 1980's, the effective effort which is currently exerted on skipjack in the area is high. In fact, the development of fishing with artificial objects by purse seiners, together with an offshore expansion of skipjack fishing grounds, has provoked a considerable increase in catches (which reached 165,000 MT in 1991 and 119,000 MT in 1992) and yields of skipjack. On the other hand, the increase in the fishing power of purse seiners on yellowfin, due to technological improvements, such as bird radar, or to improvements in the nets, has also probably increased the efficiency of the purse seine fisheries for skipjack (as it had been estimated for yellowfin).

In the western Atlantic, the fisheries are relatively stable after several years at a level close to 25,000 MT.

Bearing in mind the knowledge of the biology of skipjack and the recent trends of the fisheries, the SCRS has not presented recommendations referring to manage the skipjack fisheries.

6. Measures for the Conservation of Stocks

The Delegate of the U.S. noted his concern on the current level of exploitation of the stock of Atlantic yellowfin. He proposed that the Panel recommend a limitation of fishing effort to its present level, in order to avoid an eventual over-exploitation of the stock in the future.

The Delegate of France indicated the same concern and, while supporting the proposal of the United States, drew the attention of the Panel to the growing importance in the yellowfin fishery of purse seiners flying flags of convenience. The SCRS noted, in effect, that these purse seiners with flags of convenience caught 15,500 MT of yellowfin in 1992, or 16% of the Atlantic yellowfin catches. The catches of these boats have been increasing regularly since 1987.

The Delegate of Spain also underlined the necessity of limiting fishing effort on yellowfin to the current level. He also emphasized the concerns expressed by France regarding the need for this limitation of effort to be applied also to the fleets flying flags of convenience of the non-Contracting Parties (NEI). The ICCAT Assistant Executive Secretary noted that some of these fleets provided detailed fishing statistics, and that these figures were available to the SCRS scientists.

The Panel adopted a Recommendation concerning limiting yellowfin effort at the present level and forwarded it to the Commission for adoption. This Recommendation is attached as **Annex 12.**

7. Research

Panel 1 supported all the recommendations on research made by the SCRS.

8. Date and place of the next Panel meeting

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

9. Other matters

The Delegate of Sao Tomé & Principe noted the difficulties faced by his country's scientists in understanding and fully participating in the research being carried out by the SCRS on yellowfin and skipjack, species which are of great interest to Sao Tomé & Principe, even though they are only slightly exploited by the local fleets. The Chairman of the SCRS reiterated that all the activities of the SCRS were open to all interested scientists. The Assistant Executive Secretary reminded him that, unfortunately, the Secretariat recently has not been able to organize training courses for technicians and scientists of interested countries because of the current financial problems of ICCAT. He noted however, that the Secretariat in Madrid, is always pleased to inform the scientists and technicians of all the Contracting Parties of ICCAT of the procedures used by ICCAT in the collection and analysis of tuna fishery statistics for

stock assessment purposes. The Delegate of Sao Tome & Principe was pleased with this offer.

10. Election of Chairman

Côte d'Ivoire was unanimously re-elected Chairman of Panel 1.

11. Adoption of Report

The Report of Panel 1 was adopted.

12. Adjournment

The meeting of Panel 1 was adjourned.

Report of the Meeting of Panel 2

1. Opening

The meeting of Panel 2 was opened by Mr. A. Lahlou (Morocco), Panel Chairman.

2. Adoption of Agenda

The Agenda was adopted without change and is attached as **Appendix 1 to Annex 11.**

3. Election of Rapporteur

Mr. John Angel (Canada) was designated rapporteur.

4. Review of Panel membership

All the Panel members, Canada, France, Japan, Republic of Korea, Morocco, Portugal, Spain and the United States, were present.

5. Report of the Standing Committee on Research and Statistics (SCRS)

5.a Bluefin

-- West Atlantic

The Chairman of the SCRS, Dr. J. L. Cort, summarized the conclusions of the Committee. The total west Atlantic bluefin catch has averaged 2,394 MT since the introduction of the monitoring quota in 1982. This is less than half the average level of the 1970's. The total catch in 1992 was lower (2,188 MT) reflecting the reduced monitoring quota for this year. Therefore, fishing mortality on young fish (ages 1-5) was reduced in 1982 even though it increased until 1991. The change in minimum size regulations for 1992 resulted in a much lower fishing mortality on young fish. The recruitment level to the stock in recent years has been lower than in the early 1970's and there is no evidence of a strong year-class in recent years. Fishing mortality on medium size fish (ages 6-7) followed a similar pattern to that on small fish until 1988, after which it declined to close to the 1982 level. Abundance increased in 1991, when the 1985 year-class recruited, but has since declined because the next year-class was poor. Mature bluefin (ages 8 and older) have been subject to increasing fishing mortality since 1982 as the numbers have declined but catches have remained steady, until the reduction in response to the 1992 regulations. The numbers are expected to have increased in 1993 with the maturation of the 1985 year-class.

-- East Atlantic and Mediterranean

Catches in 1992 were 27,100 MT, which are the highest recorded. A catch of 7,600 MT were taken in the eastern Atlantic and the total for the Mediterranean was 19,500 MT, including 1,500 MT which was estimated from Japanese import statistics and judged not to have been reported elsewhere. There was no assessment this year as this is done on a two-year cycle and the next one will be carried out in 1994.

The Delegate of Japan thanked the SCRS for its work and its report. He also expressed surprise that the results of the assessment for bluefin were worse than the that of two years ago considering the severe catch limits which have been in effect since 1982, with Japan absorbing the most severe cuts. The 1993 advice that stock abundance was still at a low level with almost no signs of recovery led the Delegate of Japan to question what was happening to the stock and wondered what the Commission was managing by imposing catch restrictions in the western Atlantic. He wondered whether a 50% cut in 1982 and a further 50% cut in 1993 will get the Commission "out of this nightmare". The Delegate of Japan therefore strongly questioned whether there was something wrong with the "assumptions and fundamentals" of the stock assessment. The VPA method shows that stock

abundance is low in the west Atlantic and that current recruitment only amounts to some 20,000 fish. Yet, at the same time, U.S. aerial photographs showed 2,000 fish in just one photograph. In other words, the actual phenomena observed in the fishing grounds do not seem to support the results of the assessment.

The Delegate of Japan stated that he implied no criticism of the scientists, but that it was time to review the "fundamentals of the current assessment and to examine the assumptions for the assessment from scratch". One of the most important issues to be resolved is the stock structure and the migration of bluefin tuna. He stated that it may be appropriate to manage bluefin tuna on the assumption of one stock, noting that very little progress has been made in the last 10 years on research in this area despite the critical nature of such research on management decisions. The Delegate of Japan noted that, for example, the SCRS described the eastern stock as being at least 20 times larger than the western stock in terms of recruitment. Therefore, if a mere 2% exchange occurs east to west, it could have a significant effect on the western stock since 2% of the eastern stock size means 40% of the western stock size. The Delegate of Japan noted that mixing of the two stocks is known to occur although the rate is unknown. In the view of the Japanese Delegation, it is therefore clear that the eastern catch might affect the western stock and vice versa and consequently, conservation measures in either zone may affect the other.

In conclusion, the Delegate of Japan strongly supported intensified research on the stock structure and the migration of Atlantic bluefin tuna and indicated his country's readiness to collaborate with other member states to further the research efforts. He stated that based on this further work, perhaps the Commission can conduct "a fundamental review of the current conservation measures for Atlantic bluefin tuna".

The SCRS Chairman noted that the scientific analysis is done on the information received and, if the input data does not reflect reality, then the analysis may be inaccurate. That is why SCRS is recommending that better and more accurate statistics be provided. With respect to the eastern-western stock issue, the Chairman of SCRS noted that the question is being studied but that time is required before any conclusions may be drawn. It is long-term, complex research involving genetic studies and sampling. He did advise, however, that the SCRS view is that these are two stocks with some mixing.

The Delegate of Canada also thanked the SCRS its the work and the answers to the subsequent questions posed. Canada expressed concern about the SCRS Report as, despite some very restrictive management measures implemented by all three countries fishing bluefin tuna in the west, the SCRS is informing the Commission that not enough has been done to improve the state of the stock. Canada is anxious to find ways to improve both the Commission's knowledge of the stock and improve its management.

The Delegate of Canada outlined several major concerns: the first concern is the question of whether the Commission is dealing with one or two stocks and the possible effects of the recent fishery in the mid-Atlantic; the second concern relates to the mortality levels of juvenile fish (fish that have never reached spawning) as well as the catches of bluefin in the spawning area (Gulf of Mexico). The Delegate of Canada felt that if spawning areas and juvenile fish are not protected, all the other management measures combined could easily be useless by themselves. A third concern is the lack of reliability and quality of data that SCRS had at its disposal, both in the east and in the west Atlantic. The Delegate of Canada expressed the view that without "complete and proper data" the Commission cannot expect its scientists to provide the Commission with a sensible and well rounded assessment.

The Delegation of Canada posed several questions to the Chairman of SCRS.

Question 1:

What would be the surplus production of all ages in 1994? The Report states that 1,200 MT would give a 50% chance if no further decline in spawning biomass. What is the comparable figures for a 50% chance of no further reduction in total biomass and what decline would that imply for the spawning biomass.

The Chairman of SCRS replied that the necessary calculations would have to be made in order to answer the question. The Report speaks only to spawning biomass but the calculation can be done for the question asked.

Question 2:

The abundance indices show a declining trend which, in the Canadian Delegation's view, indicates a

declining biomass. Would the same patterns be shown if bluefin were changing their area of distribution?

The Chairman of SCRS replied that the trends are based on abundance indices for certain areas. Consequently, if the stock changes location, the abundance figures would show a resultant decline.

Question 3:

Would it not benefit recovery if small fish catch was reduced without increasing the catch of mature fish?

The SCRS Chairman replied that the Report states that a reduction in the catch of juvenile fish would have no effect without a reduction in total catch.

Question 4:

How long would it take the SCRS to provide additional information to give a better idea of stock structure? One year? Two years?

The Chairman of SCRS replied that the methodology for these studies is still being refined and that it will probably require a minimum of two years. He recommended that the Commission not formally ask this question but instead allow the research work to progress as is presently planned.

Question 5:

Is it too early at this stage to indicate what type of information may be provided in two years time?

The Chairman of SCRS did not wish to identify a time frame on this issue. It is a complex issue and things can change. It may be simpler or more complex. Only time and research will tell.

The Delegate of the United States expressed the view that SCRS did the best with what it had and that all member states must share the responsibility for any shortcomings in the advice as they contributed the information on which it is based.

The U.S. Delegate, however, also expressed some of the same concerns outlined by Canada and Japan. The U.S. Delegate stated an intention to conduct a "peer review" of the SCRS advice. He emphasized that the purpose of the review was to "help and not to criticize". The U.S. feels it is important to bring all the available resources to bear on this issue to find that delicate balance between economic impact and resource protection.

The U.S. Delegate indicated that the results of recent aerial photographs, where one photograph showed 2,000 fish and in total 9000 fish were identified in one day, raises questions about abundance. The U.S. is also concerned about the one stock/two stock issue.

The Delegate of Spain pointed out that the SCRS Report contains nothing which indicates that there are not two stocks. He wondered what is meant by "a peer review" and felt it might be worthwhile for the group to collaborate with SCRS rather than work independently. After all, ICCAT (SCRS) is a peer group.

The U.S. Delegate advised that the "peer review" would not only include those key members of the SCRS who worked on the bluefin science, but also such individuals from academia and other resource management areas where the individuals were professionally knowledgeable and could contribute to an unbiased review of the current research and analyses.

The Delegate of France expressed concern over the stock structure debate and felt that it was premature to conclude that we are dealing with a single stock and, until the Commission can conclusively do so, it must continue the current management approach based on two stocks. He urged a cautious approach on the issue.

The SCRS Chairman, in conclusion, emphasized the importance of ensuring that SCRS has good information, since the scientific evidence is only as good as the data on which it is based. He felt that the Commission needed more in-depth research and analysis on the Atlantic bluefin tuna stock structure as well as the impact of the mid-Atlantic catch on the entire bluefin resource.

5.b Albacore (North)

The Chairman of the SCRS, Dr. J. L. Cort, summarized the conclusions of the Committee. Catches of north Atlantic albacore have shown a decreasing trend between 1980-92, but rose to 29,700 MT in 1992, an increase of 4,500 MT. The declines have reflected a general decrease in effort by traditional fisheries, but recently some new gillnet and trawl fisheries have been

harvesting albacore. Catches in the Mediterranean are low, ranging between 1,500-4,200 MT with the 1992 catch reported to be 2,200 MT.

-- Production model

The apparent conclusion from the ASPIC trial is that the stock is in a state of low to moderate exploitation. It is noted that only nominal CPUE data were used for the surface fisheries. It is not known with certainty the effect (in absolute magnitude) of the use of nominal indices of abundance. It could be possible that if such indices were standardized the image of the actual state of the resource would be less optimistic.

-- Virtual Population Analysis (VPA)

This analysis and the sensitivity analyses all showed increases in F on the younger ages and decreases for older ages in recent years, associated with a decline in recruitment. However, the confidence intervals for the estimates of these parameters (particularly mortality on age 1-4), in recent years are large and apparent increase of F on younger ages could be illusive. The 1992 estimate of recruitment is also very preliminary.

6. Measures for the conservation of stocks

6.a Bluefin tuna

The SCRS Chairman stated that taking into account the uncertainties of the data and models applied and the caveats about them, the results of VPA and production model analyses indicate that the current exploitable biomass of western Atlantic bluefin is between 8% and 26% of the level estimated for 1975. He further reported that production model analyses indicate that recent exploitable biomass is between 6% and 12% of that which could produce MSY, which itself is theoretically about half the pre-exploitation level. Analyses also indicate that catches at current (1992) levels are likely to result in continued decline in spawning stock biomass.

The SCRS Chairman indicated that his Committee noted the Commission's request to provide options for rebuilding the stock in a reasonable period of time, and that consistent with the Commission's goal to rebuild the spawning biomass to level producing MSY, the SCRS recommended that future catches should be below 1,200 MT.

The U.S. Delegation expressed deep concern about the state of the western stock, noting that despite severe management measures, the stock decline continues. He further noted that countries fishing the eastern stock in the Mediterranean have consistently ignored regulatory measures recommended on fishing mortality and minimum sizes. He referred to the dramatic rise in the mid-north Atlantic catches. The U.S. felt that ICCAT must demonstrate that it is prepared to take tough measures at this time with respect to both the eastern and western stocks. Otherwise, the Commission may be facing the listing of bluefin tuna in Appendix I to CITES. The U.S. outlined a multi-point approach consisting of the following:

-- A quota for the western Atlantic based on SCRS advice;

-- Ensure compliance with the 1974 recommendation on limiting fishing mortality and minimum size of 6.4 kg;

-- The use of trade sanctions on non-complying ICCAT Contracting Parties and non-ICCAT Contracting Parties;

-- Reaffirm ICCAT's concern on large-scale pelagic driftnet fishing in the eastern Atlantic and the Mediterranean;

-- Strengthen the Infractions Committee as a means to highlight compliance measures;

-- Establish a "cautionary fishing area" in the area of the 45° West longitude line.

-- Ask SCRS to advise on the appropriateness of the stock division at 45°W.

The U.S. Delegation tabled a specific proposal, containing several management measures (**Appendix 2 to Annex 11**), and referred to another on driftnet fishing which will be tabled in the Plenary. (A Draft Resolution was later presented at and adopted by the Plenary; it is attached as **Annex 5.**)

The Delegate of Canada thanked the U.S. for the positive and constructive proposal on the western Atlantic stock but expressed some preliminary concerns. His first concern centered on the long-term nature (14 years) of the plan. He felt that more answers to some of the scientific questions are needed before the Commission can consider such a time period. Secondly, the Delegate of Canada expressed concern over the recommended increase in the small fish tolerance from 8% to 8.8% feeling that ICCAT should be decreasing mortality on juvenile fish rather than increasing it.

The Delegate of Japan expressed appreciation for the U.S. proposal on management measures but felt that it was a bit inconsistent with the SCRS advice and that it was difficult to accept such a long-term plan considering the uncertainties surrounding the scientific advice.

With respect to the long-term nature of the proposal, the U.S. Delegate replied that the plan could be adjusted as the scientific advice is developed over time. He added that the reason for the recommendation of a quota of 1,995 MT in the first year was to avoid procedural delays which would arise if a change to the 1991 Recommendation was proposed. He felt the proposal was consistent with the SCRS advice and that ICCAT cannot and must not delay the implementation of serious conservation measures. With respect to the proposed increase in the juvenile fish tolerance, the U.S. pointed out that this amounted to approximately 16 MT of fish.

The Chairman suggested that Canada, the U.S., Japan and a member state fishing the east Atlantic form a working group to discuss the proposal as tabled.

The Delegate of Japan tabled three proposals: one calling for a spawning closure in the Mediterranean for June-July (**Appendix 3 to Annex 11**); a second proposing a satellite tracking and catch reporting system for vessels greater than 24 m fishing outside of areas of national jurisdiction in the Convention Area (**Appendix 4 to Annex 11**), and a third proposing restrictions in the central Atlantic catch between 45°W and 30°W and North of 30°N along with more research on the stock structure question (**Appendix 5 to Annex 11**).

The Delegate of Spain asked whether states that have had no recent catches in the area would be permitted to fish under this proposal in the future. The Japanese Delegation replied that countries with no recent catches would not be permitted to fish in the central Atlantic area once this proposal was adopted.

The French Delegation reiterated that recommendations must be based on scientific grounds and that current scientific opinion does not indicate a single stock. Some of the proposals tabled contain language that almost assumes the one stock theory which is not so.

The U.S. Delegation, while agreeing that proposals must be based on scientific advice, felt that ICCAT must not wait too long to take action to protect the stock and should proceed cautiously with respect to fishing in the mid-Atlantic area.

The Japanese Delegation replied that they were not proposing one stock management but were instead proposing scientific studies.

The Delegate of Japan referred to a series of photographs taken by a Japanese inspector aboard a Japanese patrol vessel, depicting fishing by a number of non-Contracting Parties in the Mediterranean Sea from May to July, 1993. The Japanese Delegation found this activity very discouraging and wondered what measures could be taken. He referred to Japan's proposals on satellite tracking and catch reporting and to the spawning closure for vessels greater than 24 m tabled earlier. Those proposals suggest contact with non-Contracting Parties for the purpose of requesting compliance.

The Delegate of France recalled the proposal he made at the meeting of the Commission in November, 1992, aimed at the prohibition of fishing effort in the spawning areas of the Mediterranean during the spawning period. This measure should be equally applied to non-Contracting Parties. Concerning the Japanese proposal, the Delegate of France questioned the reasons for excluding vessels of less than 24 m and the renunciation of the procedure of objection which is contained in the text of the Convention.

The Delegate of Spain expressed skepticism about the ability to monitor such a measure especially with respect to non-Contracting Parties. The area must be well defined so it can be effectively monitored. Secondly, the Delegate of Spain, within the context of next year's review of the eastern bluefin stock, requested that selection studies be conducted to establish a minimum hook size and suggested a prohibition on the retention of fish less than 2 kg in

the 15% tolerance. This latter measure would facilitate the compliance and enforcement in the market.

The Delegate of France echoed the comments made by Spain on monitoring and the request for research on the hook size issue. He also supported the measure with respect to fish less than 2 kg.

The Chairman, on behalf of Morocco, supported the spawning closure but felt that the SCRS should advise on the area and timing of the closure. He also supported Spain's recommendation on hook size and the ban on retention of fish less than 2 kg.

The Chairman asked for a progress report from the working group discussing the U.S. proposal for management measures for the western Atlantic stock.

The U.S. Delegate advised that no consensus had been reached on the two major issues of the quota and the fishing in the mid-Atlantic area. Indeed, the three countries remained far apart on several aspects.

The Chairman suggested that this group continue its discussions with a view to reaching consensus. The group agreed to continue to strive for agreement.

At this point the Delegate of the U.S. tabled a proposal for measures in the mid-North Atlantic zone **(Appendix 7 to Annex 11)** including the creation of a "Cautionary Fishing Area", the attribution of catches in the area to country quotas for the western Atlantic and the prohibition of effort transfer from other areas. The proposal urged implementation as soon as possible. The U.S. made these recommendations due to the uncertainty of the stock composition in this area and asked member states to consider the recommendations.

Returning to the Japanese proposal for the closure of fishing during the spawning season in the Mediterranean **(Appendix 3 to Annex 11)**, the Delegate of Spain wondered whether the SCRS felt that this was a worthwhile measure. He also reiterated the monitoring difficulty, especially with respect to non-Contracting Parties.

The Delegate of Japan advised that Japanese vessels are now prohibited from fishing the Mediterranean during the spawning season by virtue of domestic regulations. However, Japan cannot continue to restrict its vessels from the area unless the prohibition is adopted internationally.

The Chairman, noting no clear consensus, asked members to discuss this issue further with a view to resolution.

Both Canada and the U.S., while not fishing in the Mediterranean, expressed support for any conservation measure on spawning fish.

The Delegate of Japan expressed the view that, until the SCRS is in a position to advise on the location of spawning areas, the entire Mediterranean Sea should be closed to large boats.

The Chairman of the SCRS advised that June-July is the peak season for spawning of bluefin in the Mediterranean.

The U.S. Delegate expressed concern about the lack of control by some countries in the eastern Atlantic fishery, with respect to levels of fishing mortality, particularly the mortality on small fish. He stated that the credibility of ICCAT as an effective organization was at stake and that non-compliance with the regulatory measures by the Contracting Parties is a major issue in that regard. The U.S. Delegate expressed his intention to raise this issue at the Infractions Committee.

The Delegate of Spain agreed on this point and felt the Commission should strengthen control but also make structural changes with respect to their former proposal on the enforcement of the small fish regulation. In this regard, Spain reiterated the suggestion on hook size as well as the prohibition on the retention of fish less than 2 kg within the 15% tolerance.

The Delegate of France indicated that the Commission should take note that effort has decreased in the east. He later clarified that he was referring to the east Atlantic and not the Mediterranean.

The U.S. Delegate presented, on its own behalf and on behalf of Canada and Japan, a draft recommendation on management measures for the western Atlantic stock. The Recommendation includes: a two-year scientific monitoring quota of 3,195 MT for the years 1994-1995, with 1,995 MT in 1994 and 1,200 MT in 1995, unless SCRS scientific information in 1994 indicates otherwise; a 400 MT quota for Japan with no more than 250 MT taken in 1994, and Japan will forego, for the two-year period, its percentage share of the west Atlantic quota. The remaining portion of the quota will be taken by Canada and the U.S. in the relative proportions agreed to in 1991. The proposal also includes other measures on research during the two-year interim period to provide scientific

information in order to develop a recovery program aimed at achieving a 50% increase in spawning biomass by the year 2008, small fish capture controls, and several other management measures.

The Delegate of Spain congratulated the three countries on the Recommendation, and remarked that such cooperative approaches are responsible action in furthering the goals of ICCAT. He requested that the Panel complete the discussion on the eastern stock before concluding discussion on the draft Recommendation.

The U.S. Delegate, on behalf of Canada, Japan and the U.S., also tabled a draft Recommendation for management in the central north Atlantic area which established a quota of 1,300 MT for Contracting Parties who have been fishing in this area, with a maximum in 1994 of 715 MT in the area North of 40°N and between 35°W and 45°W. His proposal also called for no fishing in this area by the Contracting Parties who had not previously been fishing in this area, as well as a thorough scientific review, prior to the 1995 SCRS Meeting, on the impact of harvests in this area on the west Atlantic stock.

The Recommendation for management measures on the central north Atlantic (**Annex 14**) was adopted and forwarded to the Commission for final adoption.

In accepting the proposal by Japan concerning measures on bluefin tuna fishing operations in the central Atlantic, the Spanish Delegation requested the record to show that such measures do not suppose or will invoke recognition or establishment of historical rights in the area fixed in the measure, on the part of the fleets that currently operate in this area. The statement by Spain is attached as **Appendix 6 to Annex 11.**

With respect to the eastern Atlantic stock, the Delegate of Japan stated that it was important for the SCRS to define the spawning season and area for the Mediterranean. The Japanese Delegate suggested that Section 3 (Proposal), paragraphs 2 and 3 of **Appendix 3 to Annex 11** be amended, by adding "longline" after pelagic and by deleting the brackets around 24 m.

The Delegates of France and Spain supported the above amendments. The Delegate of Spain felt that the Recommendation should include all vessels and not just longliners, but was prepared to support the proposal as written.

The Recommendation for management measures on the eastern Atlantic bluefin tuna (**Annex 15**) was adopted by the Panel and forwarded to the Commission for final adoption.

The Delegate of Spain recommended that the SCRS conduct studies on hook size selection as well as the effect of the prohibition on catching fish less than 2 kg.

After the adoption of two Recommendations, one on bluefin tuna in the Mediterranean Sea, and another on bluefin tuna in the central north Atlantic, the Panel also adopted a Recommendation, drafted by Canada, Japan and the U.S., concerning the management of bluefin tuna fishing in the western Atlantic (**Annex 13**).

The Delegate of Japan submitted a statement (**Appendix 9 to Annex 11**) referring to these two proposals which it requested be made part of the record. The Japanese Delegate stated that Japan was ready to reduce the western Atlantic quota to 1,200 MT next year. He stated that Japan has made the greatest sacrifice in the west Atlantic by agreeing to the proposal and that, if further measures are required after 1995, he hoped that the other parties would be prepared to sacrifice as well.

The Delegate of the U.S. stated, for the record, that they wanted to take even more severe measures, including a long-term stock rebuilding plan. Secondly, the U.S. also indicated that they were making great sacrifice in this plan and it should not be implied that the U.S. is not doing its share.

The Delegate of Canada also stated that the measures adopted will have a severe impact on the Canadian fishing fleet and industry and that all parties are conscious that the measures are painful.

6. Measures for the conservation of albacore

6.b Albacore

The Chairman of SCRS advised that no regulatory measures were in place for albacore and none were recommended. The SCRS recommended, however, that the stock be monitored closely.

The Delegate of Spain expressed grave concern about the expansion of the albacore driftnet fishery, pointing out the increase in catches, as well as the negative interaction with other gears. He indicated that if the results of some models gave optimistic assessments, other models indicated levels close to MSY. The substantiation of the strong expansion of this fishing method and of the uncertainty on the state of the stock, required major transparency in the catch

and effort data to be able to evaluate their impact and consequences. The Delegate of Spain noted that the SCRS had said that the expansion of effort, and thus the catch per unit of effort, in tons per fishing day, might not be an adequate unit.

The Delegate of France stated that it was a technicality and what really mattered was the amount of dead fish.

The Spanish Delegation stated that although it was certain that there were different analytical methods, the SCRS had advised submitting data in adequate and precise units of effort.

The Delegate of France recalled that the albacore gillnet fishery of the north Atlantic only represented 15% of the total fishing mortality on this fishery. This fishery was the object of close monitoring, in the presence of on-board observers. Concerning fishing gear interaction, the Delegate of France noted that, according to ICCAT statistical data, some of the afore-mentioned traditional fisheries, such as trollers, experienced reductions in catch levels even before the introduction of the gillnet fishery. On the same subject, the Delegate of France referred to a scientific study on the albacore fishery of the north Atlantic, carried out jointly by French and Spanish research institutes. This study, requested by France, at the meeting in November 1992, was transmitted to the Executive Secretary and to the Chairman of the SCRS. The Delegate of France requested that this document be circulated as soon as possible to all the ICCAT Contracting Parties.

7. Research

7.a Bluefin & 7.b Albacore

The Chairman of the SCRS referred to the section of the 1993 SCRS Report on research and statistics for both bluefin (section BFT-4w.b) and albacore (section ALB-4a and 4b) for recommendations on research activities and particularly noted the requirement for a final meeting of the Albacore Research Program which will take place in northern Spain in June, 1994.

The Panel accepted the research recommendations.

8. Date and place of the next Panel meeting

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

9. Other matters

The Japanese Delegated tabled a proposal for a "real time monitoring program" in the western Atlantic fishery.

Both Canada and the U.S. felt the proposal looked positive at first glance but requested time to study it in more detail. After reviewing this proposal, it was adopted and is attached as **Appendix 8 to Annex 11.**

10. Election of Panel Chairman

Morocco was unanimously re-elected Chairman of Panel 2.

11. Adoption of Report

The Report of Panel 2 was adopted.

11. Adjournment

The 1993 meeting of Panel 2 was adjourned.

Report of the Meeting of Panel 3

1. Opening

The meeting of Panel 3 was opened by the Panel Chairman, Mr. L. J. Weddig of the U.S.A.

2. Adoption of Agenda

The Tentative Agenda for Panel 3 was accepted by all the Panel members without change and is attached as **Appendix 1 to Annex 11.**

3. Election of Rapporteur

Mr. A. J. Penney (South Africa) was designated rapporteur for the meeting.

4. Review of Panel Membership

The Chairman noted that all Panel 3 members (Brazil, Japan, South Africa, Spain and the U.S.A.) were present. The Delegate of Brazil notified the Panel of its intention to withdraw from Panel 3 in the near future. There were no other requests for changes in membership of Panel 3.

5. Report of the Standing Committee on Research and Statistics (SCRS)

The relevant sections on the state of the stocks in the SCRS Report were presented by the SCRS Chairman, Dr J. L. Cort.

5.a Southern bluefin tuna

The 12th Tripartite Administrative Meeting between Australia, Japan and New Zealand was held in October, 1993, to assess this stock, with Taiwan attending as an observer. Assessments by virtual populatin analysis (VPA) using the original catch-at-age data, and new data based on revised growth rates, provided different results. Parental biomass remains far lower than in 1980 and it appears that a number of recent year-classes have not contributed to the rebuilding of the stock. VPA assessments on original growth data suggest that the parental biomass has stabilized, that young adult fish are increasing but that mortality on 11+ fish has increased. Assessment using the new growth data suggests that parental biomass continues to decline and provides no evidence of increase in young adults.

5.b Albacore - South

Revised abundance indices were developed for southern albacore from available Taiwanese and Japanese longline CPUE data, standardized to account for the effect of the increased shift in targeting to bigeye tuna. These were analyzed using two dynamic production models. An age structured dynamic production model (Punt Model) indicated the MSY of this stock to be 24,000 MT. Unconstrained ASPIC analyses suggested an MSY of 25,000 MT, while ASPIC analyses constrained to assume the biomass in 1960 was unexploited indicated an MSY of 24,300 MT. The estimated 1992 biomass relative to B_{MSY} ranged from 0.85 to 1, the ratio of F/F_{MSY} has exceeded 1 since 1985 and annual catches appear to have exceeded estimated MSY since 1985.

6. Measures for the Conservation of Stocks

6.a Southern bluefin tuna

Voluntary restrictions were adopted in 1971 by Japanese longline fishermen, while Australia introduced a national quota of 14,500 MT in 1984. Japan and New Zealand introduced quotas of 23,150 MT and 1,000 MT, respectively in 1985. Quotas were reduced in 1987 and the Tripartite Administrative Meeting introduced

quotas of 6,065 MT for Japan, 5,265 MT for Australia and 420 MT for New Zealand in 1989. These catch limits were retained until 1992. In 1993, interim catch limits were set, pending confirmation of the assessment results obtained using the revised growth information.

No management recommendations were made for southern bluefin as the circum-global stock of this species is monitored by another international body.

6.b Albacore - South

There are currently no management measures in effect for the southern albacore stock. The Chairman of the SCRS reported that no management measures had been proposed for this stock, but it had been noted that available assessments indicated that the southern stock has been exploited beyond MSY. Should results of further analyses continue to indicate this resource to be exploited beyond MSY, consideration should be given to appropriate measures to limit fishing mortality to sustainable levels.

The Delegate of South Africa read a statement (attached as **Appendix 10 to Annex 11**), expressing concern about the state of the southern albacore resource. He noted that, after considerable effort to address criticisms of assessments presented in 1991 and 1992, assessment of available abundance indices continued to indicate this resource to be exploited beyond MSY. South Africa refrained from recommending the introduction of a Total Allowable Catch limit at this meeting, despite her concerns. However, the Delegate of South Africa noted his intention to recommend appropriate management actions at the next meeting if assessments continued to indicate the resource to be exploited beyond MSY.

Commenting on the South African statement, the Delegate of Japan shared the concern expressed for the southern albacore resource. He noted, however, the SCRS recommendation for improved assessments to develop a more solid scientific basis for recommendation of any regulatory measures for this stock. He noted that the southern albacore stock is principally fished by Taiwanese longline and South African baitboat fisheries, and that Japan does not target this resource. The Delegate of Japan felt that the next meeting of the Albacore Research Program and the albacore stock assessment session would provide more information on the state of southern albacore, and that more thorough analyses were required as a basis for formulation of appropriate management measures for this stock.

The Delegate of the U.S. noted the viewpoints of South Africa and Japan and supported the careful scrutiny of all information on the southern albacore stock, with a view to providing appropriate advice on management of this stock in the future.

7. Research

7.a Southern bluefin tuna

No research recommendations were made for southern bluefin tuna, but it was noted that the ICCAT statistical system remains important for monitoring Atlantic catches.

7.b Albacore - South

Numerous research recommendations applicable to both northern and southern albacore stocks were made by the SCRS, so these were not all described again during the meeting of Panel 3. The most important research recommendations concerned efforts to improve catch, effort and size-frequency statistics required for improved assessments of these stocks. It was concluded that continued scientific monitoring and improved assessment of the southern albacore stock was important.

8. Date and place of next meeting

Dr. Cort noted that the SCRS had recommended the holding of a final meeting of the Albacore Research Program in northern Spain in June, 1994, and that this would be of relevance to both northern and southern albacore. The Panel supported the holding of such a meeting. At the suggestion of the Panel Chairman, the Panel agreed to hold the next meeting of Panel 3 to coincide with the next meeting of the Commission.

9. Other Matters

No other matters were discussed.

10. Election of Panel Chairman

The U.S. was unanimously re-elected Chairman of Panel 3.

11. Adoption of Report

The Report of Panel 3 was adopted.

12. Adjournment

The meeting of Panel 3 was adjourned after adoption of the Report.

Report of the Meeting of Panel 4

1. Opening

The Chairman, Mr. F. F. Litvinov of Russia, opened the Meeting of the Panel.

2. Adoption of Agenda

The Tentative Agenda was reviewed and adopted by the Panel (**Appendix 1 to Annex 11**). The Panel decided to review Agenda Items 5 through 7 separately for each species.

3. Election of Rapporteur

Dr. Z. Suzuki (Japan) was designated Rapporteur for the Panel.

4. Review of Panel membership

The Chairman confirmed the membership of the Panel as follows: Angola, Canada, France, Japan, Korea, Spain, United States, Russia and Venezuela. All the Panel members were present.

The Delegate of Uruguay, as an observer, expressed her country's interest to be a member of this Panel in the near future.

The Delegate of Brazil, also attending the Panel meeting as an observer, expressed his country's interest in becoming a member of Panel 4.

The Delegate of Russia noted that Russia intended to withdraw from Panel 4.

It was suggested by the Chairman that Atlantic bonito be included in other species (small tunas) and the suggestion was adopted.

BIGEYE TUNA (BET)

BET-5. Report of the Standing Committee on Research and Statistics (SCRS)

Dr. J. L. Cort, Chairman of the SCRS, summarized the SCRS view on the status of the bigeye tuna stock, as was analyzed by the hypothesis of a single stock in the entire Atlantic. The only abundance indices used for the bigeye stock were those calculated from the catch rates of the longline fishery.

Dr. Cort noted that increased fishing mortality on juveniles was observed, which is accounted for by the increase in effort of the tropical surface gears. He noted that this situation probably continued in 1992, during which purse seine catches of juvenile bigeye were significant. He noted that fishing mortality on adult fish is still high, but that it declined somewhat to the level observed during the 1986-1990 period.

An updated production model analysis (PRODFIT), applied to the data for 1961-92, estimated an MSY of 69,500 MT (Fox exponential model, m= 1). This analysis suggests that the catch in 1992 is slightly higher than the estimated MSY. The production model analysis also indicates that fishing effort on bigeye tuna is at slightly lower level than optimal fishing effort (f_{opt}) that corresponds to MSY, which has always been the case in the previous analyses by this model.

Two fits of non-equilibrium production model (ASPIC) have also been done on bigeye data. The first fit assumed a constant catchability for the entire time series 1961-92. The results of the model (equivalent to a logistical model m=2) shows a less optimistic estimate of the state of the stock and estimated MSY at 65,000 MT. Recent catches, since 1989, seem therefore to have surpassed the MSY estimated by the ASPIC model. The stock biomass at the beginning of 1993 is estimated slightly lower than optimum level and the 1992 fishing mortality rate seems to surpass the optimum level by about 28%. A second fit of the ASPIC model, carried out on two time series (1961-74 and 1975-92) took into account the use of the deep longline and a probable change in the catchability. This assessment estimates the MSY at 69,500 MT, a value which is comparable to that estimated by PRODFIT.

Bigeye yield per recruit analysis indicates that, under the current exploitation pattern, yield could be increased significantly (about 15%) by increasing fishing mortality. On the contrary, a change in the age at first capture may have little effect on the yield per recruit (3% potential increase), unless it is accompanied by a combined increase in fishing

mortality. Multi-gear yield per recruit analysis suggests that, under the current exploitation pattern, significant gains could be obtained if the increase in fishing mortality of adult bigeye tuna is accompanied by a simultaneous decrease in mortality on juveniles. On the contrary, if an increase in fishing mortality on juveniles occurs simultaneously with a decline in mortality on adults, a decline in yield per recruit may be observed.

BET-6. Measures for the conservation of stocks

The bigeye minimum-size regulation of 3.2 kg has been in effect since 1980, and was adopted to reinforce the yellowfin regulation. It has been reported in recent years that the tropical surface fleets (baitboat and purse seine) continue to land a large number of juvenile bigeye tuna. This tendency has further increased in 1991-1992.

According to the available assessment results, there are few potential benefits to changing the age at first capture, given the current situation. However, the Committee recommended maintaining the regulations currently in effect, taking into account the increase in purse seine fishing effort and that the increased use of artificial floating objects increases the catch of juveniles. Thus, the current regulation is always useful for improving the yield per recruit of the stock.

Additional information on the percentage in number of bigeye smaller than 3.2 kg in the total Atlantic bigeye catch was provided by request of the Executive Secretary of the ICCAT. The percentage (58% of the total catch in number) substantially exceeded the 15% limit, especially in recent years.

BET-7. Research

The SCRS Chairman briefly introduced several of the Committee's recommendations for research.

SWORDFISH (SWO)

SWO-5. Report of the Standing Committee on Research and Statistics (SCRS)

The Chairman of the SCRS summarized the status of the stock, the effects of current regulations, management recommendations, and research recommendations on Atlantic swordfish.

North Atlantic

The SCRS Chairman indicated that updated catch rate information was provided from the three major longline fisheries, i.e., the Japanese, Spanish and U.S. abundance indices standardized by the General Linear Modelling (GLM) approach. The basic data are aggregated catch and effort data by month and 5-degree rectangles for the Japanese fishery and catch per trip information for the Spanish and U.S. fisheries. As in past analyses, age-specific indices were developed for all these fisheries by the age-slicing method using the ICCAT Gompertz growth equation for pooled sexes. Five age-specific indices (age 1, 2, 3, 4, and 5+) were obtained from the Spanish and U.S. fisheries. An index for age 5+ was estimated from the Japanese fishery.

The relative trends of these indices for the north Atlantic were summarized as follows. The USA indices in 1992 for fish of ages 1 and 2 were much lower than the values in previous years due mainly to the implementation of the ICCAT minimum size regulations. Since these catch rates were based on landings, catches discarded in 1991 and 1992 were not included in the analysis. The 1992 abundance index values for older fish (ages 3 to 5+) are higher than the 1991 abundance value. However, caution should be exercised in the interpretation of the changes in the index values since these could be caused, among other factors, by changes in catchability not adequately accounted for in the analysis.

The Spanish indices indicate almost the same level of relative abundance in 1992 for age 2 and 4 fish and a slightly lower value for age 3 fish. The same indices for age 1 and 5+ are slightly higher in 1992. Trends between the Spanish and U.S fleets are consistent for the age 5+.

The Japanese index shows a continued decline in 1992. However, it should be noted that the 1992 statistics are preliminary. As regards this index, the Committee suggested that catch information other than swordfish be included in the model since the Japanese longliners do not target swordfish. This was accomplished at the meeting and the revised preliminary index value for 1992 also indicates a continued decline.

South Atlantic

The Committee expressed concern about the status of swordfish in the south Atlantic because of the large increase in landings in recent years. The absence of

additional standardized abundance indices other than those from the Japanese and Spanish fisheries hinders stock assessment. The Japanese longline CPUE with preliminary 1992 statistics for ages 5+ shows a declining trend from 1975 through 1992, while the age 5+ index from the Spanish fleet shows a flat pattern since 1989. Spanish CPUE for the south Atlantic stock was derived mainly from the areas adjacent to 5°N. Therefore, it is recommended that the scientists who are familiar with the other fisheries of the south Atlantic countries participate in developing standardized abundance indices.

Dr. Cort briefed the Panel on the effects of current regulations. Regarding the reduction of fishing mortality (or the equivalent amount of fishing effort), for fish weighing more than 25 kg or fish larger than 125 cm LJFL, in the north Atlantic, (1990 recommendation 1), estimated total F in 1991 (from the 1992 analysis) has decreased 15-42 percent (from production and VPA model analysis, respectively), relative to 1988. Landings accordingly had also decreased from 19,331 MT in 1988 to 13,301 MT in 1991, a decrease of 31 percent. Landings in 1992 (13,352 MT) were similar to those in 1991. The weight of swordfish larger than 25 cm LJFL landed by nation along with an index value relative to 1988 was compiled. The United States and Spain have reduced their landings in weight of fish larger than 125 cm LJFL by 30 percent and 38 percent, respectively.

With respect to the 1990 recommendation to protect small swordfish (Second Recommendation), the percentage of undersized fish landed (LJFL < 125 cm) by nation in the north and south Atlantic as well as Mediterranean was compiled. In 1992 the percentage of swordfish less than 125 cm LJFL was 14.8% for all nations fishing in the Atlantic. Recent changes in the percentages of swordfish less than 125 cm LJFL may reflect the regulations or changing effort distributions and stock dynamics. The Committee noted that the only significant decline in landings of swordfish less than 125 cm LJFL since 1991 was for the U.S. fleet. Estimates of discards in the U.S. fishery were presented and this source of mortality will be considered in the 1994 assessment. Additional information on discards was provided by Spain.

With respect to the 1990 recommendation to limit fishing mortality by minor fishing nations (Fourth Recommendation), available information indicates that fishing mortality attributed to nations other than the United States, Spain, and Japan could be increasing. A length-based sequential population analysis for the north Atlantic presented at this meeting provided results consistent with the previous assessment. That analysis also indicated a significant partial fishing mortality that can be attributed to catches by fishing nations other than the United States, Spain, and Japan. That proportion of total fishing mortality has increased significantly since 1985. These minor fishing nations now (1992) account for slightly more than 20 percent of the landings in numbers and in weight in the total Atlantic.

With respect to the 1990 recommendation for fisheries which do not target swordfish (Fifth Recommendation), estimates of the proportions of swordfish in the total catch of tuna and billfish for the Japanese, Korean, and Taiwanese longliners in the north Atlantic were provided. These proportions are lower than the recommended 10 percent by-catch level.

The Committee reviewed landings data from the south Atlantic along with the Japanese and Spanish CPUE indices for that region. The Committee continued to express concern about the high landings and the lack of progress in developing standardized CPUE indices from several of the fisheries in that region. The Committee emphasized the need to conduct a full assessment of the assumed south Atlantic stock at the 1994 swordfish assessment session.

SWO-6. Measures for the conservation of stocks

The Delegate of Canada commended the SCRS for providing an excellent report on this species. He expressed several concerns about the effect of current regulations and asked two specific questions of the SCRS Chairman. The Canadian Statement on Swordfish is attached in **Appendix 11 to Annex 11** .

In reply to the first question raised by the Delegate of Canada to whether the SCRS was recommending a reduction of catch levels or the landings of small fish, the SCRS Chairman responded that it was a reduction in landings. The Delegate of Canada also inquired whether the effect of discards was taken into account in the assessment, to which Dr. Cort replied that this will be taken into account in the 1994 swordfish assessment.

In reply to the second question of Canada regarding if the SCRS was able to evaluate the change in fishing mortality for the total Atlantic at this time compared to the 1988 level, the SCRS Chairman responded that the Committee would be able to do so

at next year's assessment, using 1993 data with respect to 1988.

The Delegate of the U.S. commended the excellent work that the SCRS done on this species. However, the Delegate raised serious concern on the management of Atlantic swordfish with respect to the increase in landings of swordfish in the Atlantic by minor fishing nations and the lack of progress on the reduction of landings of swordfish less than 125 cm. The U.S. statement is attached as **Appendix 12 to Annex 11.**

After hearing the statement by the U.S., the Delegate of Canada felt it necessary to clarify, specifically regarding the second paragraph of the aforementioned U.S. statement relative to the recommendation made in 1992 to maintain catch levels for 1993 and 1994 at recent levels. The comments made by the Delegate of Canada are contained in the Second Statement by Canada on Swordfish, which is attached as **Appendix 13 to Annex 11.**

The U.S. Delegate responded to the Second Statement by Canada, noting that the 1992 recommendation was relevant to countries harvesting a minor amount of swordfish, whereas the Canadian catch has increased significantly, not only in absolute quantity, but also in percentage, and therefore not justifiable as a minor harvesting country.

The Delegate of Spain also commended the efforts made by the SCRS in the research and analysis of this species. He highlighted how seriously Spain took several important regulatory measures in compliance with the current management regulations. Those measures include reduction of fishing effort, reduction of its catch of under-sized fish, freezing of fishing capacity, banning of drift gillnets and a census of the surface longline fleet. He also noted that Spain has been placing observers on board Spanish vessels to assure transparency of the statistics and information obtained. Further, the Delegate of Spain supported the statement made by the U.S. Delegate, and reiterated concern about the increase in the swordfish catch by other minor swordfish fishing countries and expressed his country's fear that the effectiveness of the regulations will be lost if all countries catching swordfish do not act cooperatively.

Following the statements made by the U.S. and Canadian Delegates, the Delegate of Spain reiterated the importance of equally sharing the burden of compliance with ICCAT's Recommendations among all the relevant countries. The Statement by Spain on Swordfish is attached as **Appendix 14 to Annex 11.**

The Delegate of the U.S. asked for clarification on the Canadian quota and further questioned if the Canadian quotas, once set at 3,500 MT and later reduced to 2,000 MT, have ever been filled.

The Delegate of Canada provided an explanation retrospectively citing a history of the Canadian swordfish fishery in that a catch of more than 6,000 MT was made in the early 1960's and mentioned that the quotas were not filled for the period during which such quotas were set.

The U.S. Delegate expressed his regret by pointing out that the recent increase of the Canadian swordfish catch was not consistent with the ICCAT regulatory measures.

The Delegate of Uruguay, attending the Panel as an observer, expressed her concern about the status of the stock in the south Atlantic, and called particular attention to the fact that swordfish catches in the area was still at a high level, and that the catches of countries other than the major swordfish-fishing countries, were increasing.

SWO-7. Research

As regards research recommendations, the SCRS Chairman urged the delegates to examine closely all the recommendations concerning swordfish in the 1993 SCRS Report. The SCRS Chairman reminded the delegates that research recommendations specific to the Mediterranean were also made in item SWO-MED.4 of the swordfish species section of the SCRS Report.

BILLFISHES (BIL)

BIL-5. Report of the Standing Committee on Research and Statistics (SCRS)

Dr. J. L. Cort, the SCRS Chairman, reviewed the 1993 SCRS Report, with particular reference to the pertinent section concerning billfish assessment.

He indicated that production model assessments of Atlantic blue marlin presented to the SCRS in the early 1980's generally showed declines in the stock(s) biomass from the early 1960's to the mid-1970's, with some stabilization for the total Atlantic from the mid-1970's through 1980, but at values far below the 1965-1975 average. These results suggested that blue marlin

were at least fully exploited and likely over-exploited by about 1980. The updated assessments presented to the 1992 SCRS included an additional 10 years of data compared to assessments carried out in the early 1980's and used a more flexible model structure (ASPIC). The general results from the analysis for each stock hypothesis suggest that biomass is below B_{msy} and in this respect the results are very similar to those of earlier stock assessments.

As was the case for blue marlin, the white marlin stock assessments presented to the SCRS in 1992 were the first since the early 1980's. Early assessments generally showed a sharp decline in the stock(s) biomass from the early 1960's through 1970, with continued but more moderate declines (with variation) to low levels through 1980. The stock(s) were considered to be at least fully exploited and likely over-exploited by the later part of this time series (mid to late 1970's). The differences between early assessments (1979-1982 SCRS) and those presented to the 1992 SCRS, in terms of methodology and available data, for white marlin are the same as stated previously for blue marlin. The general results from the analysis for each stock hypothesis illustrate declines in stock biomass to levels well below estimated B_{msy} and corresponding increases in fishing mortality above estimated F_{msy} through 1990.

Previous production model assessments for western Atlantic sailfish (including spearfish) (1982 SCRS) indicated that this resource was moderately exploited. The updated assessment submitted to the 1993 SCRS included an additional 10 years' data compared to assessments carried out in the early 1980's and used a more flexible model (ASPIC), as discussed for blue and white marlins. Point estimates of maximum sustainable yield for west Atlantic sailfish ranged from 606 to 707 MT (east Atlantic sailfish MSY is about 2,700 MT) for several assessment approaches. The results suggest that the west Atlantic sailfish is fully exploited or over-exploited.

No new stock assessments for east Atlantic sailfish (including spearfish) were presented to the 1993 SCRS. The most recent equilibrium assumption production model results, i.e., those presented to the SCRS in 1988, suggest that the coastal east Atlantic stock of sailfish is not yet fully exploited. The most recent Japanese longline sailfish CPUE indices (not fully standardized) for the central and east Atlantic fishing grounds were those presented to the 1988 SCRS. These indices indicated a steep declining trend from the late 1960's to the mid-1970's, followed by a more gradual decline through 1986.

BIL-6. Measures for the conservation of stocks

No ICCAT regulations are currently in effect for billfishes. However, two ICCAT Contracting Parties (the U.S. and Venezuela) and one non-Contracting Party (Mexico) established domestic regulations involving Atlantic billfishes in 1988 and 1990-1991. Venezuela initially prohibited commercial fishing in the area of La Guaira in 1988 and in 1990, and stricter regulations were established to minimize Venezuelan recreational landings of billfishes and prohibit their sale. In addition, Mexico prohibited commercial longliners within 50 miles of her coast in 1990 and revised billfish regulations to eliminate the commercial sale of billfish in 1991. Recent stock assessment results for blue and white marlins and west Atlantic sailfish, which indicate that these species are either fully or over-exploited, warrant consideration for development of methods to reduce fishing mortality rates on billfish at this time. In light of the recent assessments for blue and white marlins presented at the 1992 SCRS and the assessment of west Atlantic sailfish presented to the 1993 SCRS, the Committee recommended that the fisheries for billfishes be monitored closely.

The Delegate of Japan expressed his country's concern about the stock status of billfishes. He also noted that cooperative action is needed to cap and reduce the billfish catches. The Statement by Japan on Billfish is attached as **Appendix 15 to Annex 11.**

The Delegate of the U.S. also made a statement which specifically pointed out his country's grave concern about the low stock levels of billfishes. The U.S. Statement on Billfish is attached as **Appendix 16 to Annex 11.**

BIL-7. Research

The Chairman of the SCRS called the Panel's attention to the research recommendations concerning billfishes contained in the 1993 SCRS Report.

The Delegate of Brazil, attending the Panel Meeting as an observer, extended an invitation, subject to official confirmation by the pertinent Brazilian authorities, to host the Workshop on Development of Abundance Indices for South Atlantic Tunas and Tuna-like Fishes, in 1994.

SMALL TUNAS

SMT-5. Report of the Standing Committee on Research and Statistics (SCRS)

The SCRS Chairman informed the Panel that there was no information to study the actual stock structure of small tunas and that current available information generally does not allow an evaluation of the status of the hypothetical stocks assumed for most of these coastal pelagic species.

SMT-6. Measures for the conservation of stocks

A "U.S. Fishery Management Plan (FMP) for coastal pelagic species in the Gulf of Mexico and Atlantic Ocean Region" has been in effect since 1983. Under the FMP, fisheries management procedures were established for king *(Scomberomorus cavalla)* and Spanish *(Scomberomorus maculatus)* mackerels through implementation of catch quotas. The objective of the FMP is to maintain these stocks at abundance levels that could provide long-term yield as close to MSY as possible, while not allowing spawning biomass to fall so low as to have a negative impact on recruitment. Annual total allowable catches from these stocks are based on recommendations from a group of scientists who conduct the annual stock evaluation analyses.

SMT-7. Research

Dr. Cort reviewed the recommendations made by the 1993 SCRS concerning research on small tunas.

8. Date and place of next Panel meeting

The Panel agreed to hold its next meeting at the same time and place as the 1994 Commission Meeting.

9. Other matters

As mentioned in Item 4, "Review of Panel membership", Uruguay expressed its interest in becoming a member of Panel 4.

10. Election of Panel Chairman

In view of his country's intention to withdraw from Panel 4 in 1994, the Delegate of Russia, whose country is the current Chairman of this Panel, asked that Russia not be considered for re-election.

The Delegate of the U.S. commended the excellent chairmanship of Dr. Litvinov in presiding over this Panel, which was reiterated by several other members of the Panel.

The Delegate of the U.S. nominated Japan as the next Chairman of Panel 4, and this was supported by Spain, Portugal, Russia, Canada, Korea and Venezuela. Consequently, Japan was unanimously elected Chairman of Panel 4.

In accepting the Chairmanship of the Panel, the Delegate of Japan thanked the Panel members for their support and also commended the excellent work of Dr. Litvinov.

11. Adoption of Report

The Report of Panel 4 was adopted.

12. Adjournment

The Meeting of Panel 4 was adjourned.

Appendix 1 to Annex 11

AGENDA FOR PANELS 1 - 4

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. Report of the Standing Committee on Research and Statistics (SCRS)
6. Measures for the conservation of stocks:

Panel 1

a) Yellowfin
b) Skipjack

Panel 2

a) Bluefin (North)
b) Albacore (North)

Panel 3

a) Southern bluefin
b) Albacore (South)

Panel 4

a) Bigeye
b) Atlantic bonito
c) Swordfish
d) Billfishes
e) Other species

7. Research
8. Date and place of next Panel meeting
9. Other matters
10. Election of Panel Chairmen
11. Adoption of Report
12. Adjournment

Appendix 2 to Annex 11

PROPOSAL BY THE UNITED STATES ON 1993 MANAGEMENT MEASURES FOR WESTERN ATLANTIC BLUEFIN TUNA

(Attached to the Report of Panel 2)

The Commission recommends that:

First: In order to continue the achievement of the goals of maintaining improvements in the western Atlantic bluefin tuna stock and allowing ICCAT to develop an enhanced multi-year recovery program for this stock;

a) The Contracting Parties whose nationals have been actively fishing for bluefin tuna in the western Atlantic institute effective measures to limit the quota for scientific monitoring purposes as follows:

1994	1995 MT
1995	1200 MT(or equilibrium yield)
1996	1000 MT
1997	1000 MT
1998	800 MT
1999	800 MT
2000 - 2008	800 MT

b) The annual scientific monitoring quotas described in paragraph 1(a) be taken by these Contracting Parties in the same proportions as previously agreed in 1990.

c) the scientific monitoring quotas be reviewed annually and adjusted on the basis of the SCRS analysis to ensure rebuilding of the stock to MSY by the year 2008.

d) If the catch of one of these Contracting Parties exceeds its country's annual scientific monitoring quota, then in the year following reporting of that catch to ICCAT, that Contracting Party reduce its catch to compensate in total for that overage. Such a reduction to be applied to the domestic catch category with the coverage of the concerned Contracting Party.

Second: The Contracting Parties whose nationals have been fishing in the western Atlantic prohibit the taking and landing of bluefin tuna weighing less than 30 kg or in the alternative having a fork length of less than 115 cm.

Notwithstanding the above measure, the Contracting Parties may gant tolerances to the capture of bluefin tuna either weighing less than 30 kg, or in the alternative having a fork length less than 115 cm, to limit the take of these fish to no more than 8.8% by weight of the total bluefin catch on a national basis provided that they institute measures such that there would not be economic gain to the fishermen from such fish.

Third: The Contracting Parties whose nationals have been fishing in the western Atlantic encourage their commercial and recreational fishermen to tag and release all fish less than 30 kg or in the alternative having a fork length less than 115 cm.

Fourth: No change to the previous recommendation.

Fifth: No change to the previous recommendation.

Sixth: No change to the previous recommendation.

Seventh: No change to the previous recommendation.

Eighth: No change to the previous recommendation.

Appendix 3 to Annex 11

PROPOSAL BY JAPAN FOR REGULATORY MEASURES BY ICCAT CONCERNING THE EASTERN ATLANTIC BLUEFIN TUNA CATCH

(Attached to the Report of Panel 2)

1. Background

For the purpose of protecting the spawning stock of bluefin tuna, Japan has taken voluntary time closure for its tuna fleets in the Mediterranean since 1975 with its patrol vessels dispatched to this area. The sighting record of our enforcement officials shows, however, that a large number of non-Japanese large pelagic tuna fishing vessels operate in the Mediterranean, presumably targeting spawning bluefin tuna.

Currently, no international conservation and management measure has been introduced in ICCAT to prohibit its Contracting Parties from catching spawning bluefin tuna in the Mediterranean. Also, without such measures, there is no rationale for ICCAT to deter non-Contracting Parties form operating the pelagic tuna fisheries in the Mediterranean during the spawning period.

2. Objectives

The objectives of the proposal are to protect the spawning stock of bluefin tuna in the Mediterranean by prohibiting Contracting Parties' large pelagic fishing vessels from catching it during the spawning season and thereby establishing a basis for discouraging non-Contracting Parties' fishing operations in the Mediterranean.

3. Proposal Amendment by Japan

In addition to the Commission's regulatory measures currently effective to the eastern Atlantic bluefin tuna, the Commission recommends:

First: that from June 1 to July 31 there will be no fishery using large pelagic fishing vessels greater than [24 m] in length for bluefin tuna in the Mediterranean.

Second: that, notwithstanding the provisions of Article VIII, paragraph 2 of the Convention, the Contracting Parties whose nationals have been fishing for bluefin tuna using large pelagic fishing vessels greater than [24 m] in length on bluefin tuna in the Mediterranean take steps to implement this recommendation before June 1, 1994 in accordance with the regulatory procedures of each country.

4. Follow-up action by the Commission

Noting that the Commission's decision in 1988 and actions taken by the Executive Secretary and Contracting Parties thereafter, the Commission will inform the above recommendation to non-Contracting Parties whose vessels fishing in the Mediterranean and urge them to implement this measure before June 1, 1994.

Note: "length" means:

(i) for any fishing vessel built after 18 july 1982, 96% of the total length on a water line at 85% of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline;

(ii) for any fishing vessel built before 18 July 1982, registered length as entered on the national register or other record of vessels.

Appendix 4 to Annex 11

PROPOSAL BY JAPAN ON A SATELLITE TRACKING AND CATCH REPORTING SYSTEM FOR LARGE FISHING VESSELS

(Attached to the Report of Panel 2)

First: For better monitoring of fishing activities and catches of fishing vessels operating in the Convention Area, the Commission resolves to establish a working group consisting of representatives of Contracting Parties with the following terms of reference:

I. To study the establishment of effective tracking and catch reporting systems for vessels of Contracting Parties fishing outside areas of national jurisdiction over fisheries in the Convention Area;

II. To review and compare the effectiveness of existing systems;

III. To develop minimum requirements for the systems;

IV. To develop a system suitable for each type of fishing vessel;

V. To develop a satellite tracking and catch reporting system for vessels greater than 24 meters in length to be implemented in accordance with the following schedule:

A. Fishing vessels for bluefin tuna in the west Atlantic and in the Mediterranean no later than March 31, 1995;

B. Fishing vessels for bluefin tuna in the east Atlantic by the end of 1995;

C. Fishing vessels for tuna and tuna-like species other than bluefin tuna in the Convention Area by the end of 1996.

VI. To develop an equivalent tracking and catch reporting system for vessels 24 meters in length or less, no later than March 31, 1995;

VII. To consider procedures for Contracting Parties to report the results of operating their systems to the Commission;

VIII. To report its findings and make recommendations to the Commission at its 9th Special Meeting in 1994 for the adoption by all Contracting Parties of appropriate vessel tracking and catch reporting systems.

Second: The Commission calls on all non-Contracting Parties whose nationals fish for tunas in the Convention Area to participate as observers in the work of the working group with a view to voluntary compliance with the system(s) to be adopted.

Third: The Commission recommends that the Contracting Parties situated wholly or partly within the Convention Area shall develop and adopt an equivalent vessel tracking and catch reporting system for vessels fishing for tuna and tuna-like species inside areas of its national jurisdiction.

Note: "length" means:

(i) for any fishing vessel built after 18 July 1982, 96 percent of the total length on a water line at 85 percent of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline;

(ii) for any fishing vessel built before 18 July 1982, registered length as entered on the national register or other record of vessels.

Appendix 5 to Annex 11

PROPOSAL BY JAPAN ON MEASURES FOR BLUEFIN TUNA OPERATIONS IN THE CENTRAL ATLANTIC OCEAN

(Attached to the Report of Panel 2)

1. Objective

To control the bluefin tuna fishing operations in the Central Atlantic Ocean so as to enhance the effectiveness of the conservation measures in both the eastern and western Atlantic Ocean.

2. Background

(History of the Regulations)

1) In 1974, ICCAT decided to freeze the fishing mortality of bluefin tuna in the entire Atlantic. In response, Japan introduced a quota for the directed fishery for bluefin tuna.

2) In 1981, ICCAT set monitoring quotas for the western Atlantic area (west of 45°W) while prohibiting a shift of fishing effort from the west to the east Atlantic. Japan, while prohibiting the bluefin catch after the monitoring quota is reached in the western Atlantic, established a quota of 1,600 MT for the bluefin directed fishery in the eastern Atlantic area, including the Mediterranean Sea. This measure was designed to restrain the total bluefin catch (both directed and incidental catches) in the eastern Atlantic under the 1975-80 average level (2,000 MT). As a result of this measure and the administrative

instructions, the average catch from 1983 to 1992 was 1,989 MT.

3) In addition, in view of an increase in the catch after 1990, the Japan Fisheries Agency issued instructions to the industry this year to restrict the bluefin catch in the eastern Atlantic. The total bluefin catch in the east Atlantic in 1993 is estimated to be reduced from the increased level of the catch (3,066 MT in 1991 and 3,473 MT in 1992) to around 2,200 MT.

(Scientific information)

1) There remains a significant possibility that only one stock of bluefin tuna exists in the entire Atlantic. At least a substantial level of exchange between the two stocks is a reasonable assumption to be a basis for management decisions.

2) The results of stock assessments also show that the size of the eastern stock is 30 times larger than that of the western stock.

3) The degree of mixture of the two stocks, if they exist, is unknown in the central Atlantic area east of 45°W. Intensified research is desirable on this question as well as the overall question of stock structure of Atlantic bluefin tuna.

4) The patterns of the ocean currents suggest significant hindrance for bluefin tuna migration between the fishing grounds west and east of 45° W, whereas no hinderance seems to be existing between the fishing ground just east of 45°W and the further east area.

3) Proposed specific measures

(ICCAT measures)

It is proposed that ICCAT adopt the following regulatory recommendation as a measure supplementary to the current conservation measures until the scientific studies bring reliable results on the stock structure and migration of Atlantic bluefin tuna.

"The Contracting Parties restrict the catches of Atlantic bluefin tuna to less than recent levels in the area between 45°W and 30°W and north of 30°N."

(Japanese measures)

The following measures will be taken to implement the above ICCAT decision:

1) To limit the total catch of Atlantic bluefin tuna including the incidental catch to 2,000 MT in the eastern Atlantic.

2) Within the quota of 1) above, to set up a three year block quota of an annual average catch of 950 MT with 10% allowance in the area between 45°W and 30°W.

3) To conduct research to identify the stock structure, including appropriate sampling from the catch in the central Atlantic for genetic and other studies.

Appendix 6 to Annex 11

STATEMENT BY SPAIN ON BLUEFIN TUNA IN THE CENTRAL ATLANTIC OCEAN
(Attached to the Report of Panel 2)

In accepting the Recommendation concerning bluefin tuna fishing operations in the central Atlantic, the Spanish Delegation wishes to assert clearly that this does not suppose nor will it be invoked as recognition or generation of historic rights, in the area fixed in the measure, for the fleets that currently operate in this area and that, therefore, the Recommendation that other Contracting Parties not operate in the area refers only and exclusively to the 1994-1995 period.

Appendix 7 to Annex 11

PROPOSAL BY THE UNITED STATES ON THE RECOMMENDATIONS CONCERNING CATCHES OF BLUEFIN TUNA IN THE MID-NORTH ATLANTIC

(Attached to the Report of Panel 4)

PREAMBLE: It is noted that over the pat few years a sizeable fishery has come into existence in the North Atlantic, in close proximity and on both sides of the arbitrary line drawn at 45 degrees West longitude to delineate data collection on the western and eastern stocks of bluefin tuna.

Realizing that the sizeable catches by longline vessels to the East of the line, in the vicinity of 50 degrees North latitude, are likely having an impact on the western stock and potentially placing a high risk on an already depressed stock,

The Commission recommends:

FIRST: That a "Cautionary Fishing Area" be established immediately, within the area delineated by 55 degrees West longitude, 60 degrees North latitude, 35 degrees West longitude, and 30 degrees North latitude, until better information is available concerning stock structure and distribution.

SECOND: That the Contracting Parties whose nationals are actively fishing in the "Cautionary Fishing Area" ensure that any harvest of bluefin tuna taken in that area is counted against the country quota for the western Atlantic.

THIRD: That the Contracting Parties take measures to prohibit the transfer of effort from other areas to the vicinity of the "Cautionary Fishing Area" in order to avoid increasing fishing mortality of the bluefin tuna in the western Atlantic.

FOURTH: That the adoption of the above measure does not imply any modification of the 1974 ICCAT recommendation adopted in 1975 concerning a minimum weight of 6.4 kg applicable to the entire Atlantic and fishing mortality limitation in the eastern Atlantic for bluefin tuna.

FIFTH: That notwithstanding the provisions of Article VIII, paragraph 2 of the Convention, the Contracting Parties take steps to implement this recommendation as soon as possible in accordance with the regulatory procedures of each country.

Appendix 8 to Annex 11

ICCAT COORDINATED REAL TIME MONITORING PROGRAM FOR DATA COLLECTION OF WESTERN ATLANTIC BLUEFIN TUNA

(Attached to the Report of Panel 2)

1. Purpose

In order to achieve more clear analysis of stock structure and stock assessment of bluefin tuna, data from the fisheries outside the framework of regulations will be collected in the western Atlantic in a coordinated manner on a real time basis. The data collected under this Program are exchanged among the participating countries of this Program.

2. Basic Design

1) Fisheries

All relevant fisheries recreational and commercial which would provide useful information including CPUE used for tuning the VPA will be applied.

Appropriate category and size of fisheries concerned will be decided through the consultation of

the countries involved in the bluefin tuna fisheries in the western Atlantic.

2) Period and area

Appropriate period and area assigned to this program will be consulted among the countries.

3) Observers

The relevant authority of the countries will deploy the scientific observer at the reasonable level on each fishery that is participating in this Program.

4) Identification of participating fisheries

The list of participating fisheries and fishing boats will be distributed among the countries before the program starts.

5) Data Collection

The following data will be collected:

- length and weight of all bluefin tuna caught with identification of sex
- fishing efforts
- biological data including sampling of gonads for reproductive study, samples for genetic studies and hard parts for ageing, etc.
- tagging and release, recovery data

3. Catch quota

The catch quota assigned to this program will be discussed among the countries concerned at a later stage.

4. Reporting

The data will be reported on a daily basis to the respective country of the fisheries. Monthly summaries will be exchanged among the countries and whole data under the program will be summarized by the respective countries and annually reported to ICCAT.

Appendix 9 to Annex 11

STATEMENT BY JAPAN ON PROPOSED RECOMMENDATIONS FOR MANAGEMENT MEASURES ON BLUEFIN TUNA IN THE WESTERN ATLANTIC AND CENTRAL NORTH ATLANTIC

(Attached to the Report of Panel 2)

1. Japan would like to say a few words on the conservation measures just adopted. In view of these measures, one can easily find who made the largest sacrifice for the conservation of the western Atlantic bluefin stock.

2. Japan decided to limit its bluefin catch in the western Atlantic to a real minimum level for scientific monitoring, namely just 200 MT for each year on an average. We cut 441 MT of quota from the normal share. This was not an easy decision. It was because we hoped that the SCRS recommendadation for setting the catch limit below 1,200 MT would be realized immediately for proper conservation of this stock. Unfortunately, it was not realized as an immediate measure. Japan is willing to help the fishing industries of the other two major fishing nations, namely the U.S. and Canada, to minimize their economic hardship. But we are still wondering whether the amount of bluefin tuna Japan saved by severe catch reduction should be used solely for that purpose, not for faster rebuilding of the stock.

3. Japan also decided to limit the catch in the central area to a low level, major reduction from the average catch in the last three fishing seasons, to avoid the possible adverse impact on the western stock. This is not an easy decision either. Some people say that Japan can compensate the reduction of the western bluefin catch somewhere else since the Japanese fleet is pelagic and mobile. However, this is totally wrong because Japan is severely limiting the bluefin catch in the eastern area, too.

4. Japan sincerely hopes the stock will turn out to be rebuilding as a result of a comprehensive scientific review in 1995. But if further deterioration of the stock is found, it would not be Japan's turn to make sacrifices. It would be the turn of the other two major fishing nations who could not cope with this year's recommendation of the SCRS.

Appendix 10 to Annex 11

STATEMENT BY SOUTH AFRICA ON SOUTH ATLANTIC ALBACORE
(Attached to Report of Panel 3)

Initial dynamic production model assessments of the southern albacore resource presented by the SCRS in 1991 indicated that this resource was being exploited beyond a maximum sustainable yield of approximately 21,000 MT. As a result of limitations in the abundance indices used, particularly concerning standardization and compensation for the effects of increased targeting on bigeye tuna, it was recommended that further analyses be conducted. In 1992, analyses of newly standardized CPUE indices indicated that the resource was being exploited beyond an MSY of 20,000 MT, with an estimated replacement yield of only 15,000 MT. As a result, South Africa expressed her concern and urged that every effort be made to investigate these assessment results, with a view to proposing suitable management action to prevent any further decline in the southern albacore resource. The meeting of Panel 3 in 1992 suggested that "serious consideration be given to the recommendation of management measures for this stock at the 1993 SCRS meeting".

During the 1993 meeting of the SCRS, substantial efforts were made to account for the shift in targeting from southern albacore to bigeye tuna, to correct the CPUE series for this effect, and to re-standardize the indices to account for other significant effects. Resultant abundance indices were selected to be representative of fishing areas in which albacore are the main target species, and the effect of bigeye targeting was accounted for. The doubts expressed concerning the 1991 assessment have therefore, to a large extent, been addressed. Analysis of these revised abundance indices, using a number of dynamic production model analysis options, now indicate that this resource is being exploited beyond an MSY of no more than 25,000 MT. Catches have exceeded this level since 1985, estimated fishing mortality has exceeded the estimated maximal sustainable level since 1986 and it appears that biomass has been below B(MSY) since 1990. Nonetheless, it was again stated that no management recommendations should be made for this stock until further stock assessments "indicate that the stock is exploited beyond MSY".

Considering the results of assessments during the past three years, the concern expressed by ourselves and other members of Panel 3 and the expressed intention of ICCAT (as embodied in Article VIII of the Convention) to "maintain the populations of tuna and tuna-like fishes that may be taken in the Convention area at levels which will permit the maximum sustainable catch", South Africa's initial reaction is to recommend the immediate introduction of a Total Allowable Catch (TAC) limit of 25,000 MT for the southern albacore resource. It appears to us that the introduction, at this stage, of this moderate degree of restraint, offers the opportunity of stabilising the southern albacore stock at the MSY level, thereby avoiding the disastrous declines that have been allowed to occur in stocks of a number of other Atlantic tuna species.

Despite our continued concern at the state of this stock, South Africa will refrain from recommending the introduction of such a TAC at this meeting. However, we do so with the understanding that all involved in this fishery, including ourselves, will do the necessary work to remove any further major doubts concerning the southern albacore stock assessments, before the next Commission meeting. Should resultant assessments continue to indicate that this stock is exploited beyond MSY, South Africa will strongly recommend the introduction of appropriate measures to ensure that fishing mortality on southern albacore is limited to sustainable levels.

Appendix 11 to Annex 11

STATEMENT BY CANADA ON SWORDFISH
(Attached to the Report of Panel 4)

Canada fully supports the decision that the swordfish population assessments be conducted every second year, given the biological characteristics of swordfish and the amount of new information that is available each year. We recognize that the SCRS Report presented this year was conducted in the absence of a full and detailed population assessment. We hope that in 1994 when the full assessment is done, the effect of current regulations can be more fully evaluated.

Canada is very pleased to see that the reductions in fishing mortality and in catches in the north Atlantic by major fishing nations have been achieved.

That having been said, we are very concerned with the catches of small fish, not to be confused with reported landings. It appears that the minimum size regulation is not working. If the dead fish discarded by the USA are included in SWO-Table 4 of the SCRS Report, then in 1992 38% of all fish caught in the US fishery were < 25 kg. In fact, no country shows a decline in the catches of small fish. This concerns Canada and indicates the apparent ineffectiveness of the small fish regulation.

We note that in its report the SCRS did not quote the ICCAT regulatory measures exactly as they are written. This is of concern to Canada. The summary of the measures in the Report does not accurately reflect the actual wording of the measures as agreed to in 1990. In particular, Canada is concerned that the third and fourth measures agreed to in 1990 have been merged by the SCRS and not evaluated in their true sense. As you know, during our Panel meetings we spend a considerable amount of time carefully choosing our wording of management measures. I would suggest that in the future the exact wording of such measures be retained for the SCRS evaluation.

I would now like to ask the Chairperson of the SCRS a couple of specific questions.

1. In its Report the SCRS makes only one recommendation under "Management" and it refers to reducing the catch levels of small fish. I would like to clarify exactly what everyone here thinks when the term "catch" is used. I Assume that catch means exactly that, and not just landings. In other words, the SCRS is recommending a reduction in the number of small fish that are caught and both discarded and landed. Is my interpretation correct?

2. Given the text of the 1990 ICCAT measure #3, which deals with those nations that at the time were considered to be the major swordfish fishing nations, is the SCRS able to evaluate the change in fishing mortality for the total Atlantic at this time compared to 1988? If not, will they be able to do so in 1994? Just to refresh your memory, the measure states:

> "The Contracting Parties that are directly fishing for swordfish shall take the necessary measures to limit the fishing mortality of swordfish in the entire Atlantic Ocean to the level of catch in 1988, or will limit the fishing effort that will result in the equivalent level of fishing mortality."

Appendix 12 to Annex 11

STATEMENT BY THE UNITED STATES ON SWORDFISH
(Attached to the Report of Panel 4)

The United States wishes to express its grave concern with the apparent increase in the landing of swordfish in the Atlantic by minor fishing nations.

At the 1990 Meeting, the Commission recommended that fishing mortality in the entire Atlantic should be limited to the level of catch in 1988. This was reinforced in the 1992 recommendation, which urged all nations fishing in the Atlantic to make every effort to maintain catch levels for 1993 and 1994 at recent levels. The SCRS noted the significant increasing trend in the fishing mortality associated with catches by fishing nations other than Spain, Japan, and the United States. Swordfish mortality has increased significantly since 1985 and these minor fishing nations now account for more than 20% of the landings. If we hope to rebuild the resource, we cannot allow 1/5 of the catch to be unrestrained and increasing to a catch level equal to or greater than apparent recent surplus production. Increases in the harvests by these nations have undermined the significant effort at rebuilding of this stock that resulted from reduced Spanish and U.S. harvests.

If the catch of one of these countries exceeds its country's 1988 through 1991 average catch, then in the future, following reporting of that catch to ICCAT, that country should reduce its catch to compensate in total for that overage. The overage of the concerned country should be applied as a reduction to the domestic catch category of that country.

The United States is also very concerned with the lack of progress on reduction in landings of swordfish under 125 cm. The only significant decline in reported landings of small fish is in the U.S. fleet. Given the reported landings of small fish, the intended effect in terms of potential benefits of minimum size regulations is not being achieved. It is very important that discard data of small fish be accurately reported. Discard data from small fish are critical and essential for the 1994 swordfish stock assessment because the SCRS was directed to consider management measures for rebuilding the swordfish stock and maintenance of the Atlantic fishery at MSY levels.

We note that the Committee report emphasizes the need for a full assessment of the assumed South Atlantic stock in 1994.

Appendix 13 to Annex 11

SECOND STATEMENT BY CANADA ON SWORDFISH
(Attached to the Report of Panel 4)

Mr. Chairman, yesterday the representative of the United States tabled a statement regarding swordfish. I have now had the opportunity to read that statement and I would like to offer a few comments.

The beginning of the second paragraph refers to the 1990 ICCAT recommendation to limit the level of fishing mortality in the entire Atlantic to 1988 levels. The complete reality is that in 1990 we agreed to a lengthy list of measures, some of which are linked together. One of these measures, the fourth one, stated:

"That, notwithstanding the first and third paragraphs, Contracting Parties whose recent catch levels are small shall keep their annual catches within levels that are reasonable and abide by conservation measures mentioned in paragraph two."

This paragraph was specifically put in the recommendations to apply to countries such as Canada and Portugal.

On this same issue, I also mentioned yesterday that Canada would like to clear up the confusion created by the SCRS Report whereby it inaccurately listed the 1990 ICCAT recommendations. It has paraphrased the recommendations, rather than listing them using the exact words as found in the 1990 Report. It has also amalgamated the third and fourth recommendations. This has changed the intention and interpretation of the recommendations.

The U.S. statement also notes that in 1992 we reinforced the 1990 recommendation by urging all nations to make every effort to maintain catch levels for 1993 and 1994 at recent levels. In this instance a couple of key words were left out entirely. What we agreed to last year in Panel 4, (and here I refer to page 98 of the ICCAT Report) was to make every effort to maintain catch levels or fishing capacity for 1993 and 1994 at recent levels. As I stated yesterday, Canada has complied with this requirement.

As I stated during the first part of the Panel 4 session earlier this week, Canada believes it has lived up to its commitments under the 1992 recommendations. However, Canada shares the concerns expressed here that the potential re- building referred to in last year's assessment may be at risk. We want to ensure that we and any other Contracting Party undertake to review our compliance to the existing management measures. I would also propose that we advise the Executive Secretary early in 1994 as to the results of our review as well as the types of management measures we would each implement for 1994.

In view of the fact that the SCRS will be providing us with new advice in 1994, I would like to suggest that all Contracting Parties come to next year's meeting prepared to discuss issues such as small fish, discards, stock resolution, license limitations, acceptable gear, etc., and that we focus on swordfish next year in the same manner we have focused on bluefin this year.

Appendix 14 to Annex 11

STATEMENT BY SPAIN ON SWORDFISH
(Attached to the Report of Panel 4)

Mr. Chairman:

My Delegation has already pointed out, throughout these days, the important effort that the Spanish fleet has had to bear in order, not only to comply, but also to surpass somewhat the obligations derived from the recommendations that entered in effect in 1991 to reduce catch and effort.

This has represented an important sacrifice, not only because of its magnitude, but because it was imposed almost exclusively on Spain and on the United States. It was accepted since it was considered that it was a measure that would have a favorable repercussion on the recovery and improvement of swordfish stock.

Next year, the Commission will examine this fishery in detail and we hope that the efforts we have made will allow this measure to continue without having to bear new restrictions. In any case, Spain wishes that these efforts are fully recognized and, as pointed out before, they have been supplemented by the introduction of severe controls and limits on capacity and on effort.

I would not like there to be any any doubts in this respect. Any additional efforts will have to be borne by all the Contracting Parties, without exceptions, and Spain will be very heedful that at least equivalent efforts be made to ensure an equal sharing of the responsibilities of conservation and management.

Appendix 15 to Annex 11

STATEMENT BY JAPAN ON BILLFISH
(Attached to the Report of Panel 4)

Japan shares the concern about the stock status of Atlantic billfishes, especially blue and white marlins. However, due to changes in the fishing strategy of the Japanese longline fishery, Japanese catches of Atlantic billfishes have been substantially reduced for blue marlin, white marlin and sailfish/spearfish and, in recent years, only a very minor portion of the total marlin catches, except for blue marlin in the south Atlantic, is being caught by the Japanese fishery.

However, it should be noted that billfishes are by-catches of the longline fishery and are being caught by various gears and by various countries other than Japan. Taking these factors into account, to reduce fishing mortality further on Atlantic billfishes, Japan is ready to cooperate with all countries catching these species and encourages them to take any appropriate measures jointly including the following points:

1) Cap fishing mortality at recent level.

2) Release all billfishes caught alive, where it is feasible.

3) Develop fishing strategy not to pursue fishing where a high concentration of marlins is observed.

In addition, the Japanese logbook of the longline fishery has been modified to separate sailfish from spearfish, starting in 1993. This will improve the stock assessment of the two species of billfishes hitherto reported aggregated.

Finally, Japan would like to express explicitly its view that utilization of billfishes should not be confined to a specific sector of the interest groups and that the commercial fishing of the billfishes for human consumption should also be recognized.

Appendix 16 to Annex 11

STATEMENT BY THE UNITED STATES ON BILLFISH
(Attached to the Report of Panel 4)

Let me start by repeating the introductory remarks that are contained in last year's United States statement because those words state the priority that is so important. That language reads:

"The ICCAT Enhanced Billfish Research Program is a successful example of cooperation between the Commission and the private sector. Funded by recreational fishery organizations from several countries, the Program has three objectives: (1) to provide more detailed catch and effort statistics; (2) initiate the ICCAT tagging program for billfish; and (3) collect data for age and growth studies" in order to provide information for assessing the status of the stocks.

Last year we asked the SCRS to prepare advice for the reduction of fishing mortality on billfish for this Commission Meeting.

In response, the SCRS has provided us with the following recommendations:

i) That accurate estimates of total landings (Task I data) caught by all types of gears be made, by species, for Atlantic blue marlin, white marlin, sailfish, and spearfish. In addition, billfish landing records from non-Contracting Parties, that do not normally

report to ICCAT, should be continued and expanded.

ii) That catch, effort, size statistics and, if possible, landings by sex from all countries be reported by five-degree area and by month, as outlined in the ICCAT sampling instructions for billfish (SCRS/88/28) and the ICCAT Field Manual.

iii) That catch statistics for sailfish and spearfish, particularly from offshore longline fisheries, be reported separately in order to facilitate stock assessment of both species.

iv) That sailfish/marlin discards for historical longline and purse seine fisheries, as well as more recently developed fisheries, be evaluated and updated.

In addition, general areas of recommended continuing research are set forth in Appendix 6 to this year's SCRS Report.

The external budget of US$ 68,000 of voluntary private contributions for the coming year is ambitious, but appropriate in respect to what the scientists are finding and their determination of what is needed. I would add that through efficient management last year's expenditures did not come up to the budgeted amount and there is a small surplus of non-expended funds to help us this year.

The assessment results to date demonstrate the need for concern over the amount of billfish catches. The U.S. requests countries to report to SCRS on possible practices that would reduce billfish by-catch. The U.S. recommends the expansion of the tagging component of the ICCAT Enhanced Billfish Program to include tagging and release of all live billfish taken as by-catch in the longline fisheries. The United States urges all countries to begin such tagging and reporting of tag recoveries. The SCRS should report to the Commission on any progress in such tagging and/or release alive of billfish in the longline fisheries and on the feasibility of expansion of tagging.

The United States commends the SCRS efforts through the ICCAT Enhanced Billfish Research Program which has significantly improved the basis for assessing the status of these stocks. The continuation of these enhanced efforts is essential to provide the information necessary for the rational management of these stocks. The expansion of scientific observers as part of this program is highly desirable. The U.S. also wishes to express its appreciation for the financial contributions of the private sector which have enabled this program to be successful.

ANNEX 12

RECOMMENDATION BY ICCAT ON SUPPLEMENTAL REGULATORY MEASURES FOR THE MANAGEMENT OF ATLANTIC YELLOWFIN TUNA

IN VIEW of the converging conclusions of the ICCAT Standing Committee on Research and Statistics (SCRS) concerning the state of the stock of Atlantic yellowfin tuna,

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RECOMMENDS:

1. That there be no increase in the level of effective fishing effort exerted on Atlantic yellowfin tuna, over the level observed in 1992.

2. That all countries whose vessels currently exploit Atlantic yellowfin tuna, or may do so in the future, irrespective of whether or not such vessels fly a flag of the Contracting Parties to the ICCAT Convention, implement the measure indicated in paragraph 1 above.

ANNEX 13

RECOMMENDATION BY ICCAT ON THE MANAGEMENT OF BLUEFIN TUNA FISHING IN THE WESTERN ATLANTIC

Taking into account the goals of maintaining improvements in the west Atlantic bluefin tuna stock and taking precautionary measures and without prejudicing the traditional fishing rights of nations,

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RECOMMENDS THAT:

FIRST

a) That the Contracting Parties, whose nationals have been actively fishing for bluefin tuna in the western Atlantic, institute, for the interim, effective measures to limit the biennial quota for scientific monitoring purposes for 1994 and 1995 to 3,195 MT, which is divided into a quota of 1,995 MT in 1994, and a quota of 1,200 MT in 1995, unless SCRS scientific information in 1994 indicates otherwise.

b) That 400 MT of the 3,195 MT two-year quota for scientific monitoring purposes described in paragraph (a) be taken by the Japanese pelagic longline fishery with no more than 250 MT taken in 1994, and Japan will forego, for the two-year period, its percentage share of the west Atlantic quota agreed to in 1991. The remaining portion of the catch limit for scientific monitoring purposes will be taken by Canada and the United States in the same relative proportions previously agreed to in 1991.

c) Unused quota in 1994 can be carried over to the 1995 quota. Beginning with the 1994 catch, if the catch of one of these Contracting Parties exceeds its relative proportion of the scientific monitoring quota, then in the year following the reporting of that catch to ICCAT, that Contracting Party will reduce its catch to compensate in total for that overage. Such a reduction will be applied to the domestic catch category of the applicable Contracting Party of the overage.

d) That Contracting Parties conduct studies during the two year interim period; specifically, a comprehensive scientific review of matters related to the west Atlantic stock so that the Contracting Parties that have traditionally harvested this stock will have sufficient scientific information so as to be able to develop in 1995 a recovery program aimed at achieving a 50% increase from current levels in the spawning stock biomass by the year 2008.

SECOND

That the three Contracting Parties will prohibit the taking and landing of bluefin tuna weighing less than 30 kg or, in the alternative, having a fork length of less than 115 cm.

Notwithstanding the above measures, the Contracting Parties may grant tolerances to capture bluefin tuna either weighing less than 30 kg, or in the alternative having a fork length less than 115 cm, to limit the take of these fish to no more than 8% by weight of the total bluefin catch on a national basis and would institute measures such that there would not be economic gain to the fishermen from such fish.

THIRD:

These three Contracting Parties will encourage their commercial and recreational fishermen to tag and release all fish less than 30 kg or in the alternative having a fork length less than 115 cm.

FOURTH:

That the adoption of the above measures concerning the western Atlantic must not imply any modification in the ICCAT recommendation adopted in 1974 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 having been extended until a new decision is made by ICCAT.

FIFTH:

That the Contracting Parties take measures to prohibit any transfer of fishing effort from the western Atlantic to the eastern Atlantic in order to avoid increasing fishing mortality of bluefin tuna in the eastern Atlantic. Such measures shall be reported in due time to the Commission for possible review at its next meeting.

SIXTH:

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

SEVENTH:

That 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.

EIGHTH:

That, notwithstanding the provisions of Article VIII, paragraph 2, of the Convention, with respect to paragraphs a) and b) of the First recommenda- tion, 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.

ANNEX 14

RECOMMENDATION BY ICCAT ON THE MANAGEMENT OF BLUEFIN TUNA FISHING IN THE CENTRAL NORTH ATLANTIC OCEAN

PENDING scientific review or until December 31, 1995,

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RECOMMENDS:

FIRST

That the Contracting Party whose nationals have been actively fishing for bluefin tuna in the Central Atlantic Ocean institute, for the interim, effective measures to limit the biennial catch for 1994 and 1995 at 1,300 MT with the maximum for the first year of 715 MT, in the area north of 40°N and between 35°W and 45°W.

SECOND

That other Contracting Parties not commence new bluefin tuna fisheries in this area during this period.

THIRD

That the concerned Contracting Parties conduct a thorough scientific review, prior to the 1995 Meeting of the Standing Committee on Research and Statistics (SCRS), of the impacts of harvests in this area on the west Atlantic stock, specifically, the relationship of the stocks in the area from 30°W and 45°W longitude and north of 40°N latitude.

ANNEX 15

RECOMMENDATION BY ICCAT ON SUPPLEMENTAL REGULATORY MEASURES FOR THE MANAGEMENT OF EASTERN ATLANTIC BLUEFIN TUNA

IN ADDITION to the Commission's regulatory measures currently in effect on eastern Atlantic bluefin tuna,

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RECOMMENDS:

FIRST

That during the period from June 1 to July 31 there will be no fishery using large pelagic longline fishing vessels greater than 24 m in length for bluefin tuna in the Mediterranean.

SECOND

that, notwithstanding the provisions of Article VIII, paragraph 2 of the Convention, the Contracting Parties whose nationals have been fishing for bluefin tuna in the Mediterranean using large pelagic longline fishing vessels greater than 24 m in length take steps to implement this Recommendation before June 1, 1994 in accordance with the regulatory procedures of each country.

THIRD

That, in accordance with the Commission's decisions adopted in 1988 and subsequent years concerning fishing activities by non-Contracting Parties, the Commission transmit this Recomendation to non-Contracting Parties whose large pelagic longline fishing vessels are currently fishing for bluefin tuna in the Mediterranean, and urge them to implement this measure before June 1, 1994.

Note: "length" means:

(i) for any fishing vessel built after 18 July 1982, 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline;

(ii) for any fishing vessel built before 18 July , 1982, registered length as entered on the national register or other record of vessels.

ANNEX 16

REPORT OF THE MEETING OF THE INFRACTIONS COMMITTEE

1. Opening of the Meeting

The meeting was opened by the Chairman of the Committee, Mr. A.J. Penney of South Africa, who presented an introductory statement on the role of the Infractions Committee within ICCAT.

2. Adoption of Agenda

The Chairman noted that a new item had been added to Agenda item 4, and proposed that this item be divided into two sections: (a) Status of application of the regulations recommended by the Commission on yellowfin, bigeye, bluefin, and swordfish; and, (b) Questions resulting from the SCRS Report. As a result, documents COM/93/25 and COM/93/35 would be discussed as two separate issues. The Delegates agreed to the proposed change in the Agenda.

The Agenda was adopted with the recommended change, and is attached as **Appendix 1 to Annex 16.**

3. Election of Rapporteur

The Chairman asked whether the U.S.A. would be willing to provide a rapporteur for the meeting and Mr. J. Mathews (U.S.A) offered to serve as rapporteur.

4a. Status of the Regulations Recommended by the Commission on Yellowfin, Bigeye, Bluefin, and Swordfish

The Executive Secretary presented document COM/93/25, which contained the texts of the recommendations adopted by ICCAT concerning conservation measures for yellowfin, bigeye, and bluefin tuna and swordfish, and annotations recording the date of entry into force of these recommendations by the Contracting Parties. The Document also contained tables indicating written notifications the Secretariat has received to date from Contracting and Non-Contracting Parties on the measures they have taken to implement these recommendations, as well as a summary of the remarks on the measures that have been taken. The Executive Secretary indicated he would update the tables accordingly as information is submitted to the Secretariat. The Executive Secretary reminded the delegates that Article 9, paragraph 1, of the Convention requires the Contracting Parties to inform the Secretariat, in writing, of steps each Party has taken to implement the recommendations. The Executive Secretary noted that Contracting Parties often have enacted measures to implement ICCAT recommendations, but fail to properly notify the Secretariat. He called upon Non-Contracting Parties to submit pertinent information indicating their compliance, or non-compliance, with ICCAT recommendations.

The Executive Secretary indicated that Table 1 contained no changes from 1992; and, that Table 2 contained new information provided by the Japanese concerning their efforts to implement recommendations for bluefin tuna in the western Atlantic on 15 July, 1992, as promised at last year's meeting. He noted that Korea had not yet provided written notification of their actions to implement the recommendations, as they had indicated they would in 1992. He stated that Table 4 indicates Canada has taken action to implement the swordfish recommendations, but that the date of their action has not been provided for the record.

The Chairman thanked the Executive Secretary for his work and noted that comments and information on the implementation of the swordfish recommendations has improved over past years. He then asked if any other Contracting Party had new information to add to the tables.

The Delegate of Brazil stated that in his country's first study of the Brazilian swordfish fishery, it was initially determined it was not necessary to implement the swordfish management recommendations. However, the Brazilian longline fishery has since increased. He expressed that although the data are poor, it appears that swordfish catches are increasing, perhaps significantly. He indicated that his country, therefore, is in the process of implementing the minimum size recommendation for swordfish. The Chairman asked the Delegate from Brazil to notify the Secretariat when these actions were taken.

The Delegate of Uruguay remarked that a group had been formed in their country to establish regulatory measures to implement the ICCAT recommendations.

The Delegate of Spain asked that Table 3 be amended to indicate their country does not harvest western Atlantic bluefin stocks. He also noted that ICCAT recommendations are supposed to be binding on Contracting Parties and that it would be very useful if Table 4 could be amended to indicate the dates and content of national measures adopted by individual Contracting Parties to implement these recommendations. Finally, the Delegate of Spain asked that information be provided regarding ICCAT correspondence with Non-Contracting Parties and the actions taken by those countries to implement conservation measures similar to those recommended by ICCAT as part of the Secretariat report to the Committee.

The Delegate of Japan noted that, in accordance with pp. 10-11 of COM/93/25 (Bluefin Tuna Statistical Document Program), Japan has already notified the Secretariat in writing of their compliance, effective 1 September 1993. The Chairman stated that the Executive Secretary has indicated the information had been received and that the tables will be updated to specifically include this information. The Delegate of Spain noted that his country had also put the Statistical Document Program in effect as of September 1, 1993. The Delegate of Japan then asked that all Contracting Parties notify the Secretariat when they implement the Statistical Document Program, and the Executive Secretary requested that all Contracting Parties provide official written notification of their compliance. The United States Delegate indicated they had taken action to implement the use of the Statistical Document, in effect in 1993, and that they would provide the Secretariat with written notification of this fact. The Delegate of Korea noted his country had implemented all recommendations made by ICCAT, but that this was not reflected in the report. He signified Korea's intent to notify the Secretariat in writing of this fact.

4b. Questions Resulting from the SCRS Report

The Chairman noted this new item on the Agenda resulted from comments and suggestions made at last year's meeting, including discussions on the SCRS Report and problems associated with the implementation of ICCAT recommendations. He asked the Executive Secretary whether it was feasible to delineate further these problems, so that they could be considered in the light of existing records and information, as well as future reports on practical actions which can be taken by Contracting Parties to implement ICCAT recommendations. The Executive Secretary then presented document COM/93/35, which contained sections on the effects of the management measures and recommendations for management that had been extracted directly from the SCRS Report, and he highlighted a few of the main findings for the various species.

The Chairman noted that the report showed that ICCAT has a minimal number of management recommendations, which all have been implemented fairly well by the Contracting Parties. However, he did note a few problems. First, there continued to be large catches of small yellowfin and bigeye tuna as a result of fishermen targeting skipjack. Second, he highlighted the problem associated with the magnitude of the catch of bluefin in the east Atlantic and Mediterranean, which exceeded the level specified in the ICCAT recommendations. Finally, he noted that catches of swordfish by non-Contracting Parties, and the issue of "re-flagging" with regard to all ICCAT regulated fisheries, were of particular concern. The Chairman asked whether any nations had any proposals for addressing the problems that had been presented to the Committee.

The U.S. Delegate presented a statement expressing ongoing concerns the U.S. has with the implementation of existing recommendations (attached as **Appendix 2 to Annex 16**). In particular, the Delegate stated that the catches of bluefin tuna in the eastern Atlantic and Mediterranean had greatly exceeded recommended levels that were adopted in 1974. He further stated that the minimum size of 6.4 kg. has not been respected, noting that, for example, 33% of the

reported catch in 1991 consisted of fish less than the established minimum size.

The Delegate of the U.S. went on to propose the elimination of the 15% tolerance for bluefin tuna less than 6.4 kg. and the establishment of a prohibition on the sale of any fish smaller than this size. Further, the U.S. also proposed that fishing mortality be limited to 5,000 MT in the eastern Atlantic and 6,000 MT for the Mediterranean, which represents average annual catches from 1970-73, and is consistent with the 1974 recommendations that proposed that fishing effort not be increased. The U.S. Delegate noted that the U.S. already disallows any landings of bluefin less than 6.4 kg. and prohibits the sale of bluefin less than 70 inches. The U.S. indicated that they believe ICCAT should take actions to enforce these recommendations, perhaps including measures outside of the regulatory framework of ICCAT, such as trade sanctions against offending nations.

The Delegate of Canada noted that document COM/93/35 was a helpful report, but that the SCRS report had resorted to a rather liberal interpretation of complex points in summarizing information for the document and, as a result, aspects of the document could be construed to have a different meaning to that contained in the original recommendations. In particular, he suggested that the swordfish summary be changed to reflect the actual words that were agreed to for the swordfish recommendations. He then expressed his support for the comments of the U.S. Delegate regarding the various management problems related to bluefin tuna. He also noted continuing enforcement problems associated with ICCAT recommendations for bluefin, particularly in the eastern Atlantic and Mediterranean, and the detrimental light this puts on ICCAT in the eyes of the environmental community in particular. He noted that in 1991 larger minimum sizes were adopted for western Atlantic stocks of bluefin, without corresponding conservation efforts being put in place for eastern Atlantic stocks. The Delegate of Canada then reiterated his concern that ICCAT's failure to implement adequately its own conservation measures for bluefin in the eastern Atlantic and Mediterranean reduced ICCAT credibility. He requested that countries fishing in the eastern Atlantic and Mediterranean provide details of their efforts to ensure compliance with minimum size and mortality limits. The Statement by Canada is attached as **Appendix 3 to Annex 16.**

The Delegate of Japan shared the concerns of the U.S. and Canada, but stated that the Infractions Committee was not necessarily the place for discussing new recommendations for management. He then presented a statement outlining measures that Japan had taken to implement the 1974 recommendations for bluefin tuna in the eastern Atlantic and the Mediterranean and to reduce their overall bluefin tuna catch in these areas (attached as **Appendix 4 to Annex 16).**

The Delegate of Spain noted that the U.S. proposal should be put forward at the panel discussion on eastern bluefin, not before the Infractions Committee. He expressed his surprise that the U.S. would present their proposal in such a manner, particularly considering the complex nature of the proposal. He asked that the proposal be made available in writing due to its complexity. The SCRS had noted there was no need to alter the two-stock theory and that the health of the stocks in the eastern Atlantic and Mediterranean did not indicate any real need for concern. Finally, he stated that, while everyone understands the importance of good management and conservation practices, any further management recommendations for bluefin this year should be proposed for western, not eastern stocks. He also referred to trade sanctions which presented other problems.

The Chairman noted there was indeed a difference between analyzing infractions and establishing new management techniques. He asked the U.S. to clarify its proposals and to distinguish between new management proposals and efforts to enforce existing recommendations. He stated that it is important that the Committee not overextend its jurisdiction or infringe on the responsibilities of other ICCAT Committees.

The Delegate of France noted that the U.S. had proposed several new ideas and expressed agreement with the concerns expressed by Spain, especially with regard to the concept of trade sanctions. He further noted that the U.S. does not have a fishing fleet in the eastern Atlantic or Mediterranean, and commented that perhaps those countries fishing in the eastern Atlantic should involve themselves more directly in the discussions regarding management schemes and quotas for the western Atlantic.

The U.S. Delegate explained that his proposal to set limits on fishing mortality in the eastern Atlantic and Mediterranean was an effort to ensure compliance with existing ICCAT recommendations, especially with regard to defining better the term "recent levels," and

was not an attempt to establish new regulations. The minimum size proposal was also designed with a similar purpose in mind. The U.S. was only offering suggestions on how better to ensure compliance with existing recommendations. He expressed his willingness to discuss these issues in any forum, but noted that the eyes of the world are upon ICCAT, and noted the need to pursue ICCAT's goal of conservation of these resources.

The Chairman asked that these proposals be further clarified in writing. He asked that the proposals be specifically drafted to consider matters related to the issue of infractions and how the Committee could best deal with them. He asked the U.S. to work with the other delegates to draft a proposal for examination by the Committee.

The Delegate of the U.S. subsequently submitted a proposal for measures to facilitate compliance with 1974 recommendations (**Appendix 5 to Annex 16**). Considerable discussion ensued concerning whether the components of the proposal were intended to support or clarify existing management measures or whether they were, indeed, new management measures.

The Delegate of Spain wondered whether the Infractions Committee was the appropriate body to be taking up the proposal. He noted that he would rather have more time to reflect on the proposal and take into account the results of the stock assessment to be completed next year.

The Delegate of Japan welcomed the effort by the US and stated that he supported the adoption of the first paragraph of the proposal which would clarify the definition of "recent levels."

The Delegate of France stated that he did not believe that it was within the framework of the Infractions Committee to take up the entire proposal, and that it would be better discussed elsewhere.

The Delegate of Canada stated that he supported some parts of the proposal, since they were either providing definition of existing management measures or calling attention to existing management measures which might not have been enforced.

Taking into account the opinions voiced during the discussion, the Chairman offered the following proposals to be forwarded to the Commission:

1. The Infractions Committee recommends that the 15% tolerance, which exists for the entire Convention area, for bluefin less than 6.4 kg should be enforced; and

2) The Infractions Committee notes, with concern, the apparent infringement of various bluefin tuna management measures in the eastern Atlantic Ocean and Mediterranean Sea. The Committee urges the SCRS and the Commission to investigate the possible effect of such infringements, and to make proposals concerning the improvement of management measures for this species in these areas. I n particular, it is recommended that consideration be given to the definition of "recent catch levels" for bluefin tuna in the eastern Atlantic Ocean and Mediterranean Sea.

5. Draft Guidelines for National Reports to the Infractions Committee on the Implementation of ICCAT recommendations

The Chairman stated that at the last meeting several comments were made regarding the benefits of the submission of reports by the Contracting Parties as a means to provide details on their efforts to implement recommendations, and any problems they have encountered in doing so. He noted that Japan had already described actions it had taken, giving a clearer picture of Japan's efforts to manage bluefin tuna. This was the type of information the proposed new reports would make available to the Committee. He noted that document COM/93/34 had been circulated to all Contracting Parties, but that only Canada had responded with comments about suggested alterations to the proposed guidelines. The Chairman explained that the objectives of the reports were to provide delegations with the opportunity to inform the Infractions Committee on specific problems related to implementation of ICCAT management recommendations and other conservation measures, to provide a standardized format for countries to report on the implementation of management measures, and to supplement the information contained in the SCRS Report.

The Delegate of Japan expressed his support for the draft guidelines. He offered several suggestions to improve the guidelines (including catch and trade data), particularly with regard to eliminating any overlap between the work of the Infractions Committee

and the new Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures. He also indicated that he believed this information should be limited to that for Contracting Parties. The Statement by Japan is attached as **Appendix 6 to Annex 16.**

The Delegate of Spain agreed with the comments and concern expressed by Japan regarding overlap between the Infractions Committee and the Permanent Working Group. He suggested that this might be the time to consider renaming the Infractions Committee to something more appropriate, to describe more accurately its future mission and activities.

The Chairman noted that there was often relatively poor feedback of information to ICCAT on the practical results of efforts by Contracting Parties to implement ICCAT management recommendations. The proposed National Reports would allow for provision of general information in this regard. He suggested that ICCAT members only be requested to submit a single National Report each year, but that this be expanded to provide all information required by the SCRS, the Infractions Committee and the Commission.

The Delegate of Canada supported the Chairman's recommendation and suggested that after a few years the report could become more standardized, once the various Contracting Parties had a better idea what other countries were putting into their reports. The Delegate noted that Canada had already supplied such information regarding bluefin and swordfish for this year's meeting. He also suggested that the name of the Committee be changed to reflect better its work in assessing the effectiveness of the implementation of management measures.

An official statement by the United States Delegate concerning the draft guidelines for reports to the Infractions Committee on the implementation of ICCAT management recommendations is attached as **Appendix 7 to Annex 16.**

The Chairman offered to revise the guidelines for the National Reports based on comments from Contracting Parties and suggested that the guidelines not be more delineated at this time, so long as all relevant information is being included in the reports.

The Delegate of Russia noted that some countries might have difficulty in assuring specific information is included in such a report due to an inability to facilitate this procedure at the national level. He also supported changing the name of the Committee.

The Chairman then asked that the Secretariat make all National Reports submitted at future meetings available to all the ICCAT Committees.

6. Port Inspection

The Executive Secretary noted that document COM/93/26 referred to issues which have been dealt with for many years. He noted that only Portugal and South Africa had submitted inspection reports to ICCAT during 1993, and that they indicated no infractions under this program. Otherwise, the Executive Secretary stated that this report differs little from last year's, though it has been updated to reflect new information from Contracting Parties.

The Chairman expressed some thoughts on the current relevance of the Port Inspection scheme, especially in light of the limited implementation of this program. He noted that participation in the Port Inspection Scheme was limited, and that the issues intended to be covered by the scheme are now largely addressed through other management efforts. He suggested the Infractions Committee examine the implementation of the scheme next year to determine whether it was still relevant and, if so, how it could best be implemented.

7. Collaboration of Non-Contracting Parties in the Objectives of the Commission

The Chairman noted that this issue had been discussed at length during the Plenary Session and was dealt with in document COM/93/27. He sug- gested that this item had, therefore, already been adequately addressed.

The Delegate of Spain concurred with the Chairman's remarks, but wondered whether there were any gaps or shortage of information in this regard which would be useful to the Committee. He noted that the Committee needed to supplement its knowledge of actions by Contracting Parties by information on non-Contracting Parties. He further indicated that he believed the Secretariat needed to keep the members of the Infractions Committee better informed on management efforts by non-Contracting Parties.

The Chairman expressed the opinion that the Working Group for the Improvement of ICCAT

Statistics and Conservation Measures may be the appropriate body for collecting this information and noted that the Committee would need to communicate with that Working Group.

8. Future Work of the Committee and Plans for Improvement

The Chairman noted that various areas of improvement had already been identified:

-- The draft guidelines on National Reports should be improved to reflect suggestions by Committee members.

-- The Terms of Reference of the Infractions Committee should be critically reviewed in the light of suggestions for future work. In particular, efforts must be made to minimize overlap of responsibilities of the Infractions Committee, the Permanent Working Group on Improvement of ICCAT Statistics and Conservation Measures, and the Panels.

-- Consideration could then be given to changing the name of the Infractions Committee to reflect the new Terms of Reference.

The Chairman stressed that these improvements require timely, substantive input from Committee members, and that the Committee should not rely on the Chairman to do all the work involved.

9. Date and Place of the Next Meeting of the Infractions Committee

The Committee agreed to meet again at the next regular meeting of the ICCAT Commission in 1994.

10. Other Matters

The Chairman addressed the proposal to rename the Committee to reflect more closely the purpose of the Committee. Several members of the Committee presented suggestions for renaming the Committee, indicating that the new name should be brief, yet contain the appropriate key words to convey a "new" image for the Committee. The tentative choices which were mentioned were: the "Management Measures Review Committee," or "Management Review Committee" (Canada); the "Conservation and Management Measures Review Committee" (Spain); and, the "Compliance Committee" (Portugal). It was agreed to consider all alternatives with a view to selecting a new name at the next meeting.

11. Election of Chairman

The ICCAT Chairman, Dr. A. Ribeiro Lima, assumed the Chair to consider nominations for the Chairman of the Infractions Committee. Noting the outstanding work of the past Chairman of the Committee, Mr. A.J. Penney, the ICCAT Chairman nominated Mr. Penney for another term as Chairman of the Infractions Committee.

Several Delegates, led by Spain, Portugal, the U.S., Japan and Canada, indicated their approval of renominating Mr. Penney, and the motion to elect him to serve another term as Chairman of the Infractions Committee was approved unanimously.

12. Adoption of Report

The Report of the Infractions Committee was adopted.

13. Adjournment

The 1993 Meeting of the Infractions Committee was adjourned.

Status of implementation by the member countries of the ICCAT recommendations.

Table 1. YELLOWFIN and BIGEYE TUNAS.

Species	*YELLOWFIN*	*BIGEYE*	
Commission recommendation	*3.2 kgs minimum size limit*	*3.2 kgs minimum size limit*	*3.2 kgs minimum size limit*
Area of application	*Entire Atlantic*	*Entire Atlantic*	*Entire Atlantic*
Date of entry into effect	*July 1, 1973*	*September 7, 1980*	*July 17, 1985*
Date of expiration	*Indefinite period*	*December 31, 1984*	*Indefinite period*
ANGOLA	June 17, 1979		
BENIN			
BRAZIL	Feb. 23, 1973	March 1981	
CANADA	Sept. 4, 1973	No fishing	
CAPE VERDE	Sept. 5, 1987		Sept. 5, 1987
COTE D'IVOIRE	March 2, 1970	March 2, 1970	
EQUATORIAL GUINEA	.....	.....No fishing.....	
FRANCE	June 29, 1973	March 3, 1981	
GABON	No fish./land.	Being considered	
GHANA	June 19, 1976		
GUINEA, Rep. of			
JAPAN	June 14, 1973	Sept. 7, 1980	Sept. 7, 1980
KOREA, Rep. of	Jan. 21, 1973	Sept. 15, 1980	
MOROCCO	No fishing		
PORTUGAL	Nov. 26, 1973	July 17, 1981	Aug. 10, 1984
RUSSIA	Sept. 28, 1978	Sept. 28, 1978	
SAO TOME & PRINCIPE			
SOUTH AFRICA	May 1973	Dec. 5, 1980	Dec. 5, 1980
SPAIN	May 29, 1974		Aug. 14, 1987
URUGUAY			
USA	Nov. 5, 1975	March 30, 1981	April 9, 1986
VENEZUELA	Nov. 19, 1981	Nov. 19, 1981	Nov. 19, 1981

NOTE: For more details on national regulations, please request information from the country's administration.

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Status of implementation by the member countries of the ICCAT recommendations.

Table 2. BLUEFIN TUNA - ATLANTIC OCEAN (including MEDITERRANEAN SEA).

Recommendation	*Minimum size 6.4 kgs*	*Limiting fishing mortality to recent levels*				
Area of application	*Entire Atlantic*	*Entire Atlantic*	*1st Extension Entire Atlantic*	*2nd Extension Entire Atlantic*	*3rd Extension Entire Atlantic*	*4th Extension East Atlantic only*
Entry into effect	*Aug. 10, 1975*	*Aug. 10, 1975*	*Aug. 10, 1976*	*Oct. 10, 1978*	*Sept. 4, 1980*	*July 21, 1982*
Date of expiration	*Indefinite period*	*Aug. 10, 1976*	*Aug. 10, 1978*	*Aug. 10, 1980*	*Aug. 10, 1982*	*Indefinite period*
ANGOLA	No fishing	.....	No fishing	.....		
BENIN						
BRAZIL		Aug. 10, 1977	Aug. 18, 1977	March 2, 1979	Nov. 17, 1980*	
CANADA	Feb. 17, 1973	Feb. 17, 1976	Feb. 15, 1979	Feb. 15, 1979	Feb. 15, 1979	Feb. 15, 1979
CAPE VERDE						
COTE D'IVOIRE						
EQUATORIAL GUINEA						
FRANCE	Aug. 8, 1975	Dec. 27, 1974	Dec. 27, 1974	Dec. 27, 1974	Dec. 27, 1974	
GABON	No fish./land.	.....	No fishing	.....		
GHANA						
GUINEA, Rep. of						
JAPAN	April 16, 1975	April 16, 1975	April 16, 1975	April 16, 1975	April 16, 1975	March 3, 1982
KOREA, Rep. of	Dec. 17, 1975	Dec. 17, 1975	Dec. 17, 1975	Oct. 14, 1978	Sept. 15, 1980	
MOROCCO						
PORTUGAL	Nov. 27, 1976	Nov. 27, 1976	**	**	**	
RUSSIA	Sept. 28, 1978					
SAO TOME & PRINCIPE						
SOUTH AFRICA	June 27, 1975	June 27, 1975	Oct. 19, 1976	Feb. 9, 1979	Jan. 11, 1980	
SPAIN	March 3, 1975	Feb. 19, 1976	Feb. 19, 1976	Feb. 19, 1976	Jan. 24, 1980	July 21, 1982
URUGUAY						
USA	Aug. 13, 1975	Aug. 13, 1975	May 18, 1976	June 15, 1979	June 13, 1980	
VENEZUELA	Nov. 19, 1981					

* In process.

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

NOTE: For more details on national regulations, please request information from the country's administration.

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Status of implementation by the member countries of the ICCAT recommendations.

Table 3. BLUEFIN TUNA - WEST ATLANTIC.*

Catch prohibited except for monitoring purposes	*1,160 MT*	*2,660 MT*	*2,660 MT*	*2,660 MT*	*2,660 MT*	*2,660 MT*
Minimum size limit	*no*	*120 cm*	*120 cm*	*120 cm*	*120 cm*	*115 cm /30 kg*
Catch prohibited Gulf of Mexico spawning stock	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Date entry into effect	*Feb. 15, 1982*	*January 1983*	*January 1984*	*January 1985*	*January 1986***	*January 1992****
Date of expiration	*January 1983*	*January 1984*	*January 1985*	*January 1986*	*January 1992*	*January 1993*
ANGOLA	.....	No fishing	.....			
BENIN						
BRAZIL	.....	Developing fishery not subject to limitation	.....			
CANADA	June 14, 1982	June 21, 1983	June 21, 1983	Sept. 16, 1985	Sept. 16, 1985	
CAPE VERDE						
COTE D'IVOIRE						
EQUATORIAL GUINEA						
FRANCE						
GABON	.....	No fishing or landings	.....			
GHANA						
GUINEA, Rep. of						
JAPAN	March 3, 1982	March 7 1983	March 7, 1983	March 7, 1983	March 7, 1983	July 13, 1992
KOREA, Rep. of						
MOROCCO						
PORTUGAL	.....	No fishing	.....			
RUSSIA			Feb. 15, 1984	Feb. 15, 1984		
SAO TOME & PRINCIPE						
SOUTH AFRICA	.....	No fishing or landings	.....			
SPAIN	.....	No fishing or landings	.....			
URUGUAY						
USA	June 11, 1982	June 17, 1983	July 24, 1984	Nov. 25, 1985	Nov. 25, 1985	
VENEZUELA						

* Details on the ICCAT recommendations are given in each Biennial Report of the Commission, starting with the "Report for Biennial Period 1982-83, Part I".

** This recommendation has been extended each year since 1986. It was in force until the end of 1991.

*** Enhanced management measures adopted in 1991.

NOTE: For more details on national regulations, please request information from the country's administration.

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Status of implementation by the member countries of the ICCAT recommendations.

Table 4. SWORDFISH.

Commission recommendations	*Fishing mortality of fish > 25 kgs to be 15 % less than recent levels*	*25 kgs minimum size limit (125 cm fork length)*	*Limiting directed fishing mortality to 1988 levels*	*Limiting incidental catch of SWO to 10 % of total catch in weight of targeted species*
Area of application	*North of 5ºN*	*Entire Atlantic*	*Entire Atlantic*	*North Atlantic*
Date of entry into effect	*July 1, 1991*	*July 1, 1991*	*July 1, 1991*	*July 1, 1991*
Date of expiration	*Indefinite*	*Indefinite period*	*Indefinite period*	*Indefinite period*
ANGOLA				
BENIN				
BRAZIL				
CANADA	yes	yes	yes	yes
CAPE VERDE				
COTE D'IVOIRE				
EQUATORIAL GUINEA				
FRANCE				
GABON				
GHANA				
GUINEA, Rep. of				
JAPAN				Dec. 13, 1991
KOREA, Rep. of				
MOROCCO				
PORTUGAL				
RUSSIA				
SAO TOME & PRINCIPE				
SOUTH AFRICA	Oct. 23, 1992	Oct. 23, 1992	Oct. 23, 1992	Oct. 23, 1992
SPAIN	Feb. 25, 1991	Feb. 25, 1991	Feb. 25, 1991	Feb. 25, 1991
URUGUAY				
USA	June 12, 1991	June 12, 1991	June 12, 1991	June 12, 1991
VENEZUELA				

NOTE: For more details on national regulations, please request information from the country's administration.

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Appendix 1 to Annex 16

AGENDA OF THE INFRACTIONS COMMITTEE

1. Opening of the meeting
2. Adoption of Agenda
3. Election of Rapporteur
4. a) Status of the application of the regulations recommended by the Commission on yellowfin, bigeye, bluefin, and swordfish
   b) Questions resulting from the SCRS Report
5. Draft guidelines for national reports to the Infractions Committee on the implementation of ICCAT management recommendations
6. Port inspection:
   a) Acceptance of the Scheme by the Contracting Parties
   b) Review of the reports of inspections carried out
   c) Updating of the list of authorized inspectors
   d) Updating of the list of national correspondents
7. Collaboration of non-Contracting Parties in the objectives of the Commission
8. Future work of the Committee and plans for improvement
9. Date and place of the next meeting of the Infractions Committee
10. Other matters
11. Election of Chairman
12. Adoption of Report
13. Adjournment

Appendix 2 to Annex 16

STATEMENT BY THE UNITED STATES TO THE INFRACTIONS COMMITTEE ON COMPLIANCE WITH ICCAT MEASURES

The U.S. wishes to acknowledge the continued dedication of the Chairman of the Infractions Committee to ensuring compliance by the member countries to the many recommendations and requests by ICCAT. However, in spite of this dedication, the U.S. notes that the major issue raised last year - disregard for some of the most important Commission recommendations (those recommended at the 1974 meeting concerning limiting fishing mortality and minimum size) - continues to be a significant problem. The failure to comply with these recommendations reduces the credibility of ICCAT and makes negotiations with non-contracting parties on issues of concern to the Commission more difficult. Specifically, as was brought to our attention by the thorough efforts of the SCRS last year, there are critical problems in compliance with recommendations for eastern Atlantic bluefin.

We are extremely concerned that those fishing the eastern Atlantic stock of bluefin tuna, particularly in the Mediterranean, have greatly exceeded the 1974 recommendations to limit fishing mortality to recent levels. For the years just prior to 1974 (1970-1973), the catches in the Mediterranean averaged about 5,668 MT. From 1974 through 1991, catches in the Mediterranean averaged about 13,893 MT (a 145% increase) and reached an all time high of 19,435 MT in 1992. A similar look at the eastern Atlantic shows an increase, but much less dramatic, from 4,964 MT to 5,824 MT (7,460 MT in 1992), while the western Atlantic for the same time periods went from 4,969 MT to 4,012 MT and, in the more recent time periods (1982-1991) averaged 2,562 MT. To eliminate any confusion and ensure future compliance, the U.S. believes the 1974 recommendation to limit fishing

mortality to recent levels should specify those levels as 5,000 MT for the eastern Atlantic and 6,000 MT for the Mediterranean (1970-1973 averages).

In addition, the minimum size limit of 6.4 kg. has not been respected and there have been large catches of age 0 fish (well in excess of the 15% tolerance). We noted last year that 33% of the reported catch in 1991 consisted of fish less than 6.4 kg. This percentage has gone as high as 65% in recent years. One way to address the high catch level of bluefin tuna less than the minimum size (particularly in the Mediterranean) would be to eliminate the 15% tolerance, which exists for the entire Convention area, for bluefin tuna less than 6.4 kg and not allow sale in any markets of bluefin tuna less than this size. The U.S. already disallows any landings of bluefin less than 6.4 kg and prohibits the sale of bluefin tuna less than 70 inches.

The United States continues to believe, as we stated last year, that it would be irresponsible for the Committee to ignore these infractions. Last year we recommended a listing of the countries involved in the fishery and detailed statistics on their fisheries. We hope this is being done. We believe this Committee should insist that countries adhere to the current (1974) management recommendations limiting the catch of small fish (or implementing the more stringent scenario suggested above) and abide by the 1974 recommendation to limit fishing mortality by implementing the caps suggested above. If countries do not take responsible actions to enforce ICCAT recommendations, the U.S. believes that ICCAT should consider other measures to ensure compliance. Such measures could include, as appropriate, trade measures or non-trade measures.

Appendix 3 to Annex 16

STATEMENT BY CANADA TO THE INFRACTIONS COMMITTEE

In the past few years ICCAT has come under considerable criticism by environmental groups and others because these groups do not believe that ICCAT has been doing its job in relation to managing bluefin tuna. While their focus has been on the western Atlantic stock it is ICCAT as a whole that is being criticized, and not just those of us that fish in the western Atlantic.

In 1991, ICCAT accepted a proposal from Canada, Japan and the United States for improvement in management of the western Atlantic stock. One of our changes at that time was to increase the previous minimum size limit from 6.4 kg. to 30 kg. However, the 6.4 kg. minimum size still remains in effect for the eastern Atlantic and Mediterranean stock. As a matter of fact, this size limit has been in place since 1974 and it appears to have been ignored since that time. Last year the SCRS assessed this stock and noted their concern over the high catches of small fish and expressly recommended that steps be taken so that no age 0 fish are caught. The SCRS reported that in 1991, 33% of the eastern Atlantic catch was of fish less than 6.4 kg. This high number is of serious concern to Canada, and we hope to other members as well, for a number of reasons.

One reason for our concern relates to the one or two stock hypothesis for bluefin tuna. While ICCAT continues to assess and manage bluefin tuna as two separate stocks, there still remain questions whether this is the way we should be managing this species. Given this uncertainty, we are naturally concerned that anything that occurs in the east could possibly have an effect on the western stock.

Another reason for concern relates to ICCAT's reputation. As a management body, we have come under considerable scrutiny and criticism for our management of western bluefin tuna. However, should any outside group focus their attention on the eastern Atlantic stock, I believe that they would be horrified to realize the extent of the catches of small fish and the disregard for ICCAT's minimum size measure. The disregard of this regulation places ICCAT, as a whole, in a very bad light.

Therefore, Mr. Chairman, Canada shares the concerns previously expressed by the United States. We believe it is important for those countries that fish in the eastern Atlantic and Mediterranean to address this issue. Also, we would be interested in hearing from those same countries as to what is being done to obtain better compliance with the minimum size regulation.

We support the U.S. suggestions on capping the catches in the eastern Atlantic.

Appendix 4 to Annex 16

REGULATORY MEASURES IMPLEMENTED BY JAPAN ON ATLANTIC BLUEFIN TUNA IN THE EASTERN ATLANTIC INCLUDING THE MEDITERRANEAN

1. According to the 1974 recommendation calling for limit of the fishing mortality to recent levels, Japan established a measure to limit the direct catch of Atlantic bluefin tuna to 4,500 MT with an allowance of additional incidental catch. As a result, the total average catch including incidental catch from 1975 to 1980 (5,063 MT) remained below the 1974 catch (5,295 MT).

2. In 1981, ICCAT decided to set separate catch limits for Atlantic bluefin in the western Atlantic and prohibit a shift of bluefin fishing from the western to the eastern Atlantic. Japan took a measure to limit the bluefin direct catch to 1,600 MT so that the level of total catch including incidental catch in the eastern Atlantic would be kept at or less than the level before 1982, namely 2,000 MT, the average catch from 1975 to 1980. The Japanese average eastern Atlantic catch from 1983 to 1992 was 2,009 MT, which is almost the same level as the target level.

3. In addition, taking account of the recent increase of the Japanese catch in the eastern Atlantic, (1990: 1,636 MT, 1991: 3,066 MT, 1992: 3,473 MT), Japan issued an instruction to the fishing industry this year for restriction of bluefin catch in the eastern Atlantic. As a result, this year's catch is estimated to be around 2,200 MT.

4. Japan further decided to introduce a regulation to limit the total catch of bluefin tuna in the eastern Atlantic, including both direct and incidental catch, to 2,000 MT. If the same fluctuation of catch as in the past 10 years continues in the future, this regulatory measure is estimated to reduce the level of the Japanese east Atlantic bluefin catch by over 20%; in other words, the average catch after 1993 would be reduced from 2,000 MT to 1,570 MT.

Appendix 5 to Annex 16

PROPOSAL BY THE UNITED STATES TO FACILITATE COMPLIANCE WITH 1974 BLUEFIN RECOMMENDATIONS

Whereas the Infractions Committee is concerned that catches of the eastern Atlantic stock of bluefin tuna, particularly in the Mediterranean, have greatly exceeded the 1974 recommendations to limit fishing mortality to recent levels and the minimum size limit of 6.4 kg. has not been adhered to, and the Infractions Committee wishes to provide helpful advice to the Commission on ways to improve compliance, the Committee recommends:

1. That "recent levels" of fishing mortality for Atlantic bluefin tuna should be defined as the average annual catches during the years 1973-

1974 and that catches in the eastern Atlantic and Mediterranean be limited to these levels;

2. That the 15% tolerance, which exists for the entire Convention area, for bluefin less than 6.4 kg. should be enforced and any retention of fish below 2 kg be eliminated, as suggested by the 1992 SCRS assessment; and

3. That the Commission consider recommending a prohibition on the sale of bluefin less than 2 kg.

Appendix 6 to Annex 16

STATEMENT BY JAPAN REGARDING AGENDA ITEM 5 OF THE INFRACTIONS COMMITTEE

Japan would like to congratulate Mr. Penny for his work and to fully support the idea contained in the Draft Guidelines for Reports to the Infractions Committee on the implementation of ICCAT Management Recommendations.

As regards the guidelines for the Secretariat report, a comparison of SCRS catch statistics and trade data obtained from the ICCAT Bluefin Tuna Statistical Document Program and other import data of the Contracting Parties should also be included.

With respect to the guidelines for national reports, information on the implementation of the ICCAT Statistical Document Program should be limited to Contracting Parties. We understand issues concerning non-Contracting Parties should be discussed by the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures.

Appendix 7 to Annex 16

STATEMENT BY THE UNITED STATES ON THE DRAFT GUIDELINES FOR REPORTS TO THE INFRACTIONS COMMITTEE ON IMPLEMENTATION OF ICCAT MANAGEMENT RECOMMENDATIONS

The United States welcomes the draft guidelines for reports to the Infractions Committee as prepared by its Chairman and circulated to Contracting Parties on 4 April 1993. It believes that these draft guidelines present a useful start to efforts to strengthen the Infractions Committee.

The United States strongly supports the objectives stated in the draft guidelines. These objectives describe the proper and crucial role of the Infractions Committee, i.e., to provide a structured forum for discussion of all problems related to the effective implementation of management measures in the Atlantic Ocean supporting the ICCAT conservation programs. The United States hopes that the Infractions Committee will formally adopt these objectives at this meeting.

The Chairman's proposal that the Secretariat Report to the Infractions Committee should be enhanced by extracting information from the SCRS report is a good idea. Such a broadened report could greatly enhance the ability of the Infractions Committee to fulfill its mandate. The United States would hope that the Secretariat could include this information in its report this year, in advance of a formal request from the Infractions Committee to do so, in order that the value and the difficulties of including such information can be weighed this year.

The proposed enhancements to the annual reports would also be useful. As international attention on ICCAT grows, it will be increasingly important that ICCAT be aware of the measures taken by member countries to implement its recommendations. Since some of the information requested, such as a description of the statistical data collection systems, may not change on an annual basis, the Infractions Committee may wish to consider whether annual reports need only include new measures undertaken in a given year, once all the requested information is on file at the Secretariat.

ANNEX 17

RESOLUTION BY ICCAT ON COOPERATION WITH THE CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES)

WHEREAS, among the objectives of the International Commission for the Conservation of Atlantic Tunas is to ensure the effective conservation and rational management of tuna and tuna-like fishes in the Atlantic Ocean, including the adjacent seas;

RECALLING that international trade in threatened and endangered species, including marine species, is under the purview of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);

NOTING that Article XV, paragraph 2.b of the CITES Convention requires the Secretariat, when it receives a proposal for an amendment to the Appendices on marine species, to consult inter-governmental bodies having a function in relation to those species especially with a view to obtaining scientific data these bodies may be able to provide and to ensuring coordination with any conservation measures enforced by such bodies;

NOTING the provisions of the Draft Resolution contained in the Notification to the Parties of CITES No. 773 of October 15, 1993, which states in particular that the views of inter-governmental organizations with competence for the management of the species concerned should be taken fully into account;

NOTING that Appendix 6 of the above Draft Resolution would require proponents, when preparing proposals to amend the Appendices relating to marine species, to consult in advance with the competent inter-governmental organizations responsible for the conservation and management of the species, and to take their views fully into account;

CONSIDERING that marine fishery resources constitute one of the valuable food sources of humankind, and that their importance will become even greater in the future.

ENDORSING the Declaration of the International Conference on Responsible Fishing (Cancún, May 1992), in virtue of which States recognize that policy for the protection of the environment should encompass the fundamental causes of the degradation of the environment, in order to avoid that the measures adopted do not involve useless restrictions in trade matters.

ENDORSING the concept of sustainable utilization of resources, agreed at the United Nations Conference on Environment and Development (UNCED) in 1992;

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT):

a) *REQUESTS* that the Parties of CITES consult fully with ICCAT in reaching conclusions on proposals for listing any of the relevant marine species, and for the revision of the criteria for listing species on the CITES Appendices;

b) *REAFFIRMS* its intention to provide CITES with a report on the status of the Bluefin Tuna populations, and on related conservation initiatives;

c) *EXPRESSES* its wish that the management measures undertaken by ICCAT and the information provided will be taken fully into account by CITES.

ANNEX 18

RESOLUTION BY ICCAT CONCERNING THE COMPOSITION OF THE DELEGATIONS OF ICCAT CONTRACTING PARTIES TO CITES

NOTING that the International Commission for the Conservation of Atlantic Tunas(ICCAT) has full competence on the conservation and management of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas,

CONSIDERING that any decision which might be taken by the Conference of Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), as regards the trade of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas should take fully into account the conservation and management measures adopted by ICCAT,

RECOGNIZING that the Delegates of the Contracting Parties to CITES may be unaware of the objectives and efforts made by ICCAT concerning the conservation of Atlantic tunas and tuna-like species,

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RESOLVES:

That when any proposal is made to CITES to list in its Appendices any tuna or tuna-like species which is under ICCAT competence, each Contracting Party of ICCAT which is also a Party to the CITES should:

a) include on its official delegation, a member or members who are familiar with ICCAT, its work and its objectives, or

b) identify a contact point in their CITES delegation, and communicate this to the other Contracting Parties of ICCAT.

ANNEX 19

GUIDELINES AND CRITERIA FOR GRANTING OBSERVER STATUS AT ICCAT MEETINGS

1. In exercising the responsibilities in respect to invitation to observers to ICCAT Meetings as provided for in Article XI of the Convention and in Article 2 of the FAO/ICCAT Agreement, the Executive Secretary, acting on behalf of the Commission, shall invite:

   -- FAO

   -- Intergovernmental economic integration organizations constituted by States that have transferred to it competence over the matters governed by the ICCAT Convention, including the competence to enter into treaties in respect of those matters.

   -- Intergovernmental organizations that have regular contacts with ICCAT as regards fisheries matters or whose work is of interest to ICCAT or vice versa.

   -- Non-Contracting Countries with coastlines bordering the "Convention Area" as defined in Article I of the Convention, or those non-Contracting Countries identified as harvesting tunas or tuna-like species in the "Convention Area".

   and may invite:

   -- Non-Governmental Organizations (NGOs), having offices in more than three countries, and that have regular contact with ICCAT or whose work is of interest to ICCAT, or vice versa.

2. Any invitation to organizations that fall within the last category of paragraph 1 are subject to prior Commission approval, in accordance with the following procedure:

2.1 A formal application for observer status must be received by the Secretariat at least 90 days in advance of normally scheduled meetings, and by a date set by the Executive Secretary in the case of emergency meetings. The application must include:

   -- Name, address, telephone and fax numbers of the organization;

   -- Addresses of all its national/regional offices;

   -- Aims and purposes of the organization and an indication as to how they relate to the objectives of ICCAT;

   -- A brief history of the organization and a description of its activities;

   -- Other pertinent information related to its participation in other inter-governmental organizations;

   -- If possible, any papers produced by or for the organization on the conservation, management or science of tunas and tuna-like species;

   -- A history of ICCAT observer status granted/revoked;

NOTE: These Guidelines and Criteria for Granting Observer Status replace the "Recommendations for Criteria for the Invitation of Observers", adopted at the Sixth Special Meeting of the Commission (Madrid, 1988).

-- Information or input that the organization proposes to present at the meeting in question;

-- Documentary evidence that the organization supports the objectives of ICCAT;

2.2 Once the term of presentation of application is finished and at least 75 days before the meeting, the Executive Secretary will proceed to transmit to the Contracting Parties by the habitual way a list of all the qualified applications with the relevant documentation corresponding to each one of them.

2.3 The decision to accept the application for an NGO to attend an ICCAT meeting will be taken unless the greater of 3 or one third of those Contracting Parties casting ballots disagree. The Executive Secretary will initiate a secret vote once the Contracting Parties have been informed of the application for observer status. The vote will be conducted in cooperation with the permanent representatives of the Contracting Parties accredited to Spain.

2.4 On sending the previously-mentioned list and documentation, the Executive Secretary will fix a limit date for the Contracting Parties to express by ballot their acceptance or non-acceptance of each on the candidacies. Permanent representatives of the Contracting Parties may submit their ballot at any time prior to the date fixed by the Executive Secretary.

2.5 In deciding whether to cast an affirmative vote on the admission of a particular NGO, Contracting Parties should consider whether:

-- Attendance by that NGO would enable ICCAT to obtain information or input that could not otherwise be obtained from Contracting Parties or invited observers to the meeting in question;

-- the organization supports the objectives and work of ICCAT;

-- the organization has access to ICCAT through any other organization, or whether its interests are not duplicated by another organization already having observer status.

-- if the organization has previously been accorded observer status, its behavior at past ICCAT meetings as an observer was sensible and whether the organization has a history of having its observer status revoked;

2.6 The Executive Secretary will communicate the results of the vote to the Contracting Parties.

2.7 In the case of an acceptance, the Executive Secretary will require the NGO to confirm in writing that the conditions imposed on the organization by ICCAT will be respected and that observer status may be revoked by ICCAT if the conduct of any representative of the organization is inconsistent with the conditions for granting observer status or with the objectives of ICCAT.

2.8 After receiving the above information, the Executive Secretary will transmit the decision of the Contracting Parties to the NGO in a letter along the following lines:

...The Contracting Parties accept/do not accept the application...

In the case of an acceptance, the Executive Secretary will outline the conditions under which the NGO can participate, e.g. attendance at subsidiary meetings, statements, distribution of papers, observer fees, etc.

3. Any invitations not mentioned above are subject to prior Commission approval, unless such invitations have been previously issued on a regular basis. Such invitations may also include individuals whose attendance would constitute a valid scientific contribution to ICCAT's objectives and work. Requests to the Executive Secretary for invitation shall be submitted to ICCAT Contracting Parties for consideration at least 90 days prior to a subject meeting. The Executive Secretary may issue such invitations 75 days before the meeting if no Contracting Party calls for a vote on the issuance of an invitation. In a vote, the procedures outlined in paragraphs 2.3 to 2.8 will be used.

4. The Executive Secretary will determine whether, due to conference room capacity, seating limitations require that a limited number of observers per non-Contracting Party and organization may be present at any meetings. The Executive Secretary will transmit any such determination in the conditions of participation.

5. Observers may attend, and at the invitation of the Chairman, address the Plenary Sessions, attend any subsidiary meetings, and otherwise participate in its work, but without the right to vote.

   If the conduct of any observer during the meeting in question is inconsistent with the conditions for granting observer status or with the objectives of ICCAT, the Chairman of the Commission may revoke its observer status at any time.

6. Observers to ICCAT Commission Meeting and/or its subsidiary meetings will be advised that a registration fee of $2000 per delegation comprised of not more than two persons will be charged. If the delegation exceeds two persons then the registration fee will be increased by $2000 for each additional person, payable in U.S. dollars or its equivalent in an international currency. The fee is payable in advance or at the time of registration. This amount could be paid in cash or by bank cheque in the name of the Commission. Intergovernmental organizations that regularly invite ICCAT to attend their meetings free of charge are exempted from this requirement. Any country or organization that has made a voluntary contribution to the corresponding financial period exceeding the participation fee may also be exempted.

7. Failure to conform to these rules or any other rules that ICCAT may adopt for the conduct of observers will result in withdrawal of accreditation.

8. The Executive Secretary may prepare, for the consideration of the Commission, a proposed list of any other conditions for observer participation, bearing in mind the practices of other intergovernmental organizations.

ANNEX 20

REPORT OF THE MEETING OF THE STANDING COMMITTEE ON FINANCE & ADMINISTRATION (STACFAD)

First Session - November 8, 1993

1. Opening of the meeting

1.1 The 1993 Meeting of the Standing Committee on Finance and Statistics (STACFAD) was chaired by Mr. D. Silvestre (France), Chairman of the Standing Committee.

2. Adoption of Agenda

2.1 After reviewing the 1993 Tentative Agenda, it was adopted without change, and it is attached as **Appendix 1 to Annex 20.**

3. Election of Rapporteur

3.1 The Chair nominated Mr. J. Pereira (Portugal) to serve as Rapporteur, and this was accepted by the Committee.

4. Administrative Report (1993 activities)

4.1 Dr. Antonio Fernández, ICCAT Executive Secretary, presented the 1993 Administrative Report (COM/93/9) to the Committee. H regretted that this report was not made available to the delegates earlier, but he indicated that it had been finalized just prior to the meeting, so as to include as much updated information as possible.

4.2 In reviewing the Administrative Report point by point, Dr. Fernández called the Committee's attention to point 3 of the Report in which updated information is provided on the ratification or acceptance of the Protocol to the ICCAT Convention that was signed in Madrid in 1992 and reiterated his appeal to the Contracting Parties to ratify this Protocol so that the new contribution calculation scheme can be implemented as soon as possible.

4.3 The Executive Secretary, in reviewing the Administrative Report, made particular note of point 6 of that Report, concerning the meetings organized by ICCAT in 1993. He referred the Committee to COM/93/12, which provides more details on these meetings. Dr. Fernández also discussed the meetings at which ICCAT was represented in 1993, specifically the FAO Informal Meeting to Draft an Agreement on the Register of Fishing Vessels, the FAO Coordinating Working Party on Atlantic Fisheries Statistics, the FAO Committee on Fisheries, the EC Seminar on the Analysis of Technical Measures for the Management of Stocks in the Mediterranean Sea, the annual meeting of Inter-American Tropical Tuna Commission (IATTC), and the U.N. Conference on Straddling Fish Stock and Highly Migratory Fish Stocks.

4.4 The Commission Chairman and several delegations expressed the importance of ICCAT's participation in international meetings, especially the U.N. Conferences concerning high seas fisheries, because of the valuable contribution ICCAT can make in this area.

4.5 As regards the Commission's cooperation with other countries and organizations, the Executive Secretary informed the Committee that frequent contact was maintained in 1993, mostly with non-Contracting Parties interested in tunas and tuna-like fisheries. Several of these countries had asked for more information about the Commission and its activities and membership accession. Dr. Fernández pointed out the close cooperation maintained with the Caribbean Community (CARICOM), the Inter-American Tropical Tunas Commission (IATTC), and the European Community, and in particular, the Food and

Agriculture Organization of the United Nations (FAO) with whom ICCAT has a cooperation agreement. He noted that FAO provides the Commission with essential catch data for many countries for which ICCAT would not normally have such information. Dr. Fernández referred the Committee to COM/93/27, which provides more information on this cooperation.

4.6 As regards cooperation with non-Contracting Parties, Dr. Fernández informed the Committee of the excellent relationship ICCAT maintains with Taiwan Fisheries, and noted that the Taiwan Deep Sea Boatowners Association had made a voluntary contribution in 1993 amounting to US$ 10,000 towards improving ICCAT statistics and research. Dr. Fernández hoped that this type of financial cooperation is pursued and, if possible, increased in the future, in view of the positive effect such contributions have on the financial resources of the Commission.

4.7 The Executive Secretary referred the Committee to point 11 of the Administrative Report, which lists the Commission publications issued so far in 1993. He also pointed out that within a relatively short time the Report of the Second Billfish Workshop (Miami, July 1992) would be published in enhanced form and that this publication would be dedicated to the former ICCAT Executive Secretary, Dr. Olegario Rodríguez Martín.

4.8 Dr. Fernández, in referring to the Secretariat staff, noted that one person had left the Secretariat at the end of 1992, and that this position, and a vacancy that occurred at the end of 1991, had not been filled due to a shortage of cash flow. He informed the Committee that internal adjustments were made and work was re-distributed among other members of the staff.

5. Auditor's Report - 1992

5.1 The Executive Secretary noted that the Auditor's Report corresponding to Fiscal Year 1992 had been distributed in April to the Commissioners and that since no comments had been received, the report was considered adopted by the Commission. Dr. Fernández referred the Committee to point 1 of the 1993 Financial Report (COM/93/10), and Statement 1 of the Report, which provides information on the financial status at the close of Fiscal Year 1992. He pointed out that at the end of 1992 there were pending contributions totaling 99,345,289 pesetas, which was equivalent to 78.9% of the 1992 total budget.

5.2 Dr. Fernández also indicated to the Committee that he had not distributed the 1993 Financial Report until the time of the meeting so that it would contain the most updated financial information possible.

6. Financial status of the 2nd half of the biennial budget - 1993

6.1 The Executive Secretary briefly reviewed the various financial statements attached to the 1993 Financial Report (COM/93/10) and placed particular emphasis on the pending contributions to the 1993 budget, the deficit foreseen in Cash and Bank of 6.9 million pesetas, as well as the substantial negative balance expected in the Working Capital Fund (11.5 million pesetas). He also pointed out the extrabudgetary income received in 1993 and cited specifically, among others, the voluntary contribution from Taiwan, the contribution from the Billfish Research Program to defray the cost of the enhanced billfish publication, and the return of Value Added Tax from the Spanish Government.

6.2 As regards the unpaid contributions towards the 1993 budget, Dr. Fernández pointed out that the current balance of unpaid contributions (as of October 15, 1993) was 138.2 million pesetas. In this regard, he noted that the Portuguese authorities had just informed the Secretariat that the contribution of Portugal would be received shortly. Several other Contracting Parties (Morocco, the Russian Federation, Sao Tomé & Principe, Brazil, Gabon) also indicated that their 1993 contributions and/or past due contributions would be forthcoming before the end of this year.

6.3 The Executive Secretary also noted that the three consecutive devaluations of the peseta in the last fourteen months had an adverse effect on Commission expenditures that are made in U.S. dollars (i.e., salaries and remuneration of staff in the Director and Professional U.N. categories,pension for staff in the General Services category). He noted that all except one of the Contracting Parties had paid their 1993 contributions in convertible pesetas. Consequently, the U.S. dollars needed to make the aforementioned payments had to be purchased on the currency exchange market.

6.4 Dr. Fernández also commented on the various special ICCAT research programs that are on-going. He noted that Albacore Research Program funds show a current balance of 1,482,518 pesetas, which will be used for the final meeting to culminate this important research program. As regards the Bluefin Year Program, he indicated that this research was not funded by ICCAT, but by research institutes of the Contracting Parties. The Executive Secretary also indicated that the Billfish Program now has a considerable balance to meet research expenses. He reiterated that while this Program is not funded by the Commission, the Secretariat does administer the Program funds.

6.5 Dr. Fernández referred the Committee to his final comments in point 6 of the 1993 Financial Report, in which he expressed his serious concern that the financial status of the Commission has not improved with respect to last year. He noted the difficulties of carrying out all the instructions given by the Contracting Parties when the necessary funds are not received.

6.6 Dr. Fernández stressed the importance of early payment of the country contributions. He again stressed the importance of early ratification of the Protocol to the Convention modifying the contribution calculation scheme. He noted that since this Protocol was not yet ratified, the Commission has to rely on the current funding system for the next budget.

6.7 The Executive Secretary stated that he had received the necessary authorization from the Commission at the 1992 meeting to open a line of credit so as to be able to solicit a bank loan if there was an extreme shortage of cash. He indicated that due to the receipt of extrabudgetary income, to advances on contributions, and to restrictions on spending, the Secretariat was able to operate during this year without having to resort to a loan. In this regard, Dr. Fernández also requested, should it become necessary to solicit a loan in the future, that the Commission grant him the necessary authorization to solicit the loan either in US dollars or in pesetas. This proposal was recommended for approval by the Commission.

6.8 The Delegate of Spain expressed his concern about the financial situation of the Commission, but at the same time he indicated that the budget should be as adjusted as possible. He expressed his pleasure that several Contracting Parties had indicated their intention to liquidate their debts to the Commission and that this could solve the cash flow problem at least over the short-term. He echoed the statements made concerning the need to speed up the ratification of the Madrid Protocol to help ease the Commission's financial crisis.

6.9 The Committee Chairman thanked the Executive Secretary for his report and noted that the Committee had to come to some decision as regards the replenishment of the Working Capital Fund. He also reiterated the need to ratify the Protocol signed in Madrid.

7. Contributions pending payment from the Contracting Parties

7.1 The Delegate of the United States recognized that a healthy Working Capital Fund was certainly important but he indicated it would be far better to deal with the replenishing of this fund at a slower pace over the next few years. He indicated that his country has not made provision for more than about 5% of that budgeted for ICCAT. He stressed that the Commission should concentrate its efforts on collecting the contributions that are in arrears, before requesting large amounts to replenish the Working Capital Fund and thereby placing an additional burden on countries that meet their financial obligations to ICCAT.

7.2. The Delegate of Côte d'Ivoire referred to Rule 9 of the Rules of Procedure concerning sanctions to apply when countries are in arrears. He indicated that this problem jeopardizes the life of the Commission. He suggested that harsher sanctions be applied, such as the suspension of voting rights and/or suspension of Commission membership.

7.3 The Chairman commented that he did not think it was wise to resort to such drastic procedures. He agreed, however, that the Commission should consider firmer actions. He noted that ICCAT should encourage the Contracting Parties to pay their contributions for the full enjoyment of their rights as parties to the Convention. The Chairman also suggested that the Committee might discuss the implementation of Rule 9.9 of the Rules of Procedure at a later session.

7.4 The Delegate of France, while not commenting on the suspension of voting rights at this time, disagreed with suspending the participation of countries that are in arrears, since the lack of data from such countries are important to ICCAT's scientific research on tunas, particularly the tropical species.

8. Status of the Working Capital Fund

8.1 The Executive Secretary reiterated his concern about the substantial expected negative balance (11.5 million pesetas) of the Working Capital Fund, which prompted him to inform the Commissioners and solicit extra-budgetary contributions to replenish this Fund. The Committee was referred to Statement 5 of the 1993 Financial Report which shows the composition and balance in the Fund, estimated to the end of Fiscal year 1993.

8.2 Taking into account the referred contributions from member countries to be received prior to the end of 1993, the Committee proposed that it would not be necessary for the time being to replenish the Working Capital Fund.

9. Financial status of the Albacore Research Program

9.1 The Executive Secretary reiterated that the balance of Albacore Research funds (1,482,518 pesetas) would be applied towards the meeting to culminate the Program.

10. Financial status of the Program of Enhanced Research for Billfish

10.1 The Executive Secretary referred the Committee to point 4 of the 1993 Financial Report, which provides a summary of the current financial status of this on-going Program. He noted that balance of billfish funds (as of October 15, 1993), which are maintained in U.S. dollars, amounted to $46,139.

11. Budgetary implications of 1994 Commission activities:

11.1 This Agenda item was discussed at length by the Committee, in view of the various meetings scheduled for 1994 and meetings at which ICCAT participation is warranted. Dr. Fernández pointed out that not all these meetings had been included in the budget proposed and indicated that some re-calculation was necessary.

11.2 The Executive Secretary referred to the meetings at which the Commission may be represented this year and which have budgetary implications. These are as follows:

-- Two sessions of the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, to be held at the U.N. Headquarters in New York in March and August, 1994.

11.3 The Committee Chairman and several delegations stressed the importance of ICCAT being represented at this U.N. Conference, especially because of the expertise ICCAT has in the study of highly migratory species, and emphasized the need for a top quality representation from the Commission.

-- Conference on Trade in Endangered Species of Flora and Fauna (CITES), to be held in the U.S.A. in November, 1994

11.4 The Chairman indicated that this too is a very important meeting at which ICCAT should be well represented. Other delegations also supported the need for ICCAT participation at CITES, given the implications that of any decisions regarding the species under ICCAT mandate may have on the future of this Commission.

11.5 The Delegate of Canada supported ICCAT representation at the U.N. Conferences, but felt that ICCAT representation at CITES could be delegated, in order to save money.

11.6 The U.S. Delegate expressed the view that it was crucial that ICCAT be represented because of the future bearing any international decisions may have on ICCAT's work.

11.7 The Executive Secretary referred the Committee to Item 16 of the 1993 SCRS Report, which lists the intersesessional scientific meetings proposed for 1994 by the SCRS, and which have budgetary implications. These proposed scientific sessions are as follows:

-- The Second Consultation on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age (to be held in the first half of 1994);

-- the meeting to culminate the Albacore Research Program (to be held in June, 1994, in northern Spain); (The balance in Albacore Program funds can be applied to cover the expenses for this conference.)

- the Ad Hoc GFCM/ICCAT Joint Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea; (The venue of this working group meeting has not been decided and this will determine the costs.)

- Coordinating Working Party on Fishery Statistics (to be hosted by ICCAT in July, 1994, in Madrid); (Funding for the CWP have been included in the budget proposal for 1994.)

- a possible Workshop on the Development of Abundance Indices for South Atlantic Tunas and Tuna-like Fishes (to be held in South America). (It has not yet been definitively decided whether this workshop will be held in 1994.)

11.8 As regards the above-mentioned Workshop on the Development of Abundance Indices for South Atlantic Tunas and Tuna-Like Fishes, the Delegate of Uruguay indicated that this might be organized in Uruguay or Brazil. She added that this matter would be discussed with the proper authorities of her country.

11.9 The Delegate of Uruguay reminded the Committee that at the 1991 meeting she had solicited financial assistance for the Southwestern Atlantic Program and indicated that she was disappointed that this matter had not been discussed at the 1992 meeting as had been agreed. She stressed the need for such assistance, although recognizing the difficult financial situation of ICCAT at this time. Therefore, she would communicate with the Tripartite Working Group (Uruguay, Brazil and Argentina) to review the objectives and the economic support of the aforementioned Program.

Second Session - November 11, 1993

15. Updating of the Staff Regulations and Rules

15.1 The Chairman referred the Committee to the document (COM/92/29), which had been distributed by the Executive Secretary at the 1992 Meeting on the draft of the Staff Regulations and Rules. He indicated that due to the lack of time at last year's meeting, it was decided that the document be studied by the Commissioners and any comments or clarifications could be directed to the Executive Secretary during the year. In June, the Chairman of the Commission reminded the Commissioners that this matter would be discussed again at this year's meeting and asked that they come to this meeting prepared to discuss and approve the Staff Rules. The Chairman also referred to the importance of this document and the need for a thorough review.

15.2 The Executive Secretary gave a brief introduction of this matter and highlighted some of the differences from the current Staff Rules. Due to time constraints again this year, the Chairman suggested that the matter be referred to a small group that would then report to STACFAD. However, the Committee preferred to discuss the issue briefly at this time and present any comments to or request any clarification from the Executive Secretary before the STACFAD adjourns.

12. Proposal of the biennial budget for 1994-1995

12.1 The Executive Secretary introduced the Estimated Budget for the 1994-1995 biennial period (COM/93/11). He summarized that his budget proposal was based from the perspective of two options, Option "A" and Option "B". Dr. Fernández explained that the basic premise of Option A is that it includes filling two vacant positions in the General Services category. He noted that Option A would represent a 12.7% increase, in nominal terms, over the amounts adopted for salaries for 1993.

12.2. Dr. Fernández indicated that his Option B proposal included the reclassification of permanent local staff in the U.N. General Services salary scheme, a freeze on filling two General Services vacancies at the Secretariat, and the hiring of a Biostatistician, in accordance with a recommendation by the SCRS. He indicated that this option would represent an increase of 16.1% for salaries, in nominal terms. He also pointed out that the reclassification of the four staff members had minor implications on the total budget.

12.3 The Executive Secretary referred to the problem of the exchange rate and the effect it has on Commission funds. He explained that part of the budgetary expenses are fixed in U.S. dollars, such as the salaries and remuneration for staff in the Director and Professional category. He pointed out that there were three peseta devaluations in the last 14 months. He indicated that since only one Contracting had paid its 1993 contribution in dollars, this currency had to be

purchased in 1993 to meet these salary payments at a much higher rates that at which the budget was calculated.

12.4 Dr. Fernández further explained that the budgetary options presented as regards the other chapters of the budget include zero growth in real terms, applying an increase of 6%, which is the expected rate of inflation.

12.5 The Executive Secretary indicated that these options also include a considerable reduction in the travel chapter, since there is no home leave in 1994 for Professional staff. However, he pointed out that, in view of the proposals that ICCAT be represented at the U.N. Conference and CITES in 1994, this budget chapter would have to be adjusted upwards.

12.6 The Chairman thanked the Executive Secretary for his summary of the budget proposals and opened the floor for comments from the member country delegations.

12.7 The Delegate of Spain, in referring to the effect of currency fluctuation on the budget, inquired whether ICCAT could stabilize the situation from the beginning of the year by operating with a fixed exchange rate. He also inquired whether all expenses could be paid in pesetas, since the budget is now based on that currency. He also agreed with the reclassification of the temporary staff and noted that Option B amortized two staff positions, while recognizing the assumptions of new responsibilities for some staff members. He also stressed the importance of contracting a biostatistician.

12.8 The Chairman pointed out that in accordance with a Commission decision made several years ago, it was agreed to establish the salaries and remuneration of staff in the Professional category according to the U.N. scheme and this scheme is fixed U. S. dollars.

12.9 The Delegate of Canada inquired as to the percentage of the overall budget that is paid in dollars and the percentage that is paid in pesetas.

12.10 The Executive Secretary responded that the percentage of the budget paid in dollars varied according to the exchange rate applied. He also explained that while the Professional staff salaries are established in dollars, there was a variable factor (post adjustment) which takes into account the currency fluctuation and when the exchange rate increases, the post adjustment amount decreases and vice versa.

12.11 The Delegate of Canada proposed that perhaps the ideal situation would be to require payment of contributions in U.S. dollars in the same proportion of the budget that is spent in that currency. He indicated that in that way the burden of currency fluctuation would be shifted to the member countries.

12.12 The Delegate of Spain supported the proposal of Canada and insisted on the need to stabilize the budget by fixing an exchange rate for the entire year. He also wondered whether all dollar amounts could be changed at one time to avoid continuous change in currency rates.

12.13 The Executive Secretary pointed out that salaries of staff in the General Services category were fixed by the U.N. in pesetas for Madrid and they remained the same for the entire year.

12.14 The Delegate of Portugal noted that it was most important at this time, before proceeding further, to find out which delegations have a certain amount of flexibility and which do not as regards accepting an increase in the 1994 budget.

12.15 The Chairman agreed with the proposal just made and asked each of the delegations present to express his country's position.

12.16 The Delegate of Uruguay indicated that she would have no difficulty in accepting either Option A or Option B.

12.17 The Delegate of Venezuela also indicated that he would have no problem in accepting either budget proposal.

12.18 The Delegate of South Africa noted that his country also had no problem accepting either budget proposal because he felt it was important that the efficiency of ICCAT be maintained.

12.19 The Delegate of France expressed serious difficulties to accept any increase in the budget, even if it was justified and relevant. He indicated that he would like to have another option to consider.

12.20 The Delegate of Cape Verde, while commending the excellent work carried out by ICCAT, stated that because of the economic difficulties in his country, he could not accept any increase in the budget at this time.

12.21 The Delegate of Japan voiced his support for option B and expressed the need for a high-level biostatistician at the Secretariat.

12.22 The Delegate of Côte d'Ivoire was in favor of a zero increase and also indicated that this was not the appropriate moment for an increase in the budget. He hoped a solution could be found without increasing the budget.

12.23 The Delegate of the United States agreed with the comments made by France and also indicated that he would find it difficult to accept an increase. However, he added that he could accept a minor increase if it was necessary in order to maintain the level of efficiency of the Secretariat.

12.24 The Delegate of Angola indicated that it was very difficult for his country to accept an increase in their commitment. He noted that his country always tries to honor its obligations, but this is becoming increasingly difficult.

12.25 The Delegate of Korea recognized that there were minor differences between the two budget options, but he expressed a preference for option A. He added, however, that Korea will support the majority decision.

12.26 The Delegate of Sao Tomé indicated that it was too early to take a stand on this issue, but pointed out that he recognized that Option A was preferred. He stressed that many Contracting Parties are undergoing severe economic crises and that such increases in commitments make it difficult for these countries to continue as members of ICCAT. He pointed out the need to speed up the ratification process of the Madrid Protocol.

12.27 The Delegate of Canada commended the excellent work carried out by the Secretariat. He indicated that Canada's aim was to obtain the highest efficiency at the lowest expense and asked the Executive Secretary to prepare a few more options for the Committee to review.

12.28 The Delegate of Russia reserve the right to comment on this issue at this time and indicated that he needed more time to study the matter and consult with this authorities.

12.29 The Delegate of Portugal supported the view of France, in that he would have difficulties accepting an increase in the budget.

12.30 The Delegate of Gabon pointed out that his country has always honored its financial obligations to the Commission. He noted that either budgetary proposal was significant when converted to Gabon's national currency. However, he indicated that he preferred Option A, given the economic situation of his country.

12.31 The Delegate of Spain commended the work of the Secretariat, and indicated that in order to continue to carry out this work it needs the necessary funds. He reiterated that Spain would be prepared to accept Option B and that the recruiting of a biostatistician was important to the work of this Commission.

12.32 The Delegate of Brazil noted that option A was interesting, but preferred that an alternative solution be sought which would not represent an increase in the budget.

12.33 The Chairman shared the concerns expressed by many counties as regards the serious economic difficulties in accepting any budgetary increase. He noted that ICCAT should limit any increase without degrading the efficiency of the organization. He also asked the Executive Secretary to prepare other budget options for consideration by the Committee.

12.34 The Delegate of France, speaking on behalf of the scientists, commended the work of the Secretariat and pointed out the importance of such work. He added that to improve the quality of this work a biostatistician was essential, and that this request by the scientists was minor in terms of budgetary repercussions. He pointed out that there was very little difference between options A and B.

12.35 The Delegate of Spain noted that if setting priority, his delegation thinks it is better not to fill the two vacancies at the Secretariat, but use that amount to fill the position of biostatistician.

12.36 The Delegate of South Africa inquired how ICCAT could increase efficiency outside the two options presented (A and B).

12.37 The Chair, while recognizing the importance of ICCAT's scientific work, noted that must also assure that ICCAT's image is extended outside. He suggested that perhaps ICCAT recruit a biostatistician at a future time and consider contracting a biostatistician on a short-term basis, as the need arises. He further suggested that ICCAT earmark a certain amount for this purpose, i.e. about 3 million pesetas. Mr. Silvestre stressed the importance of high level participation of ICCAT at the two sessions of the U.N. Conference on High Seas Fishing to be held in New York.

12.38 The Delegate of Spain shared the views of the Chairman, as concerns the representation of ICCAT at international meetings, especially the U.N. Conference in New York. In referring again to the Staff Rules, Mr. Conde recognized that there was a certain link between the budget and the staff rules, as some of the changes does have budgetary implications.

12.39 The Executive Secretary explained that the financial implications of the new Staff Rules (i.e. reclassification of temporary staff) had been included in the budgetary options he prepared. He noted that the educational allowance (currently at $1,500 per dependent child of Professional staff) would only have a budgetary implication if that amount were to be increased.

12.40 The Delegate of Portugal reiterated his support for high-level ICCAT representation at the New York meetings. He pointed out two priorities: to accelerate the signing of the Madrid Protocol and to maintain the present level in the quality of the work of the Secretariat with only a 6% increase, which is the estimated rate of inflation. He also proposed that the Executive Secretary be authorized to change money from one budgetary chapter to another.

12.41 The Executive Secretary recognized that in spite of the economic crisis, he had expected the countries to accept his budgetary proposal. He indicated that the Secretariat required a minimum amount in order to continue to comply with its mandate from the Commission. He noted that he felt that the Secretariat could continue with the same level of efficiency as this past year by increasing responsibilities of the staff. He agreed with Portugal in that if ICCAT freezes activities then it should consider only an increase in nominal terms.

12.42 The Chairman of STACFAD indicated that ICCAT should select only the most important meetings for ICCAT participation in 1994 in order to have sufficient travel funds to attend the U.N. conferences on the high seas and CITES.

12.43 The Delegate of Japan strongly supported ICCAT participation at the CITES meeting and also agreed with the proposals made by Portugal.

12.44 The Delegate of Côte d'Ivoire noted that the next few years will be decisive for the Commission. There is crucial scientific work to be carried out, but since ICCAT is in the middle of a crisis, the Secretariat will have to make sacrifices and work harder. He also said that the Commission should solicit voluntary contributions to help ease the financial burden of ICCAT.

12.45 The Delegate of Canada supported the hiring of a part-time biostatistician in order to save money. He recognized that ICCAT should be represented at international conferences, but that this representation can be delegated to a Contracting Party.

12.46 The Delegate of Portugal also referred to the importance of high-level ICCAT representation at the U.N. Conference and suggested that the Executive Secretary represent ICCAT, as well as the Commission Chairman at his own expense. As regards CITES, he felt that a member country of ICCAT could represent the Commission at this meeting.

12.47 The Delegate of the U.S. agreed with Portugal that ICCAT must be represented at the U.N. Conference. He also noted that ICCAT has to choose priorities as regards travel next year.

12.48 The Delegate of Uruguay requested that a biostatistician, at least on a short-term basis, was essential.

12.49 The Chairman summarized the debates so far. He also noted that if there were insufficient funds for travel to the U.N. Conference, that the Commission solicit a loan, since the Executive Secretary had been authorized by the Commission to open a line of credit.

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12. Proposal of the biennial budget for 1994-1995 (Continued)

12.50 In accordance with that requested by the Standing Committee, the Executive Secretary presented new budgetary options for 1994, which are shown as Options C and D in **Tables 1A and 1B.**

12.51 The Delegate of Portugal expressed his appreciation to the Executive Secretary for the concise information provided in the documentation presented on the Proposed Budget. In order to expedite the deliberations, he proposed that the Committee take a vote on Option D, which represented an overall 5.3 % increase over the 1993 Budget.

12.52 The Delegate of Japan, who also favored moving ahead quickly with the discussions because of the time constraints, supported the proposal made by Portugal.

12.53 The Delegate of the U.S. favored Option D, but indicated the across the board increase of 10% for the 1995 Budget, which is considered provisional, seemed too high.

12.54 The Delegate of Côte d'Ivoire indicated acceptance of Option D, but pointed out that ICCAT should be represented at the U.N. meeting and the CITES and these important activities involved additional expenses.

12.55 The Spanish Delegation also supported the proposal by Portugal to expedite the approval of the budget and indicated agreement for Option D.

12.56 The Delegates of Morocco and Cape Verde supported the proposal by Portugal and Option D.

12.57 The Delegate of Venezuela agreed with Option D and noted that this Option seemed more

balanced than the others presented and meets the interests of the Commission.

12.58 The Delegates of South Africa and Russia also supported the proposal by Portugal.

12.59 In expressing support for Option D, the Delegate of France indicated that he had some revisions to the catch and canning figures for France.

12.60 Several Delegations indicated an interest in receiving the table showing the final member country contributions based on the updated catch and canning figures.

12.61 The Executive Secretary assured the Committee that the contribution tables would be made available by early afternoon. He pointed out that any revisions to the catch and canning figures corresponding to 1991, the base year on which the 1994-95 contributions had been calculated, will have a slight effect on all the contributions. He also indicated that the Secretariat had issued a circular in July requesting catch and canning information and that several reminders had also been sent to the Contracting Parties to this effect, but that in spite of these requests, some countries had not responded, and the Secretariat had carried out the corresponding estimates based on the data available.

12.62 Dr. Fernández also confirmed that the 1995 budget and contributions had been prepared since the Executive Secretary's mandate is to prepare a biennial budget. He indicated that the 1995 budget and contributions are provisional, pending review by the Committee at its 1994 meeting.

12.63 After reviewing the tables prepared and distributed to the Committee by the Secretariat on the revised total budget figure of 140,268,000 Pesetas for 1994 and a provisional budget figure of 154,294,800 Pesetas for 1995, based on Option D (**Tables 1A** and **1B**), the 1994-1995 biennial budget was adopted by the Committee, and was recommended to the Commission for final adoption, with the understanding that the figure for 1995 was provisional and will be reviewed in 1994.

13. Contributions of the Contracting Parties to the 1994-1995 budget

13.1 The Executive Secretary reiterated the reference to the 1994-1995 Estimated Budget (COM/93/11) as regards the method to calculate the contributions corresponding to the Contracting Parties to finance the budget for the coming biennial period.

13.2 The Committee also reviewed the tables prepared by the Secretariat on the revised catch and canning figures (**Table 2**), in particular as regards those corresponding to 1991 which were used to calculate the contributions to finance the 1994-1995 biennial budget, as well as the corresponding contributions of the Contracting Parties (**Tables 3A and 3B**). These contributions were adopted by the Committee and recommended to the Commission for final adoption, with the understanding that the figure for 1995 was provisional and will be reviewed in 1994.

14. Draft wording of the modifications to the Financial Regulations and Rules of Procedure for the purpose of introducing the new scheme for the calculation of contributions

14.1 The Delegate of the United States, in referring to the modifications to be introduced in the Financial Regulations and Rules of Procedure due to the change in the calculation scheme, inquired as to whether the amendments relative to the change in the budget base currency had been made.

14.2 In response to the above inquiry, the Executive Secretary clarified that the decision to change the budget base currency had been adopted at the 1991 Commission Meeting. He pointed out that in the document on this matter presented to the Commission last year (COM/92/28), two proposals were included, one to reflect the decision to change the currency unit and another to amend the Financial Regulations and Rules of Procedure to reflect the change in the calculation scheme as indicated in the Madrid Protocol.

14.3 Dr. Fernández also called the Committee's attention to Document COM/93/28, relative to this Agenda item. He noted that the proposal to reflect the decision to change the budget base currency was considered as accepted by the Commission since there was no discussion on this point in 1992. He indicated that Document COM/93/28 only refers to the modifications in the Financial Regulations and Rules of Procedure stemming from the Madrid Protocol. He informed the Committee that all these modifications of the wording, including the change in the base currency, will be included in the next version of the "Basic Texts" at the appropriate time.

15. Updating of the Staff Regulations and Rules (Continued)

15.3 The Executive Secretary again referred the Committee to Document COM/92/29, the Draft of the ICCAT Staff Regulations and Rules. He reminded the Committee that the 1992 STACFAD had, because of time constraints, deferred the study of these Regulations and Rules to the intersessional period so as to give ample time to the Delegations to review this important document and present any inquiries and/or comments to the Secretariat. He pointed out that the Commission Chairman had issued a reminder to the Contracting Parties in July concerning this matter and requested that they come to the 1993 Meeting prepared to discuss and adopt the Staff Regulations and Rules. He indicated that since then no comments had been received at the Secretariat regarding this matter.

15.4 The Delegate of Portugal expressed the opinion that the Delegates had had sufficient time to study the Staff Regulations and Rules, and suggested that the Committee approve them on a provisional basis for one year, with the condition that this would not imply any budgetary increase during this trial period.

15.5 The STACFAD Chairman agreed with the proposal and asked for comments from the Delegations.

15.6 The Delegate of France agreed with the proposal by Portugal that the Staff Regulations and Rules be accepted for a one-year provisional period.

15.7 The Chairman of STACFAD confirmed that the Staff Regulations and Rules were accepted provisionally for one year and recommended them to the Commission for adoption.

16. Other financial and administrative matters

16.1 The Delegate of the U.S. asked for information on the status of the Madrid Protocol.

16.2 The Delegate of Portugal agreed with the U.S., but indicated that such discussions should perhaps take place at the Commission Plenary rather than at STACFAD.

16.3 The U.S. Delegate agreed, but indicated that since this matter directly relates to the financial situation of the Commission, the Committee could emphasize the importance that those Contracting Parties that have not yet accepted or ratified the Madrid Protocol, should try to expedite the administrative procedures, so as to assure the financial health and future of the Commission.

16.4 The Chairman agreed with the point raised by the Delegate of the U.S. and recommended that, at the Plenary, the Commission Chairman urge the Contracting Parties to move ahead quickly with acceptance or ratification of the Madrid Protocol.

16.5 The Executive Secretary referred the Committee to Document COM/93/9, which indicates that only three countries (Republic of Korea, Canada and South Africa) have accepted or ratified the Protocol so far.

16.6 The STACFAD Chairman suggested that the Committee draft a formal request reminding all the Contracting Parties to accept or ratify the Protocol as soon as possible, and recommend the draft to the Commission for adoption.

16.7 The Delegate of Portugal informed the Committee that his country is proceeding with the ratification process and he pledged to try to expedite the process upon his return to his country. He indicated that by the time of the next meeting, Portugal will have ratified the Protocol.

16.8 The Delegate of Canada noted that it was useful that countries indicate formally the approximate time when they expect to send their ratification or acceptance to FAO, the Depository of the ICCAT Convention.

16.9 The Delegate of Japan informed the Committee that his country was also proceeding with the ratification process and indicated that since the delay was just procedural, he could not give an exact date for the ratification.

16.10 The Delegate of Brazil indicated that the ratification process was underway in his country and that the Protocol had been sent to the Brazilian National Congress. He hoped that in 1994 this process would be completed, as it was in the interest of Brazil.

16.11 The Delegate of Angola notified STACFAD that procedures to ratify the Protocol had been initiated and had been presented to the Council of Ministers. He indicated that in 1994 the National Assembly of Angola would finalize the ratification process.

16.12 The Delegate of Spain reiterated that the Protocol had been published in the Official Parliamentary Bulletin, and ratification will occur shortly.

16.13 As regards the status of the ratification of the Madrid Protocol, the Delegate of Uruguay assured the Committee that the matter was in process.

16.14 The Delegate of Côte d'Ivoire, in reminding the Committee that it was his country that first proposed that the scheme to calculate the country contributions be changed, informed STACFAD that his country had started the ratification procedure and that it was under consideration by the National Assembly. He also reminded the Committee that Côte d'Ivoire was one of the countries at the Madrid Conference of Plenipotentiaries that had full power to sign the Protocol.

16.15 The U.S. Delegate indicated that the ratification process was well advanced and that the Protocol had been sent to the Senate and that it was well received by that body. He also noted that the Protocol would be ratified by the U.S. President very soon, for sure by the time of the next ICCAT Meeting.

16.16 The STACFAD Chairman thanked the Delegations for providing the updated information on the status of the ratification of the Protocol. He also requested the Secretariat to draft a Resolution urging the Contracting Parties to ratify the Madrid Protocol as soon as possible.

16.17 Following the instructions of the Chairman, the Secretariat proposed a draft Resolution concerning the importance of ratifying the Madrid Protocol. This text was agreed by the Committee and recommended to the Commission for final adoption. The Resolution is attached as **Annex 21.**

17. Date and place of the next meeting of STACFAD

17.1 The Committee agreed to hold the next meeting of the Standing Committee on Finance and Administration (STACFAD) during the same week and at the same place as the Ninth Special Meeting of the Commission in November, 1994.

18. Election of the Chairman of STACFAD

18.1 Mr. D. Silvestre, the incumbent Chairman, noted that since the term of office for STACFAD Chairman was for a two-year period, his term had come to an end.

18.2 In recognition of the Mr. Silvestre's efficient chairing and excellent guidance of STACFAD, the Delegate of Portugal nominated him for re-election for a second two-year term.

18.3 The Delegate of Côte d'Ivoire fully supported the nomination of Mr. Silvestre for re-election and commended his work as STACFAD Chairman. He expressed the wish that during the next Regular Meeting the procedure for the election of all the officers of the different organs established by the Commission be more homogeneous.

18.4 The Delegates of Japan, Spain, South Africa and Venezuela all expressed their support of the re-election of Mr. Silvestre for a second term as STACFAD Chairman, and commended his work in chairing the Committee.

18.5 The Chairman, after being unanimously re-elected, thanked the Committee for its support and expressed his appreciation to all the members of the Committee.

19. Adoption of Report

19.1 The Committee adopted the reports of the first and second sessions of STACFAD, with some minor modifications, and agreed to adopt that of the final session as well the STACFAD Report in its entirety by correspondence. The Chairman thanked the Rapporteur and the Secretariat for their collaboration and assistance.

20. Adjournment

20.1 The 1993 Meeting of the Standing Committee on Finance and Administration was adjourned on Friday, November 12.

Table 1A. Budgetary options considered and final budget adopted (Option D).

Chapters		*1993 Budget*	*1994 Budget Option A*	*1994 Budget Option B*	*1994 Budget Option C*	**ADOPTED 1994 Budget (Option D)**		**Provisional 1995 Budget (+10% Opt. D**
Chapter 1.	Salaries	71,417,000	80,346,000	77,216,000	77,216,000	**77,216,000**		**84,937,600**
Chapter 2.	Travel	3,121,000	1,158,000	1,158,000	1,158,000	**3,158,000**	*	**3,473,800**
Chapter 3.	Commission Meetings	5,564,000	5,898,000	5,898,000	5,898,000	**5,898,000**		**6,487,800**
Chapter 4.	Publications	3,276,000	3,473,000	3,473,000	3,473,000	**3,473,000**		**3,820,300**
Chapter 5.	Office Equipment	764,000	810,000	810,000	810,000	**810,000**		**891,000**
Chapter 6.	Operating Expenses	10,237,000	10,851,000	10,851,000	10,851,000	**10,851,000**		**11,936,100**
Chapter 7.	Miscellaneous	1,254,000	1,329,000	1,329,000	1,329,000	**1,329,000**		**1,461,900**
Sub-total Chapters 1-7		95,633,000	103,865,000	100,735,000	100,735,000	**102,735,000**		**113,008,500**
Chapter 8.	Statistics and Research:							
	8a) Salaries	20,748,000	23,560,000	29,766,000	18,766,000	**18,766,000**		**20,642,600**
	8b) Travel to improve research	1,113,000	1,180,000	1,180,000	1,180,000	**1,180,000**		**1,298,000**
	8c) Port Sampling	1,638,000	1,736,000	1,736,000	1,736,000	**1,736,000**		**1,909,600**
	8d) Biostatistical Work	1,310,000	1,389,000	1,389,000	1,389,000	**2,389,000**	**	**2,627,900**
	8e) Electronic Equipment	1,638,000	1,736,000	1,736,000	1,736,000	**1,736,000**		**1,909,600**
	8f) Data Processing	4,149,000	4,366,000	4,366,000	4,366,000	**4,366,000**		**4,802,600**
	8g) Scientific Meetings (includi	6,343,000	6,724,000	6,724,000	6,724,000	**6,724,000**		**7,396,400**
	8h) Miscellaneous	600,000	636,000	636,000	636,000	**636,000**		**699,600**
	8i) Albacore Research Progra	0	0	0	0	**0**		**0**
	8j) Billfish Research Program	0	0	0	0	**0**		**0**
Sub-total Chapter 8		37,539,000	41,327,000	47,533,000	36,533,000	**37,533,000**		**41,286,300**
Chapter 9.	Contingencies	0						**0**
TOTAL EXPENDITURES		133,172,000	145,192,000	148,268,000	137,268,000	**140,268,000**		**154,294,800**

*** OPTION D: includes increase in Cahpter 2 Travel.**

**** OPTION D: includes increase for Chap 8d Biostatistical work, as provision for short-term contract of biostatistician.**

Table 1B. Summary of budgetary options considered and percentage variation over 1993.

BUDGET CHAPTERS	1993 BUDGET	OPTIONS				% VARIATION OVER 1993			
		A	B	C	D	A	B	C	D
CHAPTER 1-Salaries	71,417	80,346	77,216	77,216	77,216	12.5%	8.1%	8.1%	8.1%
CHAPTER 8A-Salaries	20,748	23,560	29,766	18,766	18,766	13.6%	43.5%	-9.6%	-9.6%
TOTAL SALARIES	92,165	103,906	106,982	95,982	95,982	12.7%	16.1%	4.1%	4.1%
OTHER CHAPTERS	41,007	41,286	41,286	41,286	44286	0.7%	0.7%	0.7%	8.0%
TOTAL BUDGET	133,172	145,192	148,268	137,268	140,268	9.0%	11.3%	3.1%	5.3%

EXPLANATORY NOTES:

OPTION A: P-Staff (NO hiring of Biostatistician); GS-Staff (REPLACE 2 vacancies); LC-Staff (MAINTAIN Spanish Social Security scheme).

OPTION B: P-Staff (HIRING of Biostatistician); GS-Staff (FREEZE on hiring); LC-Staff (UPGRADE to U.N. Salary scheme).

OPTION C: P-Staff (NO hiring of Biostatistician); GS-Staff (FREEZE on hiring); LC-Staff (UPGRADE to U.N. Salary scheme).

OPTION D: P-Staff (NO hiring of Biostatistician); GS-Staff (FREEZE on hiring); LC-Staff (UPGRADE to U.N. Salary scheme). Increase of Chapter 2. T

Table 2. Catch and canning figures (in MT) of member countries

(12-XI-93)

Countries	1990 Catch		1990 Canning		1990 Total	1991 Catch		1991 Canning		1991 Total	1992 Catch		1992 Canning		1992 Total
Angola	802	*	320		1122	985	*	393	**	1378	500	***			500
Bénin	345	*	0	**	345	349	*	0	**	349	349	*			
Brasil	25800	*	1807	**	27607	27076	*	1790	**	28866	28842	p	2173	**	31015
Canada	1356		9		1365	1571		0		1571	2084		0		2084
Cap Vert	3538		41		3579	3900		26		3926	4277				
Côte d'Ivoire	6215		9000		15215	4800		3500		8300	2900	p	1400	p	4300
España	162915	+	39120		202035	189004	+	44055		233059	150657	+	44920		195577
France	73911		22883		96794	81798		22883	**	104681	71800	+			71800
Gabon	0	*	0	**	0	0	*	0	**	0	0	*			
Ghana	40803		86		40889	37795		112		37907	30777		128		30905
Guinea Ecuatorial	340	*	0	**	340	350	*	0	**	350	350	*			
Guinée, Rép. de	0	**	0	**	0	0	**	0	**	0	0	*			
Japan	59291	+	0		59291	54399	+	0		54399	47366	+			
Korea	4268		0		4268	1876		0		1876	1147		0		1147
Maroc	5494	a*	285		5779	4251	a*	221	**	4472	4518	a*	189		4707
Portugal	13838	*	12774		26612	16130	*	16393		32523	15807	*	13346		29153
Russia	16331	*	92		16423	9189	*	52	**	9241	4719	*			
S.Tome et Principe	552		0		552	539		0	**	539	211	p			211
South Africa	4832		55		4887	3564	+	30		3594	6486	+	28		6514
U.S.A.	23801	+	38627		62428	26142	+	60277	p	86419	25562	+	56351	p	81913
Uruguay	531		15		546	368		11		379	380		8		388
Venezuela	25529		3507		29036	36440		5553		41993	35911		19935		55846
Total	470492		128621		599113	500526		155296		655822	434643		138478		573121

* From Statistical Bulletin.

** Secretariat estimates.

*** Only partial data are available.

a Landings from African transshipment ports are not added.

p Preliminary data.

\+ 1993 National Report.

Table 3A. Member country contributions to the 1994 Commission Budget

OPTION "D"

Based on 1991 figures

Total Budget (Convertible Pesetas) = 140,268,000

Country	Panel # (A)	Panel % (B)	Catch MT (C)	Canning MT (D)	C+C MT (E)	C+C % (F)	Fee Conv. Pts (G)	Panel Conv. Pts (H)	Panel Conv. Pts (I)	C+C Conv. Pts (J)	Total Conv. Pts (K)
Angola	2	4.918	985	393	1,378	0.210	138,000	276,000	2,161,475	184,694	2,760,169
Bénin	0	1.639	349	0	349	0.053	138,000	0	720,492	46,777	905,268
Brasil	2	4.918	27,076	1,790	28,866	4.401	138,000	276,000	2,161,475	3,868,918	6,444,393
Canada	2	4.918	1,571	0	1,571	0.240	138,000	276,000	2,161,475	210,562	2,786,037
Cap Vert	1	3.279	3,900	26	3,926	0.599	138,000	138,000	1,440,984	526,203	2,243,186
Côte d'Ivoire	1	3.279	4,800	3,500	8,300	1.266	138,000	138,000	1,440,984	1,112,451	2,829,435
España	4	8.197	189,004	44,055	233,059	35.537	138,000	552,000	3,602,459	31,236,961	35,529,420
France	3	6.557	81,798	22,883	104,681	15.962	138,000	414,000	2,881,967	14,030,423	17,464,390
Gabon	1	3.279	0	0	0	0.000	138,000	138,000	1,440,984	0	1,716,984
Ghana	1	3.279	37,795	112	37,907	5.780	138,000	138,000	1,440,984	5,080,685	6,797,669
Guinea Ecuatorial	0	1.639	350	0	350	0.053	138,000	0	720,492	46,911	905,402
Guinée, Rép. de	0	1.639	0	0	0	0.000	138,000	0	720,492	0	858,492
Japan	4	8.197	54,399	0	54,399	8.295	138,000	552,000	3,602,459	7,291,113	11,583,572
Korea	3	6.557	1,876	0	1,876	0.286	138,000	414,000	2,881,967	251,441	3,685,408
Maroc	2	4.918	4,251	221	4,472	0.682	138,000	276,000	2,161,475	599,383	3,174,859
Portugal	3	6.557	16,130	16,393	32,523	4.959	138,000	414,000	2,881,967	4,359,066	7,793,034
Russia	2	4.918	9,189	52	9,241	1.409	138,000	276,000	2,161,475	1,238,574	3,814,049
S.Tomé & Principe	1	3.279	539	0	539	0.082	138,000	138,000	1,440,984	72,242	1,789,226
South Africa	1	3.279	3,564	30	3,594	0.548	138,000	138,000	1,440,984	481,705	2,198,688
U.S.A.	4	8.197	26,142	60,277	86,419	13.177	138,000	552,000	3,602,459	11,582,762	15,875,221
Uruguay	0	1.639	368	11	379	0.058	138,000	0	720,492	50,797	909,289
Venezuela	2	4.918	36,440	5,553	41,993	6.403	138,000	276,000	2,161,475	5,628,333	8,203,809
Total	39	100	500,526	155,296	655,822	100	3,036,000	5,382,000	43,950,000	87,900,000	140,268,000

A: Panel membership.
B: % annual and panel membership (G+H).
C: Catch (live weight).
D: Canned production (net weight).
E: Total (C+D).
F: Percentage distribution of E.
G: Pesetas equivalent to $1000 annual membership fee (at the time of calculation).
H: Pesetas equivalent to $1000 for each panel membership (at the time of calculation).
I: 1/3 of (Total less G+H) distributed according to col. B %.
J: 2/3 of (Total less G+H) distributed according to col. F %.
K: Total (G+H+I+J)

Table 3B. Member country contributions to the 1995 Commission Budget

OPTION "D"

Based on 1991 figures

Total Budget (Convertible Pesetas) = 154,294,800

Country	Panel # (A)	Panel % (B)	Catch MT (C)	Canning MT (D)	C+C MT (E)	C+C % (F)	Fee Conv. Pts (G)	Panel Conv. Pts (H)	Panel Conv. Pts (I)	C+C Conv. Pts (J)	Total Conv. Pts (K)
Angola	2	4.918	985	393	1,378	0.210	138,000	276,000	2,391,423	204,342	3,009,765
Bénin	0	1.639	349	0	349	0.053	138,000	0	797,141	51,753	986,894
Brasil	2	4.918	27,076	1,790	28,866	4.401	138,000	276,000	2,391,423	4,280,511	7,085,934
Canada	2	4.918	1,571	0	1,571	0.240	138,000	276,000	2,391,423	232,962	3,038,385
Cap Vert	1	3.279	3,900	26	3,926	0.599	138,000	138,000	1,594,282	582,183	2,452,465
Côte d'Ivoire	1	3.279	4,800	3,500	8,300	1.266	138,000	138,000	1,594,282	1,230,799	3,101,081
España	4	8.197	189,004	44,055	233,059	35.537	138,000	552,000	3,985,705	34,560,090	39,235,795
France	3	6.557	81,798	22,883	104,681	15.962	138,000	414,000	3,188,564	15,523,043	19,263,607
Gabon	1	3.279	0	0	0	0.000	138,000	138,000	1,594,282	0	1,870,282
Ghana	1	3.279	37,795	112	37,907	5.780	138,000	138,000	1,594,282	5,621,192	7,491,474
Guinea Ecuatorial	0	1.639	350	0	350	0.053	138,000	0	797,141	51,901	987,042
Guinée, Rép. de	0	1.639	0	0	0	0.000	138,000	0	797,141	0	935,141
Japan	4	8.197	54,399	0	54,399	8.295	138,000	552,000	3,985,705	8,066,774	12,742,479
Korea	3	6.557	1,876	0	1,876	0.286	138,000	414,000	3,188,564	278,190	4,018,754
Maroc	2	4.918	4,251	221	4,472	0.682	138,000	276,000	2,391,423	663,148	3,468,571
Portugal	3	6.557	16,130	16,393	32,523	4.959	138,000	414,000	3,188,564	4,822,804	8,563,368
Russia	2	4.918	9,189	52	9,241	1.409	138,000	276,000	2,391,423	1,370,339	4,175,762
S.Tomé & Principe	1	3.279	539	0	539	0.082	138,000	138,000	1,594,282	79,928	1,950,210
South Africa	1	3.279	3,564	30	3,594	0.548	138,000	138,000	1,594,282	532,951	2,403,233
U.S.A.	4	8.197	26,142	60,277	86,419	13.177	138,000	552,000	3,985,705	12,814,989	17,490,694
Uruguay	0	1.639	368	11	379	0.058	138,000	0	797,141	56,202	991,343
Venezuela	2	4.918	36,440	5,553	41,993	6.403	138,000	276,000	2,391,423	6,227,101	9,032,524
Total	39	100	500,526	155,296	655,822	100	3,036,000	5,382,000	48,625,600	97,251,200	154,294,800

A: Panel membership.
B: % annual and panel membership (G+H).
C: Catch (live weight).
D: Canned production (net weight).
E: Total (C+D).
F: Percentage distribution of E.
G: Pesetas equivalent to $1000 annual membership fee (at the time of calculation).
H: Pesetas equivalent to $1000 for each panel membership (at the time of calculation).
I: 1/3 of (Total less G+H) distributed according to col. B %.
J: 2/3 of (Total less G+H) distributed according to col. F %.
K: Total (G+H+I+J)

Appendix 1 to Annex 20

AGENDA OF THE
STANDING COMMITTEE ON FINANCE & ADMINISTRATION
(STACFAD)

1. Opening of the meeting
2. Adoption of Agenda
3. Election of Rapporteur
4. Administrative Report (1993 activities)
5. Auditor's Report - 1992
6. Financial status of the 2nd half of the biennial budget - 1993
7. Contributions pending payment from the Contracting Parties
8. Status of the Working Capital Fund
9. Financial status of the Albacore Research Program
10. Financial status of the Program of Enhanced Research for Billfish
11. Budgetary implications of 1994 Commission activities:
    -- Research and statistics
    -- Intersessional meetings
    -- Publications
    -- Next meeting of the Commission
    -- Others (e.g., CITES 1994, etc.)
12. Proposal of the biennial budget for 1994-1995
13. Contributions of the Contracting Parties to the 1994-1995 budget
14. Draft wording of the modifications to the Financial Regulations and Rules of Procedure for the purpose of introducing the new scheme for the calculation of contributions
15. Updating of the Staff Regulations and Rules
16. Other financial and administrative matters
17. Date and place of the next meeting of STACFAD
18. Election of the Chairman of STACFAD
19. Adoption of Report
20. Adjournment

ANNEX 21

RESOLUTION BY ICCAT CONCERNING THE RATIFICATION OF THE MADRID PROTOCOL

RECOGNIZING the importance that the change in the scheme to calculate the contributions of the Contracting Parties to the budget has on the financial stability of the Commission;

RECALLING that, in order to address this matter, a Conference of Plenipotentiaries was held in Madrid on June 4-5, 1992, and a Protocol (Madrid Protocol) was adopted to amend Paragraph 2 of Article X of the ICCAT Convention;

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) RECOMMENDS:

that the Contracting Parties which have not accepted or ratified the Madrid Protocol do so as soon as possible so that the Protocol may enter into force in the near future.

ANNEX 22

LETTER FROM THE COMMISSION TO CITES

Madrid, March 14, 1994

Dr. Izgrev N. Topkov
Secretary General
CITES
6, rue du Maupas
Case postale 78, Chauderon
CH-1000 Lausanne 9

Dear Dr. Topkov:

At the 8th Conference of the Parties to CITES, held in Kyoto in March, 1992, a number of ICCAT Contracting Parties agreed to promote within ICCAT:

1) that ICCAT continue its initiatives, with particular emphasis on quota reductions, to restore and maintain Atlantic bluefin tuna populations, underlining the importance of monitoring international trade and restricting commerce, in a manner consistent with international obligations, in Atlantic bluefin tuna taken contrary to the conservation program of ICCAT;

2) that ICCAT continue to improve its data collection and research programs to enhance the understanding of the status of the populations;

3) that all nations fishing for Atlantic bluefin should cooperate with ICCAT in its research and management programs, in recognition that the cooperation of all those involved in the fishery is important to the effective management and conservation of that fishery, including those not currently members of ICCAT;

4) that ICCAT keep CITES informed fully on the status of the bluefin populations and on related conservation initiatives, including presenting this information to the 9th Conference of the Parties.

You will recall that on December 31, the Executive Secretary, Dr. A. Fernández, advised you that ICCAT, at its Thirteenth Regular Meeting (Madrid, November 1993), adopted a Resolution to cooperate with CITES.

I have pleasure in enclosing, for dissemination amongst CITES Parties, a report on the status of the bluefin tuna populations and on related conservation initiatives in the Atlantic. This report includes a review of items 1-4 as laid out above, with an emphasis on the west Atlantic stock. ICCAT assessments and Recommendations for conservation measures on the Atlantic bluefin tuna stocks are also attached to this report as Annexes.

I believe it fair to say that ICCAT has vigorously pursued its goals, and:

-- has drastically reduced the allowable catch for western Atlantic bluefin tuna. (The catch levels for the biennial period 1994 and 1995 are distributed as 1,995 MT and 1,200 MT, respectively. The catch level for 1991 was 2,660 MT, implying a reduction of 55% between 1991 and 1995.)

-- has introduced an effective measure for monitoring international trade through the Bluefin Tuna Statistical Document Program;

-- has undertaken, or is developing, other methods to improve data collection;

-- is encouraging expansion of research and analysis with a goal of having the basis, at the Commission Meeting in 1995, to develop a program aimed at achieving a 50% increase from current levels in the spawning stock biomass of the western stock by the year 2008;

-- has adopted an amendment to the Convention that allows the European Union to be a Contracting Party and hence expand the number of countries

adhered to ICCAT. The ratification of this amendment by all the member countries is now in its final stage.

I noted that CITES declared also an interest in the status of the eastern Atlantic stock of bluefin tuna. The status was assessed last in November, 1992 (the pertinent section of the 1992 Report of the Standing Committee on Research and Statistics is enclosed) and will next be assessed in November, 1994. Regulation of fisheries for this stock has been much less than occurred in the west Atlantic and, until 1993, consisted of the 1975 regulation on minimum size and restriction on effort increase. The difference in regulatory activity is commensurate with the very different pattern of population abundance in the eastern stock compared to the western. The numbers of young fish in the eastern stock have generally increased over the past 20 years, although due to heavy fishing, the numbers of older fish have declined with the spawning stock, in 1992 estimated to be about 40% of that in 1970. The new ICCAT Bluefin Tuna Statistical Document Program described in the western bluefin report is providing much better information on such catches made by non-members, because the catches are exported to ICCAT member countries. Furthermore, it is clear from discussions within the ICCAT Commission that, in November, 1994, there will be substantive discussion of additional controls on east Atlantic fisheries. Pending this discussion, ICCAT had already adopted, in November, 1993, a Recommendation for supplemental regulatory measures prohibiting pelagic longlining by large vessels in the Mediterranean during the spawning period of the eastern stock. The text of this Recommendation is also attached.

I trust that the documents will be of interest to the Parties and I reiterate the offer of assistance of ICCAT member countries and the Secretariat in providing further information, either in advance or during the 9th Conference of the Parties.

Yours sincerely,

Dr. A. Ribeiro Lima
Chairman, ICCAT

REPORT BY THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) ON THE STATUS OF THE BLUEFIN TUNA POPULATIONS AND ON RELATED CONSERVATION INITIATIVES IN THE ATLANTIC

I. SUMMARY

The population status of the western Atlantic bluefin stock was re-assessed during the autumn of 1993. A Working Group met in Madrid, September 23-October 1 and the assessment was reviewed by the Standing Committee on Research and Statistics (SCRS) November 1-5. The conclusion was that the additional measures introduced for 1992-93 had resulted in much reduced mortality on young fish, but that the spawning stock was continuing to decline and would continue to do so unless catches were cut further.

Measures to improve the information available to the Commission on catches and on other controls of harvest were discussed at a number of meetings during 1992-93. These included two meetings of the Management Review Committee for western Atlantic Bluefin Tuna in 1992, and a meeting of the Working Group to develop technical details for the implementation of the ICCAT Resolution on catches by Non-Contracting Parties, as well as the Eighth Special Meeting of the Commission in 1992 and the Thirteenth Regular Meeting of the Commission in November, 1993.

The Thirteenth Regular Meeting of the Commission adopted new management measures. It was decided that the catch quota available for harvest of bluefin tuna in the western Atlantic would be cut from the 4,758 MT which had applied to the two-year period 1992 and 1993 to 3,195 MT for 1994 and 1995, distributed 1,995 MT for 1994 and 1,200 MT for 1995. It was further decided that intensified research would be carried out - so that the Parties would have

sufficient scientific evidence to be able to develop, in 1995, a recovery program aimed at achieving a 50% increase from current levels in the spawning stock biomass by the year 2008.

Measures were adopted to reduce the catch of bluefin in the central north Atlantic (north of 40°N latitude and between 35°W and 45°W longitude) and it was agreed that during the spawning period of east Atlantic bluefin tuna in the Mediterranean, there should be no pelagic longline fishing by large vessels.

As part of the initiative to document the actual catches of bluefin tuna in the Atlantic, a recommendation was adopted at the 1992 Commission Meeting that imports of Atlantic bluefin tuna into any Contracting Party must be accompanied by an ICCAT Bluefin Tuna Statistical Document that *inter alia* notes the flag state of the vessel that caught the fish and what part of the Atlantic the fish was caught in. Furthermore, if the flag country does not have an ICCAT approved system for identification of individual landed fish, then the document must be validated by a Government official of the flag state that harvested the tuna. This process was put in place originally for frozen product effective September 1, 1993, and will apply to all fresh bluefin as of June 1, 1994.

The ICCAT Bluefin Tuna Statistical Document Program includes a requirement for adequate national data reporting. An interim set of criteria was adopted for the use of the Secretariat in judging the adequacy of a country's logbook and information retrieval (statistical reporting) systems in terms of this requirement.

Discussion was initiated at the 1993 Commission meeting on requiring tuna vessels, wherever they are fishing in the Atlantic, to carry a system by which vessel location can be tracked and catch can be reported through satellite.

II. HISTORICAL AND RECENT CATCHES

Catch Overview (BFT-Table 1)

Atlantic bluefin tuna have been harvested for many centuries, but since about 1950, a number of new fisheries have been introduced, mostly using purse seines or pelagic longlines. Total Atlantic and Mediterranean catches (hereafter referred to as total Atlantic) ranged from 25,000-37,000 MT during the 1950's, the largest components being purse seiners off Norway (peak 11,400 MT in 1952) and traps in Morocco and Spain (peak 20,000 MT in 1958), but generally were less than 1,000 MT in the western Atlantic. The catches in the east Atlantic declined rapidly after 1962, but total Atlantic catches were maintained by growth of fisheries in the west Atlantic which peaked at 18,400 MT in 1964, due to purse seining off the U.S. East Coast (over 5,000 MT in 1964 and 1965) and to pelagic longlining by Japan (peak 12,400 MT in 1964). Total catches then fell and were around 15,000-17,000 MT until 1974 after which catches in the Mediterranean increased considerably. Total catches since 1980 have varied between 20,000 MT and 30,000 MT, with about two-thirds coming from the Mediterranean.

In the western Atlantic, catches declined quickly after the peak of 18,400 MT in 1964, to 3,000 MT by 1968. They were in the 5,000-7,000 MT range through the 1970's and have been 3,000 MT, or less, since 1982, the year in which a scientific monitoring quota was introduced for the fisheries of Canada, Japan and the U.S.A., the main fishing countries in this area.

A new longline fishing ground was developed after 1989, with catches up to 1,700 MT, for bluefin in the central north Atlantic, east of the line of longitude (45°W), that is used to assign catches to one or other stock, to the west of the traditional fishing areas for bluefin in the eastern Atlantic.

Landings in 1992 are estimated to have been 2,200 MT in the western Atlantic, 7,600 MT in the eastern Atlantic, and 19,500 MT in the Mediterranean.

III. MANAGEMENT OVERVIEW

During the 1950's and 1960's, catches of other tunas in the Atlantic were increasing rapidly and the Convention establishing the International Commission for the Conservation of Atlantic Tunas was signed in 1966.

The first meeting of the Commission was in 1969. Discussion of the status of bluefin began early and, in 1974, recommendations were adopted for the entire Atlantic and Mediterranean that established a minimum size limit of 6.4 kg with a tolerance of 15% in number of fish per landing of the total bluefin catch of each boat, and required that there be no increase in fishing mortality above recent levels. These regulations entered into effect in 1975.

The status of the bluefin tuna resource in the western Atlantic continued to decline, and despite ongoing debate as to whether there were separate

east/west stocks, recommendations covering the west Atlantic only were introduced for 1982. These established a catch limit for scientific monitoring purposes of 1,160 MT. The catch limit was increased to 2,660 MT for 1983, in the expectation that this would allow a slow increase in the stock size over a long period, with no more than 15% in weight of the catch in the western Atlantic consisting of bluefin smaller than 120 cm fork length, and prohibited directed harvesting of the spawning stocks in the Gulf of Mexico. The regulations remained unchanged until 1992.

In the 1991 scientific assessment of the western Atlantic stock, it was concluded that, while there was some evidence that stock decline had been stopped for the younger component of the population, there was little sign of the expected slow recovery of the spawning stock (age 8+). Furthermore, as shown in previous assessments, the spawning stock had declined very greatly during the 1980's, although the 1991 assessment suggested that decline had perhaps been halted for the younger spawning ages. This decline of spawning fish, during the 1980's, had been expected, given the previous heavy harvest of the component year-classes during the 1960's and 1970's, especially as very young fish in the 1960's. Bluefin can live at least to 20 years and possibly more and fish spawned in 1965 could still have been contributing to spawning in 1990. The first year-classes that would have been subjected only to harvests conducted under the 1982 measures, would not have entered the spawning stock until the late 1980's. A significant factor that contributed to the trends in population numbers of younger ages during the 1980's was poor recruitment. The year-classes of the later 1970's and the 1980's were generally much smaller than those prior to the mid-1970's.

As a result of the 1991 assessment ICCAT, at the Twelfth Regular Meeting of the Commission in 1991, reduced the annual catch limit for monitoring purposes from 2,660 MT to an average of 2,379 MT for the two-year period 1992-3, and included a provision that the annual catch for the period 1994-95 would be reduced to 1,995 MT averaged over the two years, should the scientific advice in 1993 indicate that this was required. The minimum size permitted to be retained was changed to 30 kg (or 115 cm fork length) but the tolerance was not only reduced from 15% to 8% by weight but it was further defined as applying to each country separately, rather than as a tolerance based on the sum total of the catch in the western Atlantic which had been the basis for a highly active U.S. recreational fishery. A provision recommended that measures be instituted to the effect such that there would not be any economic gain to the fishermen from such fish. A further provision encouraged the introduction of tag-and-release programs for fisheries that might capture fish below the minimum size.

In 1993, at its Thirteenth Regular Meeting, the Commission reduced the catch limits to 1,995 MT for 1994 and 1,200 MT for 1995, with the appropriate adjustment for each Contracting Party, should their 1994 catch limit not be taken fully or be exceeded (**Annex 13 to the 1993 Proceedings**). The Commission adopted also a recommendation to control the catch of bluefin in the central north Atlantic, between 45°W and 35°W, pending scientific review or until 31 December 1995. A catch limit in that area for 1994-95 was set at 1,300 MT for the two-year period with a maximum of 715 MT for 1994. A further provision requires Contracting Parties not already fishing actively to refrain from commencing new fisheries in the area (**Annex 14 to the 1993 Proceedings**)

A problem that ICCAT has been addressing through the 1980's is the inadequacy of the reporting of bluefin tuna catches by non-contracting parties. Significant improvements were achieved through country visits and through cooperation with other organizations, such as the General Fisheries Council for the Mediterranean (GFCM). The problem has, however, increased recently as the result of the initiation, or expansion, of bluefin fisheries by nations that have not traditionally exported bluefin, but which are now doing so, primarily for export to the Japanese market. For some time it was not possible to assess the significance of these harvests because of lack of national catch reporting, and because the import statistics in general, while identifying the exporting country, did not separate out the area of harvest on the ocean. Thus, the imports could have been either southern bluefin or northern bluefin and could have been from the Pacific, Indian or Atlantic Oceans. This has been addressed by a number of initiatives, particularly the provision by Japan of greater details on the imports. The most significant action, however, has been the development of the ICCAT Bluefin Tuna Statistical Document Program (see section on Additional Controls).

Overall, most of the Atlantic bluefin exported to Japan by non-ICCAT member countries is estimated to have been caught in the Mediterranean. Longline vessels fishing in that Sea carry the flags of a number

of the countries newly-harvesting bluefin, including countries in the Caribbean and Gulf of Mexico. There appears to be little harvesting of bluefin in the western Atlantic that is not reported by flag state; the estimate for 1992 is that only 20 MT of the western bluefin was imported into Japan without being reported as catch by the relevant flag state.

Although most of the regulatory activity has focussed on western Atlantic bluefin, ICCAT has instituted controls on a number of other species, including swordfish (minimum size and general harvest level), yellowfin tuna (minimum size and general harvest level) and bigeye tuna (minimum size). There is also a scheme of Port Inspection, to verify that catches are in compliance with regulations. The scheme can be applied to vessels unloading in a port of a country other than the flag state of the vessel.

IV. ADDITIONAL CONTROLS

The application of ICCAT's recommendations is the responsibility of the individual Contracting Parties. The measures agreed as recommendations become binding on Contracting Parties after six months if they have not lodged objections, as provided for in the Convention.

There have been a number of reports that regulations are not being adhered to fully, some of which can be verified by examining the scientific data that are collected on the catch. Thus, the application of the minimum size regulations has been examined and the results reported each year. In general, catches of undersized bluefin from the western Atlantic had not exceeded the tolerance permitted under the regulations, but catches from the eastern Atlantic and Mediterranean have done so. Faced with this type of information, and concerns about the application, the ICCAT established an Infractions Committee that has begun to discuss this problem and to bring pressure to bear on those members that have not been enforcing rigorously the ICCAT size recommendations. The Report of this Committee is included in the annual report of the Commission.

A major concern in the management of bluefin tuna has been the lack of harvest data from non-contracting parties. As discussed in the Historical Overview section, Japan, which provides currently the primary market for bluefin tuna exports, has received imports that are in excess of catches reported by the exporting country, and many of these countries make no report of any catch. The ICCAT Bluefin Tuna Statistical Document Program has been introduced to allow compilation of details on catch and catch location for any import received by an ICCAT Contracting Party, whether the exporting country is an ICCAT Contracting Party or not. The scheme has been in effect since September 1, 1993, and applied initially to frozen products (**Annex 6 to the 1992 Proceedings**), but will apply to fresh products beginning June 1, 1994 (**Annex 10 to the 1993 Proceedings**). A number of other improvements were accepted at the 1993 Meeting of the Commission including, clarifying the requirements for validation by the appropriate authorities in the exporting countries (see **Annex 9 to the 1993 Proceedings**), and establishing criteria for ICCAT acceptance of logbooks and information retrieval systems (**Addendum to Annex 9 of the 1993 Proceedings**) as provided for in the requirements for validation of the ICCAT Bluefin Tuna Statistical Document.

ICCAT has established a Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures to oversee the development of the Bluefin Tuna Statistical Document Program and to address other means of improving statistics and conservation. The Permanent Working Group met for the first time at the 1993 Commission Meeting. In addition to developing the improvements to the Bluefin Tuna Statistical Document Program as mentioned above, the Agenda included items on the means of controlling transshipment at sea, and on re-flagging for the purpose of avoiding fisheries management measures. It was recognized that these items are also addressed in the new FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, but further discussion in the ICCAT context will be carried out at a Special Meeting of the Permanent Working Group in early 1994. This Special Meeting will consider also, the appropriateness and possible mechanisms for the use of a satellite system for vessel tracking and catch reporting.

V. ASSESSMENT OF WESTERN ATLANTIC BLUEFIN POPULATION STATUS

The bluefin tuna stock assessment section of the 1993 SCRS Report (**Bluefin Tuna Section of Annex 23-**

1993 SCRS Report) indicates that the catch of western bluefin in 1992 was 2,190 MT, a reduction of 810 MT from the year before. This includes an estimated 20 MT catch exported to the Japanese market without being reported by the harvesting country. This non-reporting problem is much more acute for the Mediterranean where as much as 1,500 MT in 1992 may not have been reported by the countries harvesting and exporting the fish to Japan. It is noted that the Japanese market also receives bluefin from the Pacific Ocean, as well as southern bluefin from three oceans.

The conclusions from the Virtual Population Analysis (VPA) conducted by the SCRS in 1993 are similar to those of the 1991 assessment; the overall exploitable biomass has declined to between 8% and 26% of the 1975 level. This comparison and those given subsequently are provided on the basis of current estimates compared to levels estimated for 1975. This reference year is a change from the 1991 Report in which comparisons were made relative to 1970. The change has been made because of uncertainty about the trend in the population size and other parameters between 1970 and 1975. Production model analyses were also conducted and indicated patterns in relative exploitable biomass which were similar to the VPA estimates. More detailed information on these investigations and associated sensitivity analyses is given in the SCRS Report.

The size of the population of one year and older fish is estimated to be about 10,000 MT and given the current age structure and pattern of recruitment, the conclusion is that the catch of about 1,200 MT annually would be the catch at which there is a 50% chance of no further decline in spawning biomass.

All the analyses undertaken by the SCRS were examined for the confidence limits associated with the conclusions and these are provided in the SCRS Report. The SCRS examined a number of other abundance indices, considered the influence of certain year specific values in the different abundance indices, reviewed the information on the stock structure, particularly in light of increased catches of bluefin in the mid-Atlantic, and analyzed the implications of the assumptions currently made in the assessment. The Report shows that the assessment is sensitive, as would be expected, to most of the assumptions, and provides much information on the various elements and a further discussion of a number of the assumptions is included in the "Supplemental Information" attached to that Report (**Bluefin Tuna Section of Annex 23- 1993 SCRS Report**). The conclusions about stock status were based on the judgement of the scientists involved, as to the best combination of indices, and years for each index.

VI. IMPACT OF RECENT MANAGEMENT MEASURES

ICCAT introduced substantial restrictions on the catch for 1983 which resulted in a 50% drop in total catch compared to the period prior to 1982 (in 1982, the measures were more restrictive). This reduction was expected to result in a slow stock increase spread over a period of 30 years (SCRS 1984). It would be expected that any recovery would first be seen in the small fish component, with the extent depending both upon the portion of the total catch taken from this size component and upon the numbers of young fish recruiting to the stock. Increase in the numbers of medium fish would be influenced by the same factors as for small fish, and in particular the numbers of tuna surviving to age 6. Consequently, any increase in medium fish would start some years later than the start of an increase in young fish, particularly because the numbers of young fish would have already been fished hard prior to 1982. This lag in the onset of an increase applies to an even greater extent to the large fish component. It thus could be expected that any increase in large fish would not be detectable for several years, and then beginning only with the youngest age-classes (8 and 9) reaching this component. The large fish component comprises fish of many additional ages, since bluefin can live to 20 years or more. Consequently this size category overall would continue to decline for a considerable number of years after the introduction of the 1982 regulation.

The VPA permits consideration of trends in abundance of the various size groups following the introduction of the 1982 and 1983 management measures and of the trends in the levels of fishing mortality on the different groups.

Small fish (Ages 1-5). The catches by number of fish age 1-5 declined markedly after the introduction of the 1982 regulation, but increased considerably in 1985 although only to a level about half of that in the late 1970's. Since then catches have fluctuated around the 1985 level but declined sharply in 1992. This reduction was mainly due to the lower catches by U.S. anglers, of fish less than 115 cm, following the additional changes

in regulations introduced for 1992. In terms of fishing mortality on ages 2-5, there was an initial decline in 1982, followed by a slow increase to the levels of the late 1970's by 1991. The mortality level in 1992 was, however, almost as low as in 1982.

The year-classes of the 1980's appear to have been considerably smaller than those in the early 1970's. In the previous assessment, the 1987 year-class was considered to be the best since the early 1970's but it now appears to have been of similar size to that of 1985. The 1986, 1988 and 1989 year-classes may have been very small. The preliminary information about the 1991 year-class is that it may be the smallest on record. This is a preliminary estimate, however, because (1) it is primarily based on only one year of data (other year class strengths are based on 2-10 years of data) and (2) that catch was taken by a single fishery component, the US rod and reel fishery for small fish, and this fishery may have been affected by the introduction of new regulations governing the capture of small fish for the 1992 season. Overall, there is no marked trend in recent years in the total numbers of fish age 1-5 , although there may have been a slight recovery in the mid-1980's and a slight decline in 1993 reflecting the first estimates of a very small 1991 year-class.

Medium fish (Ages 6-7). The catch of medium fish dropped markedly after 1981, and while it increased sharply in 1988, it has decreased since then back to the 1982 level. The abundance of this size category which increased in 1991 with the entry of the stronger 1985 year-class has declined somewhat in 1992 reflecting the poor 1986 year-class. Fishing mortality dropped sharply in 1982 but quickly increased to levels similar to those in 1980-81. Since 1988, fishing mortality has declined to a level close to that of 1982, by 1992.

Large fish (Ages 8+). The catch by numbers of large fish also dropped greatly in 1982, given the very low quota in that year and increased in 1983 commensurate with the increase in quota. The catch fell somewhat in 1984, recovered steadily for a few years, and increased again in 1988-91 to levels similar to 1983-84. The 1992 catch was somewhat lower. These catch levels are, however, much below levels in the late 1970's. The abundance has declined since the early 1970's although it appears that it increased by 1993 as the 1985 year-class recruited. In terms of fishing mortality there has been a considerable increase because the catches, which are in conformity with a regulation based on weight, have been taken from a declining biomass.

Given the large number of ages in this category (age 8 to 20 years or more) and the expectation that the benefits of the catch restrictions would be detected first for the youngest ages in the category, the recent trend in abundance of fish aged 8 and 9 were examined separately from that of fish aged 10 and older.

The abundance of ages 8 and 9 fish appears to have been very low in 1992 but to have increased by 1993 to the level of 1982 as the 1985 year-class recruited.

The abundance of fish aged 10 and older must be expected to decline given that most year-classes contributing to it were fished heavily prior to 1982. The numbers cannot increase until the year-classes reaching age 10 do so in strength. It is noted that the 1985 and 1987 year-classes will recruit to this age category in 1995 and 1997, respectively.

VII. POTENTIAL FOR STOCK RECOVERY

The potential of the stock to recover was examined on the basis of four harvesting scenarios:

1) 1,995 MT each year;
2) 1,995 MT in 1994 and 1995 and thereafter 1,200 MT each year;
3) 1,200 MT each year; and,
4) no catch in any year.

The tonnage of 1,995 MT was chosen for options 1 and 2 because this was the catch level envisaged for 1994 and 1995 in the Recommendation adopted in November, 1991. The value of 1,200 MT was used because this is the value estimated in the VPA as providing a 50% chance that there would be no further decline in the spawning stock.

The projections (**BFT-Figure 10**) were run for 1994-2002 using the 1992 estimate of population size as the starting point, and incorporate a number of conservative assumptions.

Stock growth is considered in terms of spawning stock size. There is some evidence that the spawning stock size may have declined to a level that is now resulting in reduced recruitment of young fish and, thus, it would be inappropriate to assume that recruitment is entirely environmentally driven. Therefore, a stock-recruit relationship was used for the projections. The significance of assuming the stock-recruit relationship was examined. The projected

population trend shown for the 1,200 MT catch scenario diverges to illustrate what happens to the estimates of spawning stock size under two assumptions about recruitment, i.e., that the numbers of Age 1 fish are 1) governed by a spawner-recruit relationship, or 2) will be that average for recruitment values seen in recent years (1983-92). The divergence does not begin until 2000 because that is when the 1992 year-class matures, this being the first year-class the size of which is estimated using the spawning stock/recruit relationship. Had the median trajectories of age 1+ been plotted, not just the spawning stock, the point of divergence of the two lines would have been much earlier. The difference in the median projections depending upon assumptions about recruitment are marked in 2001 and 2002, and indicate stronger recovery if year-class strength is not related to spawning stock numbers, but fluctuates around the average level seen recently.

The preliminary estimate of the size of the 1991 year-class is that it is the smallest on record. That estimate is considered highly uncertain because there was very little information available for the calculation and because of regulatory changes in 1992 which could have impacted that estimate. This year-class will be better determined in the next assessment which will be carried out in 1995. The sensitivity of the projected spawning stock sizes to this estimate was examined by the SCRS, substituting the next lowest estimate of recruitment in the time series, and it was found to have little impact on the trajectory of the spawning stock.

No allowance was made in the assessment or projections for the apparent tendency to underestimate stock size as judged by retrospective analysis (an apparent average underestimation of number of fish of age 10+ by about 25% in most years). This was examined and discussed by SCRS and is reported in the "Supplemental Information to the Bluefin tuna Species Section of the 1993 SCRS Report".

VIII. 1993 MANAGEMENT RECOMMENDATIONS AND EXPECTED IMPACT

The Commission adopted management measures that did not match any of the SCRS scenarios, i.e., a catch limit of 3,195 MT for the two-year period 1994-95 (1,995 MT for 1994 and 1,200 MT for 1995). Under this catch regime, the spawning stock might be expected to track the trend projected under the 1,995 MT/1,200 MT catch scenario between 1994 and 1995 and then parallel the 1,200 MT trend line as shown in **BFT-Figure 10**. The Commission's decision includes, however, a provision to develop, in 1995, a recovery program aimed at achieving a 50% increase for current levels in the spawning stock biomass by the year 2008.

It is emphasized that the actual pattern of change, with time, will be evaluated in each new assessment and management decisions will be reviewed in this light. It is clear, however, that any recovery will be slow and that, even under a regime of no catch, the stock would be unlikely to recover to the level commensurate with the Maximum Sustainable Yield (MSY) within the period of projections. It is also clear that given the present stock status, the combination of ICCAT management measures will ensure that the stock is not endangered.

IX. EAST ATLANTIC BLUEFIN STOCK

The east Atlantic bluefin stock was last assessed by the SCRS, in November, 1992 (**Bluefin Tuna Section of Annex 14-1992 SCRS Report**). The numbers of young fish in the eastern stock have generally increased over the past twenty years, although due to heavy fishing, the numbers of older fish have declined with the spawning stock, in 1992 estimated to be about 40% of that in 1970. In 1993, ICCAT expressed concern on the unregulated fishery on this stock by Non-Contracting Parties and adopted a regulatory measures to prohibit fishing of bluefin tuna by large pelagic longline fishing vessels greater than 24 m in length in the Mediterranean, during the period from June 1 to July 31 (**Annex 15 to the 1993 Proceedings**). A new assessment is planned for the east Atlantic stock in 1994 and review of the management of this stock will be on the Agenda of the Commission meeting in 1994.

It is expected that the Bluefin Tuna Statistical Document Program will clarify much of the uncertainty about levels of harvest in the Mediterranean by Non-Contracting Parties, since it appears that most of these catches enter international trade.

X. FUTURE RESEARCH

Two elements, both significant, that will be investigated further in the immediate future are the

stock structure and the significance of transatlantic migrations. There remains considerable debate as to whether there are in fact two stocks in the Atlantic, given the observed migration of tagged fish (from one side to the other, now numbering over 70), although it would appear that such migrations are episodic (i.e., occur periodically) rather than annual. The relationship between the bluefin being harvested in eastern and western Atlantic and that being caught in the central Atlantic is uncertain under the two-stock assumption. Some information suggests a discontinuity in bluefin distribution close to the current assumed boundary at 45°W, due to oceanographic conditions, associated with the intersection of the Labrador current with the Gulf Stream. The technique of "DNA fingerprinting" may provide important information on the stock structure and research on bluefin using the technique is being initiated. The "ICCAT Bluefin Year Program (BYP)", a special research effort aimed at improving information on Atlantic bluefin tuna, has been initiated, within the framework of ICCAT research activities, and includes all the major research areas for the study of the stock structure of this species.

The next assessment will be conducted in the autumn of 1995, and it is anticipated that a number of questions about the assessment will have been investigated further. It can be expected that estimates of the size of the 1991 year-class will be more robust, and that estimates of the 1992 and 1993 year-classes will be available. The various abundance indices will have been subjected to additional study, particularly with respect to "outliers" (annual values widely different from other values in the series and from what would be expected given estimated stock sizes). These improvements should further reduce uncertainty in the results of the VPA. The stock structure and migration of individuals is likely also to be understood better. This can be expected to allow for a more precise interpretation of the trends in stock size in the early 1990's and to provide the Commission with clearer advice about options to re-build.

ANNEX 23

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

(Madrid, November 1-5, 1993)

1. Opening of the Meeting

Dr. J. L. Cort, Chairman of the Standing Committee on Research and Statistics (SCRS), opened the 1993 SCRS Plenary Sessions on November 1, 1993. He welcomed all the scientists, particularly those attending the meeting for the first time. He reviewed briefly the various intersessional meetings held by ICCAT in 1993 and other work carried out by the Committee. Dr. Cort referred to the special requests made to the SCRS by the U.S., Canadian and Japanese Commissioners to include a few special aspects in this year's bluefin stock assessment. It was recognized that this may require a revision of the draft species report prepared by the scientists at the western Atlantic Bluefin tuna stock assessment session held a month earlier.

The Executive Secretary, Dr. A. Fernández, addressed the Committee and stated that the scientific work carried out by the scientists of the SCRS is the core of the Commission's activities. He referred to several specific points which should be given special attention by the Committee, including: three Commissioners' requests for bluefin analysis, the request by Japan to introduce a new regulation on restriction of the catches of bluefin spawners, the request by Japan to study a satellite surveyance system, specific studies on bluefin tuna within the Bluefin Year Program, the request made by the Infractions Committee to address the scientific findings regarding the impact of regulations on the stocks, and the preparation of possible scientific comments related to the new criteria under consideration by the Conference of the the Contracting Parties on International Trade in Endangered Species of Wild Flora and Fauna (CITES) for listing species in their Appendices.

2. Adoption of Agenda and Arrangements for the Meeting

The Tentative Agenda was presented and adopted without any changes (**Appendix 1 to Annex 23**). It was understood that the Committee would be flexible in the chronological order of addressing the Agenda items.

The following scientists served as rapporteurs for the 1993 SCRS Report:

Tropical Tunas (General)		A. Fonteneau
YFT:	Yellowfin	P. Pallarés
BET:	Bigeye	J. Pereira
SKJ:	Skipjack	A. Delgado
ALB:	Albacore	F. X. Bard
BFT:	Bluefin	J.S. Beckett/J.J. Maguire
BIL:	Billfish	E. Prince
SWO:	Swordfish	Z. Suzuki
SBF:	Southern bluefin	Y. Ishizuka*
SMT:	Small tunas	L. Gouveia
All other SCRS Agenda items:		P. M. Miyake

3. Introduction of Delegations

The scientific delegations of all the Contracting Parties were introduced. The List of the Participants is attached as **Appendix 2 to Annex 23.**

* Not present at the 1993 SCRS Meeting; draft report was presented through correspondence.

4. Admission of Observers

The observers were introduced and duly admitted, since they had all been invited in accordance with the criteria approved by the Commission. The list of observers is also included in the List of Participants (**Appendix 2** to this Report).

5. Admission of Scientific Documents

The Committee noted that 141 scientific documents were presented at this session (see **Appendix 3 to Annex 23**). All the documents met the criteria set up for acceptance of documents established by the SCRS, and hence were accepted, except SCRS/93/121, 122 and 138, which became available after the deadline. The Committee recognized that these three aforementioned documents were presented in order to supplement the work of bluefin stock assessment, in accordance with the request by some Commissioners to address specific questions. Therefore, the Committee decided to accept these three reports. The Committee, however, recognized the difficulties in making 80 copies of these reports available to all participants. Hence, the Committee recommended that copies be made available at least to the bluefin species group.

6. Review of National Fisheries and Research Programs

6.1. CANADA

In 1992, bluefin regulations were implemented in response to the new ICCAT regulatory recommendations. Swordfish regulations continued and include a quota, limited entry, no more than 15% of small fish (< 25 kg) by number, and no drift nets. Regulatory amendments and a management plan for sharks are planned for 1994.

Bluefin tuna catches were 443 MT in 1992, leaving 588 MT of the 1992-93 quota uncaught, 410 MT of which were caught by 21 October, 1993. There has been a significant shift in fishing areas, with some very large fish (300-550 kg) harvested. Swordfish landings in 1992 were 1546 MT and in 1993 the fishery is still in progress. About 50 of the licenses have been active in recent years. Shark and other tuna landings are monitored and Task I and II data were submitted for 1992, and shark summaries were submitted.

Research responsibility for both bluefin tuna and swordfish resides at the Biological Station, St. Andrews, New Brunswick. In 1992 and 1993, tagging studies and biological sampling continued. The ICCAT Workshop on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age was held at the Biological Station in St. Andrews. Historical CPUE series (1961-1992) have been analyzed for swordfish and used in the production model. In 1993, a biologist has been hired and considerable effort shall be given to the development of size-specific, standardized CPUE's for the Canadian swordfish and bluefin fisheries. A research program on sharks has been initiated at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia.

6.2 CôTE D'IVOIRE

Côte d'Ivoire no longer has large tuna vessels registered under their national flag. A small canoe fleet still exploits large pelagic fish, among them tunas, in the vicinity of coasts. This fishery has been described in documents presented to the 1992 SCRS (SCRS/-92/147 and SCRS/92/148). This fishery also exploits swordfish.

The port of Abidjan is the base for about 70 large purse seiners that land at this port all year round. These landings and transshipments are estimated at 150,000 MT/year.

The "Centre de Recherches Océanologiques" of Abidjan (CRO) conducts under different types of contracts the collection of fishing logbooks and multi-species size sampling on all the tuna purse seine vessels. The coverage rate of the fishing logbooks is always over 90%. The sampling rate is about one fish measured per ton landed. All these data are coded, collected, verified and transmitted on magnetic files.

There are some biological research programs. These are based on the good availability of tunas at the canneries located in Abidjan, with all the pertinent information on the place and date of fishing. Thus, within the framework of studies on yellowfin, Côte d'Ivoire has been able to identify the main spawning area of this species in the Atlantic.

Côte d'Ivoire is participating in the Billfish Program through extensive sampling of swordfish landed at Abidjan.

Côte d'Ivoire is also serving as correspondent for the recovery of tags. Thus, Côte d'Ivoire has also been able to recover, since 1988, as many as 15 large yellowfin tagged off the U.S. coast, which confirms the existence of important mixing of large yellowfin between the east and west Atlantic.

Côte d'Ivoire has also recovered as many as three tags on "transatlantic" blue marlins.

The CRO scientists at Abidjan presented four documents this year to the SCRS, concerning yellowfin migrations, by-catches of small tunas by purse seiners, the feeding ecology of tropical tunas, and the biometrics of yellowfin.

6.3 FRANCE

French tuna catches rose to 72,600 MT in 1992. The catch of bluefin tuna in the Mediterranean reached 5,970 MT, which represents a 31% increase in relation to the previous year. Fishing for albacore took place in the summer of 1992 by 47 boats using driftnets and 23 paired mid-water trawlers. These vessels landed 4,465 MT and 2,459 MT, respectively, of albacore, which represents the best French catch since 1979. In 1992, the catches of tropical tunas by the French tuna vessels reached 58,800 MT (31,500 MT of yellowfin, 20,100 MT of skipjack, and 7,200 MT of bigeye) with a declining fishing effort of purse seiners (withdrawal of five vessels) and for baitboats (withdrawal of two vessels).

French tuna research is carried out by the scientists of ORSTOM, for the tropical species, and by the scientists of IFREMER, for the temperate species of the Atlantic and Mediterranean. These two institutions collected and submitted to ICCAT the complete statistics of the French fleet. Research on tropical tunas, as well as on temperate species, has been carried out. This research has been included in several documents presented to the SCRS by the French scientists.

6.4 JAPAN

There are two types of Japanese fisheries, i.e., longline and purse seine, in the Atlantic in 1992. The longline fishery operated in almost the entire Atlantic, except for the middle latitudinal waters (15°-30° in both hemispheres) on the western side of the Ocean. The purse seine fishing grounds are located in the Gulf of Guinea. The Japanese 1992 total catch was estimated to be 47,365 MT, of which 94% (44,571 MT) were taken by the longline fishery. Among the species caught by longline, bigeye tuna accounted for the largest share, reaching 31,000 MT (70%), followed by bluefin tuna, swordfish and yellowfin tuna.

The National Research Institute of Far Seas Fisheries (NRIFSF) has been responsible for the compilation of fishery statistics. These data are routinely submitted to ICCAT for scientific research purposes. Research activities on biology and dynamics on Atlantic tunas and billfishes are also undertaken and continued by the same Institute. Among those, the Bluefin Year Program-related research is one of major activities. In 1992, NRIFSF scientists attended the ICCAT Working Group to Evaluate Atlantic yellowfin Tuna, ICCAT workshops on the Technical Aspects of Methodologies which account for Individual Growth Variability by Age and the 1993 SCRS, and the bluefin species group which met in September.

More detail information is given in the National Report of Japan (SCRS/93/125)

6.5 KOREA

The Korean fleet of tuna longliners that operated in the Atlantic Ocean in 1992 consisted of eight vessels which is the lowest number in recent years. The total catch of tuna and tuna-like fishes by the Korean longliners decreased from 1,876 MT in 1991 to 1,147 MT in 1992. Among the 1992 catches, bigeye tuna showed the highest catches (866 MT, about 75% of the total catches), followed by yellowfin tuna (219 MT, 19%). About 57 MT of billfishes were caught incidentally by longliners in 1992.

The National Fisheries Research and Development Agency (NFRDA) monitors all the fishing activities carried by Korean tuna fishery vessels to collect and submit fishery data to ICCAT. In 1993, the NFRDA began its research on tuna stomach contents to determine the diet of tunas.

6.6 MOROCCO

In 1992, total tuna catches off the coast of Morocco amounted to 4,518 MT, of which 88% was caught by the coastal fleet and only 12% by the traps. These catches are comprised mainly of swordfish and small tunas (frigate tuna and bonito).

Tuna fishing is carried out generally by small longliners mainly using gillnets, and by traps. The purse seine fishery also catches tunas, but more sporadically.

As regards tuna research, the "Institut Scientifique des Pêches Maritimes" (ISPM) ensures the collection of statistics of tunas and tuna-like species at the various landing points.

Currently, a program relating to the collection of size data on swordfish and small tunas and to longline fishing effort is in effect at the port of Nador.

6.7 PORTUGAL

Tuna fishing in Portugal takes place mainly in the areas off the Azores and Madeira, by the local baitboat fleet seasonally fishing tunas using live bait. A longline fleet, which targets swordfish, operates off the coast of continental Portugal, and in waters off the Azores and Madeira Islands.

In 1992, the catches of tunas and tuna-like species reached 15,427 MT, comprised of 5,473 MT of bigeye (35.5%), 7,471 MT of skipjack (48.4%), 1,638 MT of albacore (10.6%), 537 MT of swordfish (3.5%) and 308 MT of other species.

The total 1992 catch decreased by about 300 MT, as compared to 1991, and has continued for some years at a lower level than the catches of the recent past. This is due mainly to a very sharp decline in Azorian catches, while there has been an increase in catches by Madeira in 1991, which have remained at the same level in 1992.

Research activities, port sampling, and the collection of statistics continued satisfactorily as in the past.

A research program to study the efficiency of fish aggregating devices (FAD) is underway in the Azores. In 1993, three FADs were placed in the water, and this program will continue in 1994.

6.8 RUSSIA

In 1992, catches of tuna and Atlantic bonito amounted to 4,748 MT, including 1,862 MT of yellowfin tuna *(Thunnus albacares)*, 1,110 MT of skipjack *(Katsuwonus pelamis)*, 306 MT of Atlantic black skipjack *(Euthynnus alletteratus)*, 627 MT of frigate tuna *(Auxis thazard)*, 814 MT of bullet tuna *(Auxis rochei)*, and 29 MT of Atlantic bonito *(Sarda)*.

Purse seiners caught 3,628 MT. The fishing grounds were Sierra Leone (2,785 MT), Equatorial Guinea (540 MT), and the open central-east Atlantic (303 MT). Nine vessels were engaged in the fishery. By-catches of trawlers off northwestern Africa and in the southeastern Atlantic totalled 1,120 MT.

In 1992, biological samples were collected by observers on Russian purse seiners in the Sierra Leone area in February-May, and in the Gulf of Guinea in September-November. Sampled tunas were measured and weighed. The stage of gonad maturity, stomach contents and food composition were studied, and age and growth rate were estimated from the first ray of the first dorsal fin.

All data on catch, effort and size composition of tuna catches were submitted to the ICCAT Secretariat.

6.9 SOUTH AFRICA

Past under-reporting of South African tuna catches was corrected during 1993. Revised data show that South African albacore catches increased from 480 MT in 1979 to a maximum of 7,270 MT in 1987. After a decrease to 3,564 MT in 1991, as a result of the temporary exclusion of South African vessels from Tripp Seamount following Namibian independence, catches increased to 6,486 MT in 1992. This catch consists mostly of south Atlantic albacore, with a 126 MT by-catch of bigeye, yellowfin and skipjack tunas.

Research concentrated on the determination of length-weight and morphometric conversion formulae for south Atlantic albacore. Length-frequency data were also used to produce the raised catch-at-size table for South African albacore catches for the first time. Dynamic production model assessments were also conducted to show that this resource appears to have been exploited above an estimated MSY of less than 25,000 MT since 1985.

6.10 SPAIN

Spanish catches of tunas and tuna-like species rose to 150,657 MT in 1992, which represents a decrease of 10% with respect to the mean catch of the last four years (1988-91). The breakdown of catches by species are: yellowfin tuna (51,684 MT), skipjack tuna (51,083

MT), bigeye tuna (9,575 MT), albacore (20,074 MT), bluefin tuna (4,526 MT), swordfish (11,855 MT) and small tunas (1,860 MT).

During 1992, Spain participated in the international research programs on tunas (Characteristics of large pelagics in the Mediterranean), financed by the DG XIV of the European Community, in collaboration with IFREMER (France), IBMAC (Greece) and the University of Bari (Italy), as well as in the ICCAT Albacore Research Program.

Besides, observer cruises have been carried out on board purse seiners seasonally targeting bluefin in the Mediterranean and on the longline fleet fishing swordfish, in accordance with the observer program started in 1990.

Tagging cruises on juvenile bluefin have also been carried out in the Mediterranean, as well as studies on growth, reproduction, feeding, interaction between fisheries, and the relationship of the fisheries to oceanographic parameters, etc., for the different species caught.

In 1993, the ICCAT Working Group to Evaluate Yellowfin Tuna met in the "Centro Costero de Tenerife" of the Spanish Institute of Oceanography.

6.11 UNITED STATES

The total (preliminary) reported U.S. catches of tuna and tuna-like fishes (excluding billfishes) in 1992 were 25,562 MT. This represents a decrease of 580 MT (2.2% decrease) from 1991. Swordfish landings decreased 459 MT to 3,833 MT, and landings from the U.S. fishery for yellowfin tuna in the Gulf of Mexico increased in 1992 to 4,587 MT, up from 3,246 MT (revised) in 1991. Estimates of swordfish discarded dead (mainly fish < 25 kg) by the U.S. fleet in 1992 ranged from 302-659 MT. The 1992 Gulf of Mexico landings of yellowfin tuna accounted for 71% of the total U.S. yellowfin landings in 1992. U.S. vessels fishing in the northwest Atlantic landed an estimated 1,156 MT of bluefin tuna, a decrease of 425 MT compared to 1991. An estimated 44 MT of bluefin tuna were discarded dead by U.S. longline vessels. Skipjack tuna landings decreased by 186 MT to 525 MT, bigeye tuna landings decreased by 240 MT to 721 MT, and albacore landings decreased by 105 MT to 377 MT. A new experimental pelagic pair trawl fishery accounted for 29% of the total 1992 albacore landings with 109 MT being landed.

Major research activities on large pelagic species in 1992 and 1993 included continued monitoring of landings and size of swordfish; bluefin tuna, yellowfin tuna, and other large pelagic species; continuation of activities responsive to ICCAT recommended research, primarily directed at determining the reproductive biology of Atlantic swordfish, and bluefin tuna; development of methodologies to determine the genetic discreteness of large pelagic fishes in the Atlantic; joint planning for a U.S.-Japanese larval research cruise in the Gulf of Mexico during 1994; investigation into the development of new abundance indices for various large pelagic species; preparation for participation in the ICCAT intersessional meetings on: (a) tropical tunas (Tenerife, Canary Islands), evaluation of methodologies for converting catch at size to catch at age (St. Andrews, Canada), the 1993 bluefin stock assessment (Madrid, Spain); continuation of port and tournament sampling for billfishes and other pelagics; coordinating further increased efforts related to the ICCAT Enhanced Research Program for Billfish; continuation of bluefin larvae surveys; and further development of statistically based sampling programs for estimation of the recreational harvests of large pelagic species. Cooperators in the Southeast Fisheries Center's Cooperative Game Fish Tagging Program (CGFTP) tagged and released 7,985 billfishes and 1,870 tunas in 1992. This represents an increase of 2.6% over 1991 for billfish, but a decrease of 25.9% for tunas.

6.12 VENEZUELA

Tuna fishing in Venezuela is carried out using three gears: rod and reel, purse seine and longline. On the other hand, there is an artisanal fishery for marlins using longline and gill nets.

Of the tuna catches, the most important species is yellowfin tuna, which in 1992 represented an average of 75% of the total catches. During this same year, catches of yellowfin tuna reached 24,353 MT. The second most important species is skipjack tuna.

In 1992, size sampling was carried out on 12,965 tuna and marlins, which represented an increase of 61.68% with respect to 1991.

At present, research activities are being carried out on the analysis of catch and effort of the industrial fishery for tunas and marlins, as well as an evaluation

of the artisanal and sport fisheries on fish of the Isthiophoridae family.

The extended program on marlins is continuing and port sampling is carried out on landings in the central and eastern areas of Venezuela. An observer program is being carried out on-board vessels directed at swordfish and on boats that incidentally catch this species.

An observer program has been implemented on industrial purse seine vessels that operate in the western Atlantic.

6.13 CARICOM

At present, five CARICOM Member States are active in fishing for large pelagic species. These fisheries are largely artisanal, with recent developments in small-scale industrial longlining. All tropical tuna species, as well as several billfish and small tuna species are caught. The actual species composition of the catch varies among the islands, but tuna and tuna-like catches are generally minor. In 1993, a preliminary study investigated the use of various hard parts for ageing blackfin tuna, and concluded that the vertebra and otoliths were the most reliable parts for use in further studies on age validation.

6.14 TRINIDAD AND TOBAGO

In Trinidad and Tobago, large pelagic species are harvested by both industrial longline and smaller, artisanal vessels. The recreational fishery, which also targets billfishes and tuna, consists of 440 vessels. The longline catch is landed at the island's transshipment port, which is also used by a number of foreign vessels. Yellowfin tuna, bigeye tuna, swordfish, marlins and sharks comprise most of the industrial longline catch. Small tunas, such as Serra Spanish mackerel and king mackerel, as well as sharks, predominate the inshore, artisanal landings. Of the tuna and tuna-like species taken in the recreational catch, yellowfin tuna, blue marlin, sailfish and wahoo are most important. Currently, management oriented research is focussed on the coastal fishery for finfish and sharks.

7. Reports of 1993 Inter-sessional Scientific Meetings

- *Working Group to Evaluate Atlantic Yellowfin Tuna*

The Working Group met at the "Centro Oceanográfico de Canarias" (of the "Instituto Español de Oceanografía") in Tenerife, in June, 1993. The Report (COM-SCRS/93/16) was presented by its Convener, Dr. A. Fonteneau. The Working Group reviewed all the biological and statistical data accumulated in the past on yellowfin tuna and a catch-at-size base and catch-at-age base for 1975 to 1991 were created. Preliminary catch-at-size data for years prior to 1975 were also available. The Group, after some analysis, adopted a single Atlantic stock hypothesis and applied various production model analyses as well as VPA analyses. These results are compared and presented in the Group's report. The Committee was further informed that the Report provided basic information for the analysis of yellowfin tuna for the 1993 SCRS.

The Committee noted that considerable progress in yellowfin tuna research was made by this Group and commended the work of the participants, Convener and the Secretariat.

- *ICCAT Workshop on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age*

The Workshop met at the Biological Station of the Department of Fisheries and Oceans, St. Andrews, New Brunswick, Canada, in July, 1993. The Report (COM-SCRS/93/17) was presented by the Convener of the Workshop, Dr. J. M. Porter. The Workshop reviewed growth of various species and compared different methodologies of converting the catch at size to catch at age. These are tested with various tuna species, haddock and simulated data sets. The Workshop noted marked progress but, nevertheless, decided to continue further research along the lines established by the Workshop. It also proposed holding another meeting in early 1994.

The Committee noted the good progress made by the Wrokshop and commended all the participants and the Convener. Particular appreciation was expressed to

the outside scientists for their contributions at the Workshop. As regards the second meeting proposed by the Workshop, the Committee deferred its discussion to Item 16 of the SCRS Agenda.

- *51st Meeting of the Inter-American Tropical Tuna Commission* (IATTC)

Mr. J. Ariz (Spain) who attended the IATTC annual meeting in Vanuatu, in June, 1993 as a member of the Spanish Delegation, also represented ICCAT as an observer. He presented his report on the IATTC meeting as COM-SCRS/93/24. The Committee thanked him for representing ICCAT at the meeting and for reporting the results in detail. The observer from IATTC at this SCRS meeting thanked ICCAT for its participation and hoped that such mutual participation would continue in the future.

- *Annual meeting of the Indo-Pacific Tuna Programme* (IPTP)

Dr. J. L. Cort, Chairman of SCRS, presented his report (SCRS/93/25) on the annual meeting of the IPTP, held in Seychelles, in October, 1993. Dr. Cort, while attending this meeting as a member of the Spanish delegation, also accepted the responsibility of representing ICCAT as an observer. The Committee thanked him for reporting the results of said meeting.

8. Review of the Progress Made by the Program of Enhanced Research for Billfish

Document COM-SCRS/93/14, the Report of the 1993 Billfish Contributions and Expenditures, was presented to the Committee by the Western Atlantic Program Coordinator, Dr. E. Prince. It was noted that this Program has been supported by independent funding, and that research had been carried out according to the Program Plan throughout 1993. Details on the progress made in research are reported in SCRS/93/80 for the east Atlantic and in SCRS/93/102 for the west Atlantic. Most of the Program Plan had been accomplished and substantial improvement has been noted in billfish data.

The Committee noted that funding prospects have improved remarkably due to contributions received from U.S. NMFS and to other financial commitments made by various private organizations.

The Report was reviewed and adopted and is attached as **Appendix 5 to Annex 23.**

9. Review of the Progress Made by the Bluefin Year Program

The progress made by the ICCAT Bluefin Year Program (BYP) was reported by Dr. Z. Suzuki, the Western Atlantic Coordinator (COM-SCRS/93/15). There was no financing by the Commission for this Program and hence voluntary contributions (in terms of money and research) were solicited. Up to now, Canada, France, Greece, Japan, Spain and Turkey have reported on their research conducted in 1993 within the framework of this Program, the results of which are reported in several papers presented at this Session.

Dr. Suzuki also referred to a plan by Japan to send a research boat to the Gulf of Mexico and the Mediterranean Sea in 1994 to carry out research on the reproduction of bluefin tuna. Several plans for joint research with pertinent countries in these areas are scheduled. During the cruise of this research boat, he requested additional collaboration by various neighboring countries.

The Committee approved the Report, which is attached as **Appendix 7 to Annex 23.**

10. Review of conditions of stocks

YFT - YELLOWFIN TUNA

YFT-1. Description of Fisheries

Yellowfin is fished in the entire tropical Atlantic between 45°N and 40°S by surface gears (purse seine, baitboat and handline) and by longline.

The baitboat fisheries target juvenile yellowfin tuna which are associated, in mixed schools, with skipjack, juvenile bigeye tuna and small tunas in the eastern Atlantic, and with skipjack and small tunas in the western Atlantic. On both sides of the Atlantic, the baitboat fisheries have been exploiting yellowfin tuna in coastal areas (**YFT-Figure 1**). The average weight of the individuals caught by this gear is around 5 kg, with sizes ranging between 30 and 130 cm for the east and 40 and 125 cm for the west.

In the eastern Atlantic, purse seine fisheries have developed rapidly since the mid-1970's, basically targeting large yellowfin tuna in spawning concentrations of the Equatorial areas during the first quarter of the year, and targeting small yellowfin tuna that are caught in mixed schools in the same areas as the baitboats (**YFT-Figure 2**). The size ranges caught show a bimodal distribution with the modes defined at 50 and 155 cm, slight representation of intermediate sizes (70-100 cm), and the presence of large sizes (> 160 cm). The purse seine fisheries of the western Atlantic, with some exceptions, have developed in the coastal areas due mainly to the hydrological conditions of the area. The sizes caught show a smaller range than in the eastern Atlantic (40-140 cm) with a greater representation of intermediate sizes.

In 1991, the main purse seine fleets in the east Atlantic (France and Spain) developed fishing with floating objects. This fishing method has been a traditional type of purse seine fishing, but has been further developed by the placement artificial floating objects. This type of fishing resulted in greater catches during the last quarter of the year. In this period, 55% of the yellowfin tuna catches are made in association with floating objects, compared to 15%, the approximate average for previous years. The species and size composition of the schools associated with floating objects remains very constant, although, as the fishing area is located more offshore, small yellowfin, bigeye, skipjack and small tunas are caught together with a greater proportion of large yellowfin tuna than when fishing in association with natural objects.

The longline fisheries operate in a wide area between 15°N and 10°S, continuous throughout the entire Atlantic (**YFT-Figure 3**). The fishing area coincides with the distribution of the main fleets that use deep longline to target bigeye. At present, with the change in target species to bigeye and the almost total withdrawal of the Cuban, Panamanian, Taiwanese and Korean fleets, the importance of yellowfin tuna catches by these fisheries has been reduced extraordinarily. The catches by these fleets are comprised of large individuals with an average weight over 40 kg. For the western Atlantic, local longline fisheries have developed, such as the Brazilian fisheries of the southwestern Atlantic, which catch significant amounts of this species, even though the target species is not yellowfin, or the United States surface longline fishery in the Gulf of Mexico.

YFT-1.a Catches

YFT-Table 1 and **YFT-Figures 4, 5, and 6**, show the trends in yellowfin catches by gear for the east, west and total Atlantic, for the period 1961-1991.

In the last year, the total catch has declined to the level of 1989, after the historic record catches of 1990 and 1991. For the eastern Atlantic, a slight decrease is observed in the surface, purse seine and baitboat fleets, while longline catches continued the downward trend of recent years as a consequence of the continuous reduction of longliners in the area.

For the purse seine catches in the NEI category ("nowhere else included"), under which catches of vessels that fly flags of convenience are included, an alarming increase is observed (32%) in 1992. These catches are now higher than those of the total baitboat fisheries and similar to those of the French fleet (52%) and the Spanish fleet (32%), the most important purse seine fleets in the eastern Atlantic.

For the western Atlantic, two well defined periods are observed: one prior to the development of the surface fisheries (especially purse seine) which goes to the end of the 1970's with catches of about 13,000 MT; and a second period of the last nine years with catches close to 30,000 MT (**YFT-Figure 5**). During this second period, catches have remained stable with small fluctuations due to the movement of the surface fleets between the Atlantic and Pacific Oceans.

YFT-1.b Effort

YFT-Table 2 and **YFT-Figure 7** show the changes in nominal effort (carrying capacity) of the eastern Atlantic surface fleets for the 1972-1992 period.

The change in fishing effort is independent and very different for the two types of fishing. The baitboat fishery has maintained a very similar effort level throughout the series. On the other hand, purse seine effort increased continuously until 1984, when the low yields obtained on large yellowfin caused a drastic reduction in effort in 1985, due to the massive shift of vessels of the FIS (French, Ivorian and Senegalese) and Spanish fleets to the Indian Ocean. This reduction continued, although to a lesser degree, during the subsequent years. In 1989 and 1990, part of these fleets moved back to the Atlantic, with the ensuing increase in nominal effort, which decreased again in 1992.

However, in this fishery the change in nominal effort is not very indicative of the real effort which, in terms of fishing mortality, is exerted on the stock. Considerable data from the fishery (decrease in searching time, lesser proportion of null sets, greater catch per set, etc.) show that the technical improvements introduced in the fleets as well as increasing knowledge of the fishery by the captains are resulting in an increase in the fishing power of the purse seiners.

As regards the west Atlantic, **YFT-Figure 8** shows the change in effort of the Brazilian longline and baitboat fisheries from 1979 to 1991.

Surface fishing effort for the Venezuelan area increased in 1992 with the seasonal incorporation of new purse seiners from the Pacific Ocean.

As concerns longliners, U.S. fishing effort in the Gulf of Mexico has increased slightly in 1992, while Japanese effort has maintained its level of recent years.

YFT-2. State of the Stocks

The ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna discussed in depth the structure of the stock and, after analyzing the available data, reached the conclusion that the hypothesis of two independent stocks of yellowfin in the Atlantic, separated at 30°N was not sustainable. This decision of the Group was based fundamentally on: (a) the important number (23) of transatlantic recoveries of large yellowfin (+ 100 cm), tagged in the northwestern Atlantic and recovered continuously near the Equatorial spawning area; (b) the existing relation between the percentage of recoveries in the eastern and western Atlantic of those tagged fish, and the catches in both areas. Of the 23 recaptures of big fish tagged in the northwestern Atlantic, 19 (83%) have been recovered in the eastern Atlantic, which almost coincides with the 86% of the total catches of such large-sized fish (> 120cm) taken in the eastern in 1987-91; and (c) the non existence of spawning areas in the western Atlantic that are as important as those of the Equatorial area in the eastern Atlantic.

Consequently, the Group developed the hypothesis of one stock of Atlantic yellowfin tuna, with a principal, well-defined spawning area in the East Atlantic in the Equatorial area, a migration (not proven for the moment) of pre-adults from the eastern Atlantic towards the west, which would explain the scarce presence of intermediate size in eastern surface catches, and a spawning migration of adults from the west towards the equatorial spawning area in the eastern Atlantic. (**YFT-Figure 9**). This general scheme does not exclude the existence of other, minor spawning areas, in the eastern Atlantic as well as in the western Atlantic.

Following the Working Group's meeting, new information was presented to the Committee that, based on a comparative analysis of size distribution of catches from the eastern and western Atlantic, apparently contradicts the existence of a migration of pre-adults from the eastern to the western Atlantic. The Committee considered that research should be continued on the hypothesis developed by the Working Group on stock structure, even though the existence of an important migration of the adult stock was evident. It thus recommended, that for the assessment, the hypothesis of two totally independent stocks not be considered.

YFT-2.a.1 Equilibrium Production model

An assessment of the stock was carried out using the generalized production model (PRODFIT) considering the 1992 data, not available during the Yellowfin Working Group. The data used for the fit were the same data as those in the Group; total Atlantic catches and abundance indices of the principal purse seine fisheries of the eastern Atlantic, estimated from the catches of the FISM and Spanish fleets, and nominal

effort, in days fishing standardized to units of FISM category 5 purse seiners, supposing a constant increase in effective effort of 3% annually from 1980. This measure of effort was considered by the Committee in 1991 as that which best represented the effective effort on the stock.

Three trials were carried out for m=2 (Schaefer model), m=1 (exponential model) and estimated m, with a value of k=4.

YFT-Table 3 shows the data used for the fit.

YFT-Table 4 shows the results obtained. In all the trials, the estimated maximum sustainable yields are similar to, and consistent with, results obtained by the Working Group. The catches corresponding to 1992 would be very close to the MSY, while the level of effort, would be slightly above the effort corresponding to the MSY (**YFT-Figure 10**).

YFT-2.a.2 Non-Equilibrium Production Model

Production Models

A series of analyses were carried out using a non-equilibrium production model (ASPIC). The basic run (run A) was intended to approximate the single-stock hypothesis. The analysis followed the procedure used by the Working Group to Evaluate Atlantic Yellowfin Tuna (WGYFT) of June, 1993. Specifically:

- Data on catches from the total Atlantic were used (**YFT-Table 3**). The changes from the WGYFT analyses included minor corrections to the catch table and the addition of data for 1992.

- CPUE data were taken from the index based on surface CPUE of the FISM and Spanish purse seine fleets in the eastern Atlantic. This index has been used regularly by SCRS for production modeling of yellowfin. As in previous assessments, this index includes an adjustment for a 3% annual assumed increase in fishing power, from 1980 (**YFT-Table 3**). This index is available for the period 1969–1992. Changes from the WGYFT analyses included corrections, particularly of the 1990 point, and the addition of data for 1992.

In some cases, production model estimates can be sensitive to the assumptions made about the initial biomass level. To examine this possibility, two additional model runs were made. In run B, the initial (1969) biomass was estimated freely, rather than constrained to remain near or less than the carrying capacity (as in runs A and C). In run C, catches for 1963–1968 were added to the beginning of the data (no corresponding CPUE data were available). Thus in run C, the constrained starting biomass was further back in time from current values. The estimates from these two runs were within a few percent of those from Run A, indicating a lack of sensitivity to assumptions about initial biomass level.

A fourth run (D) was made with the same CPUE index but with eastern Atlantic catches only. This run was intended to provide continuity with past production-model analyses by SCRS. (As noted by the WGYFT, the CPUE indices presently available for the western Atlantic do not allow fitting a production model to estimate the status of a western Atlantic stock only). A sensitivity run (E) demonstrated lack of sensitivity to assumptions about the initial biomass.

Results of model runs A and D are summarized in **YFT-Table 5**. The total Atlantic model (run A) estimates that the stock is approximately fully exploited and that the present fishing mortality rate is close to F_{MSY}. **YFT-Figure 11** shows the fishing effort observed and estimated by the model for the entire Atlantic. The relative biomass and fishing mortality trajectories under the single-stock hypothesis are presented with approximate 80% confidence intervals in **YFT-Figures 12 and 13.**

Estimates for an eastern Atlantic stock (under the two-stock hypothesis) suggest a somewhat depleted stock (**YFT-Table 5**). The stock biomass is estimated to be at 65% of its optimum level, and the 1992 fishing mortality rate is estimated to be 147% of the optimum level. This model is illustrated in **YFT-Figures 14 to 16.**

YFT-2.a.3 Virtual Population Analysis (VPA)

The Committee maintained the results of the analytical assessment that the Group carried out on a catch matrix by age for the period of 1975-1991 (**YFT-Table 6**), considering 5 age classes (0-4) and a plus group in the 5+ class. The Group carried out two assessments, using both (1) VPA in "forward" form, on a quarterly basis, and (2) a separable VPA linked to a "backward" VPA on an annual basis. Both methods were used without calibration by means of external indices..

The possible biases that could occur in the assessments if they were carried out considering the age in years were discussed, since the strong seasonality of the spawning fishery (80% of the eastern Atlantic catches) and the high rates of natural mortality and exploitation on the stock, makes it advisable that an age unit smaller than year (quarter) be used in the analysis. The Committee considered it convenient to develop the means to allow this sort of analysis.

YFT Table 7 and **YFT Figures 17 to 19** show recruitment, fishing mortality, biomass and spawner biomass obtained by both methods. For the most recent years, consistency between the estimates of both methods is observed, while for the historic period (1975-1979) certain discrepancies are observed in the F trends and estimated biomass, especially important in the case of the biomasses, whose causes are still to be determined. Notwithstanding, the two methods coincide in the present diagnosis of the state of the stock. According to both assessments, the actual recruitment would be at a mean level of around 63 million yellowfin tuna. Throughout the series, recruitment, descending in the first years, was maintained with variations without a trend around this mean value. Equally, the estimated fishing mortality would be near to the mean values of the years of heavy exploitation, without reaching the high values of 1982 and 1983.

The biomasses and the spawner biomasses maintain a descending trend, from 1989, after an important recovery during the period 1984-89 as a consequence of the drastic reduction in fishing effort on the eastern Atlantic stock.

The results of the assessment, however, did not reveal the effect of the wide extent of fishing with floating objects in 1991 and 1992 on the juvenile stock, as it did not include the year 1992 and the estimates of the VPA for 1991 were not calibrated by external indices. However, the possible increase in the catches of juveniles did not show neither in the mean weight of the purse seine catches, nor in the proportion of individuals of age 0 in the catch (**YFT-Figure 20**). On the other hand, the estimates of the species composition of the catches of small fish landed at the port of Abidjan for the local market suppose a percentage not larger than 3% for yellowfin tuna. All this seems to support the results of the VPA that do not show an increase in the fishing mortality on juveniles in 1992.

YFT-Figure 21 shows the partial fishing mortality for the eastern and western Atlantic obtained from the F's estimated by the forward VPA. As in previous assessments carried out under the hypothesis of two stocks in the Atlantic, the same scheme of exploitation is maintained for the eastern Atlantic: heavy exploitation on the spawning stock and to a lesser degree on juveniles, and weak mortality on the pre-adults. On the contrary, in the western Atlantic, greater mortality is observed on pre-adults and the first few mature ages. The fact that the surface fisheries of the eastern and western Atlantic are directed at different age groups must be borne in mind when analyzing the results of the evaluations carried out considering a single Atlantic stock and specially of the yield per recruit analysis, since the changes in global yield will have a different effect on both sides.

The Group also evaluated an alternative VPA method, using the FADAPT program, to analyze the catch matrix by age. This approach requires fewer assumptions about recruitment or levels of input of F, because it permits calibration ("tuning") by means of external indices of abundance.

Due to restrictions in the present version of FADAPT, a constant natural mortality of 0.7 was assumed, rather than the usual assumption of $M=0.8$ for ages 0 and 1 and M of 0.6 for older ages. Six indices were used for tuning; four were based on the purse seine catch rates on ages 1, 2, 4 and 0-5+, while two were derived from longline catch rates from the western Atlantic (ages 3 and 4) and the eastern Atlantic (ages 4 and 5+). Successive runs of FADAPT were performed, with each index being iteratively reweighted, based upon the inverse sum of squared residuals. The series of indices and the relative weights assumed in the final run are shown in **YFT-Figures 22 and 23** and in **YFT-Table 8a.**

The results of FADAPT generally followed the same trends produced by both the backward and forward VPA analyses (**YFT-Figure 24, YFT-Table 8b**). Although there was an overall, slight increase in estimated F, this may be due to the assumption of constant natural mortality. During the 1975-1979 period, estimated F values from FADAPT exceeded those of the other two methods. An examination of nominal catch levels indicated that FADAPT followed the catch trends more closely during this time period than did either the backward or forward approaches. The estimated F in the terminal year from FADAPT substantially exceeded that from the other methods. The reason for this was unclear, but may have been related to assumptions made regarding the exploitation profile in the terminal year.

The Group felt that the FADAPT approach showed promise and recommended that there be

further investigation of its application to yellowfin, including possible modifications to address the problem of strongly seasonal catches.

YFT 2.A.4. Yield per Recruit

From the fishing mortality vectors estimated by the "forward" VPA method, yield per recruit analysis was carried out. The estimated values were taken assuming that the stock was subjected to heavy exploitation, as the current information on the stock appears to show, and to a low level of exploitation. This second assumption contemplates the possibility that there exists a stock biomass, unaccessible at present, that could change considerably the results of the current assessments. This situation would be similar to that which occurred in the mid-70's, when the purse seine fishery extended towards the high seas, making accessible the spawning biomass not taken into account in previous analyses. In both suppositions runs were carried out under the hypothesis of a single stock and multi-gear yield per recruit analyses were also carried out for different components of the stock.

YFT-Table 9 and YFT-Figure 25 show the yield resulting as a function of the effort and the size at first capture for the Atlantic stock. Under the supposition that the stock is heavily exploited, it is observed that the current F would be at the level of the F_{max}, so that increases in the effort would produce decreases in the yield. On the contrary, if the size at first capture were increased, the yield could be increased. The increase in the size at first capture to 1.5 years would suppose a 15% increase in yield. If size at first capture is estimated in weight, a similar increase would be produced if yellowfin below the minimum size of 3.2 kg adopted by the Commission were not caught. In the case of the stock being subjected to a low level of exploitation, major benefits would be obtained by increasing effort.

YFT-Table 10 and YFT-Figure 26 show the changes in the yield of the western Atlantic stocks and the spawning fisheries of the eastern Atlantic by increasing the fishing mortality on the juvenile stock. As would be expected on the basis of the different exploitation schemes, important gains are observed in the yield in the western Atlantic and in the spawning stock in the eastern Atlantic, if fishing mortality on juveniles declined. **YFT-Figure 27** shows the partial F's considered in the calculation of yield per recruit.

YFT-3. Effects of Current Regulations

The adoption, in 1973, of a minimum size regulation of 3.2 kg for yellowfin has not resulted in a reduction in fishing mortality on juveniles that, at the present time, make up 40% of the total catch. If this reduction occurred, it would represent an increase of close to 15% in the yield of the stock. However, it must not be forgotten that small yellowfin are fished in the juvenile concentrations associated with small skipjack and bigeye tunas. Thus, any reduction in the catches of yellowfin tuna could only be obtained by considerably reducing the skipjack tuna catches, the main component of the catches of these mixed schools.

YFT-4. Recommendations

The Committee endorsed all the recommendations of the ICCAT Working Group to Evaluate Atlantic Yellowfin tuna and, after analyzing the data presented after the meeting of the Group, further recommended that:

i) Analyses to identify possible components of the stock and the mixing rates be continued.

ii) Work be continued on obtaining abundance indices for the western Atlantic.

iii) Trials be carried out to standardize the effort of purse seiners in the eastern Atlantic by means of GLM models.

iv) Solutions be sought to allow using assessment methods with calibration on a non-annual age basis that, for yellowfin tuna, may result especially convenient, given the possible biases that may be introduced when annual estimations are carried out on a stock whose catches present strong seasonality and are subjected simultaneously to a high M value and to heavy exploitation.

v) Further research be conducted on production models, and their underlying assumptions, particularly concerning the different forms of production curve, and the use of the equilibrium assumption with effort smoothing.

vi) Taking into consideration the results of the above research, an attempt be made to adapt the ASPIC model or a similar model to encompass other production curves.

YFT-5 Management

Under the single Atlantic stock hypothesis the two production models, an equilibrium production model (PRODFIT) and a non-equilibrium production model (ASPIC), which were used to carry out a global assessment of the stock, show a situation very similar for Atlantic yellowfin that catches in 1992 were near to MSY and that the level of effort, in the last two years, was slightly higher than the effort corresponding to MSY. These results coincide with the fishing mortality estimated by the VPA, which for 1991 presents a mean F near to the mean F's corresponding to the period of heavy exploitation. As for the exploitation pattern, no variation is noticed in 1991 to indicate an increase in fishing pressure on juveniles as a consequence of the increase of fishing with artificial floating objects.

In this situation, sustained increases in effort should not correspond to sustained increases in the catches. Therefore, it is recommended that the current level of effort on Atlantic yellowfin tuna not be increased.

The results of the production models applied to a single Atlantic stock show a situation of the stock very similar to that of recent past years for the eastern Atlantic. On the contrary, the yield-per-recruit analysis carried out show very different conclusions from those normally obtained for the eastern Atlantic. When two independent stocks were considered, the scarce presence of intermediate sizes in the catches of the surface fleets of the eastern Atlantic meant that the yield per recruit was hardly sensitive to increases in the size at first capture as a large part of the fish that were not caught as juveniles would not be fished as pre-adults. However, under the single-stock hypothesis developed by the Yellowfin Working Group, the yield-per-recruit analysis shows notable gains in yield by increasing the size at first capture. By estimating the relation between age and weight, an increase of more than 15% can be expected in the yield of the western Atlantic and of the adult stock of the eastern Atlantic if yellowfin tuna below 3.2 kg were not caught. Therefore, the Committee insists on the advantage of maintaining the said minimum size.

BET - BIGEYE TUNA

BET-1.Description of fisheries

Bigeye tuna are widely distributed in the tropical and temperate waters of the Atlantic Ocean, between approximately 45°N and 45°S. The presence of juveniles is only observed in the Gulf of Guinea, the only presently known nursery. Adult bigeye tuna are mainly exploited by longline between 15°N and 15°S. The principal fishing areas are located in the central and eastern Atlantic.

The stock is exploited in the entire area of distribution by different fleets and fishing gears: longline, purse seine and baitboats.

The main fishery for bigeye tuna (about 60% of the catches) is the longline fishery which operates during the whole year in the entire area of distribution. The longline fishery exploits adult bigeye tuna (weighing about 40 kg or more). Since the late 1970's, Japanese longliners directly target bigeye tuna using deep longlines and concentrate their effort in the time-area strata where the density of bigeye tuna is higher. Since 1980, Korean longliners began targeting bigeye tuna using deep longline. The same situation occurs for the Taiwanese longliners from 1990.

Of the surface fisheries, many local baitboat fleets seasonally target bigeye tuna in the areas of the Azores, Madeira and Canary Islands. These fisheries of the northeastern Atlantic islands exploit mainly pre-adult or adult bigeye tuna (average weight of approximately 30 kg).

The Dakar-based baitboats, which fish off Senegal and Mauritania, seasonally catch medium-sized pre-adult bigeye tuna. (The mean weight observed for bigeye tuna taken by the Dakar-based baitboats was about 10 kg).

In the eastern tropical Atlantic, the purse seine and baitboat fleets take juvenile bigeye (mean weight of approximately 5.5 kg for the purse seiners and 2.5 kg for the Tema-based baitboats) which form mixed schools with skipjack and juvenile yellowfin. These last two fisheries do not directly target bigeye, but each year take significant amounts of juveniles, especially in terms of number of fish.

Since 1990, an increasing use of artificial floating objects has been observed in the tropical surface fisheries. The change in fishing strategy of these fleets due to the use of aggregating devices has caused an increase in the catch of juvenile bigeye tuna, simultaneously with the expansion of the purse seine fishing

area towards the west along latitudes near the equator, following the drift of the floating objects. (**BET-Figures 1 and 2**). Significant catches of small bigeye by purse seiners to the south of the Equator (to 5° South) in relation to artificial floating objects has also been observed in 1991 and 1992.

BET-1.a Catches

The annual catches of bigeye tuna, from 1962 to 1992, by country and fishing gear, are given in **BET-Table 1**, and the total catch, by gear, from 1950 to 1992 is shown in **BET-Figure 3**.

BET-Figure 4 shows the areas of operation and the size ranges characteristic of each gear. **BET-Figure 5** shows the changes in annual catches of these gears for 1975-1992.

The total catch in the Atlantic increased regularly to 63,800 MT in 1974 and then showed a declining trend until 1979 (45,100 MT). In the following years, the catches gradually increased, reaching a maximum of 74,600 MT in 1985. They then decreased to 48,800 MT in 1987, and increased in the following years and are currently at a level of 72,000 MT (1992 preliminary figure).

The decrease in catches observed in the period 1986-1988 is mainly due to a decrease in the longline catch, but a decrease was also observed for the surface gears.

The between-year variability observed in the catches of bigeye tuna is mainly a result of the longline operation whose catches have represented 60 to 70% of the total up to 1990. This predominance of the longline in the bigeye catches has been the case since the beginning of this fishery in the Atlantic Ocean as well as in other oceans. The longline catch for 1991 is the lowest observed in the last 5 years, but the preliminary data for 1992 show an increase in these catches in relation to 1991. As a result of the increase in the catches of the surface gears in 1991 and 1992, the longline catches represent only 49% and a 54%, respectively, of the total bigeye catch during these two years.

The strong between-year variability observed in the Portuguese and Canary Island catches is most probably linked to the variations in the local hydrological conditions.

Regarding surface gears, the catches showed a increasing trend from 1989, and the catch for 1991 (35,000 MT), is the highest recorded for the history of the fishery. The surface catch of 1992, of 33,100 MT (preliminary figure) is at the same level as that of 1991. This reflects the continuous increase observed in the purse seine catches since 1989, which reached a record high of 21,300 MT in 1991, and which corresponds to 29% of the total catch. The 1992 catch, 20,100 MT, corresponds to 27% of the total of the catches.

BET-1.b Effort

The decline in the longline catches observed in 1986 and 1987 was caused by the decrease in the number of Japanese and Korean longliners in the Atlantic during this period. This situation has reversed since 1988 and, in 1991 and 1992, the number of Japanese longliners that operated in the Atlantic was the highest of the last seven years. In contrast, the number of Korean longliners has continued to decrease in recent years.

Fishing effort of FIS baitboats based in Dakar continued to decline, following the trend observed during several years. In the baitboat fisheries of the Azores and Madeira, fishing effort has increased in 1992, following the trend observed during the last few years.

The decrease in purse seine catches, observed from 1985 to 1989, is due to the decrease in effort which occurred after 1984, following the departure of part of the purse seine fleet to the Indian Ocean. Since 1985-1986, the number of purse seiners in the Atlantic has increased, which resulted in a regular increase in nominal effort and in their catches, that have also increased principally since 1990.

BET-2. State of the Stocks

The state of the bigeye stock was analyzed using the hypothesis of a single stock in the entire Atlantic. A single bigeye stock hypothesis is made mostly in view of the fisheries data, the geographic distribution of the species, the tagging results, the location of the spawning areas known in the tropical area between 15°N and 15°S, and in view of the fact that the only nursery known for young bigeye is found in the Gulf of Guinea.

The only abundance indices used for the bigeye stock are those calculated from the catch rates of the

longline fishery, which directly targets bigeye tuna in the entire Atlantic. In fact, since the surface fisheries only catch bigeye seasonally or incidentally, and since they only catch certain sizes, their CPUE indices are not considered representative of the total stock abundance.

The CPUE of the seasonal fisheries of the northeastern Atlantic islands reflects the local abundance of a fraction of the stock, and is subject to variations caused by local hydrological conditions. This situation is illustrated in **BET-Figure 6**, which shows the changes in CPUE of Azorean baitboats from 1979 to 1992, during the second quarter, when this species is fished. The CPUE shows a declining trend in recent years. The strong influence of the hydrological conditions on this fishery indicates that this trend may not correspond to the adult stock abundance.

As concerns the FIS baitboat fishery, its CPUE, although seasonal, is less influenced by environmental changes (**BET-Figure 7**). The increase observed in CPUE during recent years is related, in part, to a change in the fishing strategy (fishing with aggregating devices) and to an increase in the efficiency of the fleet. For this type of fishing, vessels are constantly associated with a school of tuna during several months, and a part of the school is caught each day.

The CPUE of the purse seiners can be interpreted as an abundance index for juvenile bigeye. The CPUE of the FIS purse seiners also shows a slight decrease with important fluctuations for the 1969-1992 period (**BET-Figure 8**). A slight increase in the CPUE was observed in the last two years, but seems to have been linked to the development of artificial floating objects by purse seiners and to the extension towards the south of bigeye fishing zones.

Standardized CPUE was newly developed for the Japanese longline fishery using the General Linear Modelling (GLM) approach. This was done in response to the recommendation made last year. Factors considered in this analysis are year, month, area, and by-catch information for whole history of the fishery. Information on gear configuration (regular or deep longline) was also included for the years 1975-1992. Since the Japanese longline fishery has quickly changed the gear configuration (**BET-Figure 9**) trying to increase the catch of bigeye tuna, data which can be used to adjust this shift are limited to several years' observations. In this sense, the estimated abundance should be interpreted with caution.

The trend of the estimated index (**BET-Figure 10**) is similar to the Honma index, but does differ for the years after 1975. The new index shows a decreasing trend while the Honma index increases gradually. The current abundance for the 1988-1992 period is about 60 percent of that in the initial stage of this fishery (1961-1965).

The trend of this new index seems more representative of the probable trend of the biomass of the stock than the Honma index, whose upward trend could be explained by the introduction of a bias in the method of fitting the effort of deep longline to that of traditional longline.

The average rate of fishing mortality as a function of age, estimated by cohort analysis for the 1976-1990 period, indicates that in the recent period fishing mortality is at a relatively high level for the young age classes 1 and 2, due to the tropical surface gears. For the adults, ages 4 +, fishing mortality is still at a relatively high level for the historical period, mainly due to the longline fishery.

Fishing mortality observed for 1991 (**BET-Figure 11**) shows increased fishing mortality on juveniles, due to the tropical surface gears. This situation will probably continue in 1992, during which the catches of juvenile bigeye by the purse seine are important. Fishing mortality on adult fish, is still at a high level, but declined to the level of that observed during the 1986-1990 period (**BET-Figure 12**).

Natural mortality variable with age, which is higher for juveniles in the first two years (M= 0.8) and lower in the following years (M= 0.4), has been postulated for the cohort analysis.

Bigeye yield per recruit analysis indicates that, under the current exploitation scheme, yield could be increased significantly (about 15%) by increasing fishing mortality. On the contrary, a change in the age at first capture may have little effect on the yield per recruit (3% potential increase), unless it is accompanied by a combined increase in fishing mortality (**BET-Figure 13**).

Multi-gear yield per recruit analysis suggests that, under the current exploitation scheme, significant gains could be obtained if the increase in fishing mortality of adult bigeye tuna is accompanied by a simultaneous decrease in mortality on juveniles (**BET-Figure 14**). On the contrary, if an increase in fishing mortality on juveniles occurs simultaneously with a decline in mortality on adults, a decline in yield per recruit may be observed.

An updated production model analysis (PRODFIT), fitted to the data for 1961-92, estimated

a MSY of 69,500 MT (Fox exponential model, m=1). This analysis suggests that the catches in 1992, were slightly higher than the estimated MSY (**BET-Figure 15**).

The production model analysis also indicates that current fishing effort on bigeye tuna is at slightly lower level than optimal fishing effort (f_{opt}) estimated by the model to arrive at the MSY, which has always been the case in the previous analyses by this model.

Two fits of the ASPIC non-equilibrium production model have also been done on bigeye data. The first fit assumed a constant catchability for the entire time series 1961-92.

The results of the model (equivalent to a logistical model m=2) shows a less optimistic estimate of the state of the stock and estimates the MSY at 65,000 MT. The recent catches, since 1989, seems therefore to have surpassed the MSY estimated by the ASPIC model. On the other hand, the estimate of the stock biomass starting in 1993 is slightly lower than optimum level and the 1992 fishing mortality rate seems to have surpassed by about 28% the optimal level (**BET-Figure 16**).

A second fit of the ASPIC model has been done on two time series, 1961-74 and 1975-92, to take into account the use of the deep longline and a probable change in the catchability. This assessment estimates the MSY at 69,500 MT, a value which is comparable to that estimated by PRODFIT. The catchability calculated by the model is 0.001057 (1961-74) and 0.000965 (1975-92). The relative biomass and the rate of fishing mortality estimated by the model, are shown in **BET-Figure 17**.

BET-3. Effects of Current Regulations

The bigeye minimum-size regulation of 3.2 kg has been in effect since 1980, which was adopted to reinforce the yellowfin regulation. It has been reported in recent years that the tropical surface fleets (baitboat and purse seine) continue to land a large number of juvenile bigeye tuna. This trend has increased in 1991-1992 (**BET-Figure 18**).

Under the present conditions, the analyses indicate that the minimum size regulation of 3.2 kg would provide little gains in yield per recruit for bigeye tuna. This regulation is quite difficult to put into force since juvenile bigeye are caught mixed with skipjack and yellowfin. Nevertheless, given the current high exploitation rate on bigeye, the limit on juvenile catches is a useful objective to improve the state of the stock.

BET-4. Recommendations

A series of recommendations which also concern bigeye tuna are presented in the yellowfin and skipjack species sections. the Committee also recommended that:

BET-4.a Statistics

i) The increasing use of deep longline fleets poses problems for the standardization of the longline data. It is recommended that the relevant information on this aspect from all the longline fisheries be made available to the Committee.

ii) Evaluate the species composition and the volume of bigeye catches in the landings at African ports.

BET-4.b Research

i) An abundance index be generated that encompasses information on the bigeye surface fisheries. This should include analyses on the apparent variability of recruitment based on the CPUE of age-classes 1 and 2 from FISM and Spanish purse seiners in the coastal areas, and on the CPUE by size class and by limited time-area strata, for purse seiners as well as for longliners.

ii) Research on changes in gear efficiency between traditional and deep longline operations be continued in order to calculate the effective effort exerted on bigeye tuna.

iii) Studies on the influence of the environment on bigeye CPUE should be developed.

iv) Recruitment indices should be developed for bigeye tuna, based on the purse seine fisheries for those which long series are available.

BET-4.c Management

According to the available assessment results, there are few potential benefits to increasing the age at first capture, in the current situation. However, the Committee recommended maintaining the regulations currently in effect, taking into account the increase in purse seine fishing effort and that the increased use of artificial floating objects increases the catch of juveniles. Thus, the current regulation is always useful for improving the yield per recruit of the stock.

SKJ - SKIPJACK

SKJ-1. Description of fisheries

Skipjack tuna is a cosmopolitan species distributed in the tropical and sub-tropical waters of the three oceans.

Skipjack tuna are caught almost exclusively by surface gears in the entire Atlantic Ocean, although by-catches of skipjack taken by longline are minor. In the eastern Atlantic, the major fisheries are purse seine, especially those of the Spanish and FIS fleets, followed by the baitboat fisheries of Ghana, Portugal, Spain, and the FIS fleets. The skipjack fishery underwent important changes in 1991 with the introduction of floating objects and the expansion of the purse seine fishery towards the west, at latitudes close to the equator, following the drift of floating objects. These changes have resulted in an increase of the exploitable biomass of the skipjack stock (due to the expansion of the fishing area), whereas the usual length distribution of the catches has been maintained. In the western Atlantic, the most important fishery is the baitboat fishery, comprised almost exclusively of Brazilian, Cuban and Venezuelan vessels. As regards the purse seine fisheries, whose overall catches are much less important than those of the baitboat fisheries, catches were only taken by the Venezuelan, Spanish, and U.S. fleets.

SKJ-Figure 1, shows the size distributions of skipjack catches by the principal Atlantic fisheries.

SKJ-1.a Catches

Catches, by gear, in the eastern and western Atlantic are shown in **SKJ-Table 1** and **SKJ-Figures 2 and 3**.

Eastern Atlantic skipjack catches in 1991 were the highest for the historical period. Although catches in 1992 decreased by 24.6% with respect to the previous year, they continued to be high (146,000 MT). This decline in the eastern Atlantic is due, almost exclusively, to the decline in purse seine catches (from 117,400 MT to 77,600 MT). The catches of the principal eastern Atlantic fisheries are shown in **SKJ-Figure 4**.

As regards the west Atlantic, there has been a slight decline in catches, due to the catches by the baitboat fleet, remaining at the level of recent years. The catches by the purse seine fleet remained at the 1991 level. **SKJ-Figure 5** shows the catches by the principal western Atlantic fisheries.

SKJ-1.b Fishing effort

As regards fishing effort, there is no information available on effective skipjack effort. As in other years, vessel carrying capacity has been used as a measure of nominal effort for the eastern Atlantic (**YFT-Table 2**). Carrying capacity is not an ideal measure of effort, since it does not take into account the increase in fleet efficiency, fleet interaction, etc., since only the load capacity of the wells of the vessels was taken into account.

Nominal effort, in days fishing of the FIS and Spanish purse seine fleets was calculated, standardized to category 5 FIS purse seiners. The total effort was obtained by multiplying the sum of the standardized fishing times of the two main purse seine fleets, by an annual weighting factor equal to the ratio between the total catch and the catch of these fleets. Besides, after 1980, an increase of 3% in the fishing power of these fleets, constant from one year to another, was assumed. This factor, established in document SCRS/92/38 for yellowfin, attempts to adjust the nominal effort to real effort (fishing mortality), in order to adjust the continuous increase in the efficiency of the purse seiners.

SKJ-Figure 6 shows the change in total carrying capacity, and by fleets, for the eastern Atlantic.

The maximum carrying capacity was reached in 1983 (81,800 MT), and since then there was slow decline until 1988 (43,800 MT), due to the massive movement of vessels of the FIS and Spanish purse seine fleets towards the Indian Ocean. Afterwards there were slight increases in 1989 and 1990, and a moderate increase in 1991 to 56,600 MT, which is still considerably less than that of 1983. In 1992, there was another slight decline in carrying capacity, to 55,700 MT.

Due to the lack of data on carrying capacity, estimates of total nominal effort for the western Atlantic could not be carried out, although there are indications that there has been a slight increase in effort, due to the increase in the number of purse seiners from the Pacific Ocean and to the stability of Brazilian baitboat fleet effort.

SKJ-2. State of the Stocks

Up to now, studies carried out on skipjack stock structure in the Atlantic have not provided definitive information on stock structure to make it possible to divide the resource into smaller units. Two management units have been assumed: in the eastern Atlantic and in the western Atlantic, due to the absence of transatlantic tag recoveries.

SKJ-2.a East Atlantic stock

The last detailed skipjack stock assessment for the eastern Atlantic was carried out in 1984 by the Working Group on Juvenile Tropical Tunas. For these analyses, data and parameters obtained mainly during the International Skipjack Year Program were used. The results of this evaluation showed that the stock was under-exploited, just as the Group, and later the SCRS, had assumed.

In observing the change in vessel carrying capacity, it is noted that at the time of the assessment, the fishery supported the highest levels of exploitation of the historical period. Vessel carrying capacity in 1983 was 81,800 MT, while it is currently at 55,700 MT, which represents a 32% reduction. This decline in recent years, with respect to the time when the assessment was carried out (1984), might not have been accompanied by a similar drop in effective effort, taking into account the increase observed in the individual fishing power of the purse seiners and the important change that occurred, at the end of 1990 and during 1991, in the pattern of skipjack exploitation, due to the massive introduction of floating objects, especially by the purse seine fleets (about 75% of the catches made in association with floating objects are of skipjack).

It is noted that the reported catches are underestimated, as a consequence of fishing with floating objects, since small sized tunas, among them skipjack, are discarded.

SKJ-Figures 7 and 8 indicate the changes in the fishery, which shows the relation between catch and carrying capacity for baitboats and purse seiners in the eastern Atlantic.

As regards parameters such as CPUE, it is advisable not to interpret their changes as an index of skipjack stock abundance, since it can be considered an index of the biomass of the stock, only if the catchability is maintained constant from year to year.

In recent years, there have been changes in the fishing strategy of the FIS purse seine fleet. During 1984 and 1988 effort was concentrated in the time-area strata with high skipjack concentrations and consequently, high yields of this species were obtained, which were maintained during this five-year period. However, skipjack CPUE by the Spanish fleet show continuous fluctuations with an increasing trend **SKJ-Figure 9)**.

The Spanish fleet (since the last quarter of 1990) and the FIS fleet (since early 1991) have started the massive use of artificial flotsam to aggregate the schools, mainly in the equatorial area (6°N-5°S and 3°W-20°W). This activity has been maintained at present. This change in fishing strategy has not changed the size distribution of skipjack catches **(SKJ-Figures 10 and 11)**, but it has changed the fishing area, which has extended towards the west and south, following the drift of floating objects **(SKJ-Figures 12, 13, 14 and 15)**.

SKJ-Figure 16 shows the relation between the eastern Atlantic catch and effort. A constant increase in effort is noted during the 1969-1983 period. Later, a significant decline is observed, due to the withdrawal of the purse seine fleet from the fishery, and finally, for the period corresponding to the latest years, there is a very important increase in the catch. As regards CPUE, there was a significant decline between 1969 and 1975, remaining stable thereafter. It should be noted, however, that effort is not directed primarily at skipjack.

In the baitboat fishery of the Azores Islands, which is the northern limit of the skipjack fisheries, the fluctuation of CPUE, with no trend, is much more marked, although in recent years it has remained at lower levels than normal (**SKJ-Figure 17**). This is probably due to the influence of environmental changes. The recent environmental changes in other areas have had a favorable effect. Such is the case of the Madeira Islands, where after various years of practically null catches, the fishery has again developed.

No definitive conclusion can be reached on the state of the eastern Atlantic stock, since the important increase in the catches could be due to various reasons: an increase in the available biomass, an increase in fishing mortality due to an increase in catchability, changes in fishing strategy, etc.

SKJ-2.b West Atlantic stock

Skipjack catches in the western Atlantic remain stable, for the various Venezuelan fleets (**SKJ-Figure 18**) as well as for the baitboat fleet of Brazil (**SKJ-Figure 19**). The low variability of the CPUE's, compared with the large fluctuations that are normally found in the catches of this species, would confirm the local character of these indices.

SKJ-3. Effects of Current Regulations

There are no regulations of any type in effect for skipjack.

SKJ-4. Recommendations

SKJ-4.a Statistics

i) Continue and improve the evaluation on the volume of the catches of small-sized tunas that are landed at the port of Tema, as well as an estimation, through multi-species sampling, of the proportion of skipjack in these catches.

ii) Attempt to estimate the discards of skipjack of the purse seine fleets, in spite of the difficulties that this would cause.

iii) The Working Group on Western Atlantic Yellowfin, which was held in 1992, resulted in considerable improvements in statistics, which were not continued the following year. Therefore, it is recommended that the countries in this area continue to provide the necessary data.

iv) Improve the sampling quality in the southwestern Atlantic in general and for Brazil, in particular.

v) The Secretariat update and improve the current tables on the carrying capacity of the purse seine and baitboat fleets in the east Atlantic, and create similar tables for the west Atlantic. For this purpose, the countries concerned should provide the historical data on the composition of their fleets.

vi) That the Secretariat maintain information on the market prices of skipjack, as such information would be helpful in knowing the target species each year.

SKJ-4.b Research

i) Improve knowledge on the associations of tropical tunas with (artificial and natural) floating objects, marine mammals, etc., in order to determine the repercussions that these interactions can have on the assessment of these species.

ii) Attempt to assess this species, carrying out the calculations with the current species compositions, which were not available when the last assessment was carried out.

iii) Carry out complementary research on skipjack reproduction in the west Atlantic.

iv) Analyze the changes in effective effort, caused by the decline in competition between vessels due to the decrease in the number of vessels and to the increase in purse seine vessel efficiency with the introduction of bird radars and generalized fishing with artificial objects.

v) Continue research on the effect of environmental factors on abundance, recruitment and availability of skipjack. This would benefit new assessments of the skipjack stocks, particularly from an analytical standpoint.

SKJ-4.c Management

It is not known if the high catches of 1991 can be maintained, but due to the lack of conclusive analysis, no management measures are presented.

ALB - A L B A C O R E

ALB-1. Description of fisheries

ALB-1.a The fisheries

It is currently accepted that the Atlantic albacore resource consists of northern and southern stocks, separated at 5°N latitude. Up to now, there have been no studies suggesting that this hypothesis be changed. Two recent GFCM/ICCAT Expert Consultation meetings confirmed that albacore in the Mediterranean should be considered to be a third separate stock.

Geographic distributions of the main albacore fisheries in the Atlantic and Mediterranean are shown in **ALB-Figures 1 and 2.**

North Atlantic

North Atlantic albacore are exploited by surface and sub-surface gears.

-- Surface fisheries

All surface fisheries generally catch juveniles and pre-adult albacore (2-15 kg), except in the Canary Islands and Azores where the baitboats exploit both pre-adult and adult individuals (about 15 kg or larger).

Traditional gears, trollers and baitboats, are mainly used by Spanish vessels that fish in the summer and autumn in the northeast Atlantic, principally in the Bay of Biscay and its adjacent offshore waters. At times, some Spanish baitboats based in peninsular Spain move for winter fishing (and at the beginning of spring) to the Canary Islands. In the same way, some baitboats sometimes move for fishing in the fall in the Azores Islands area and southwest of Portugal. Portuguese baitboats occasionally fish albacore in the Azores and Madeira.

The French fleet, after a period of sharp decline in albacore catches, introduced two new gears in 1987: driftnets and mid-water paired pelagic trawls. These gears are used at night. The use of the troll gear during the day has became very scarce.

A large Taiwanese driftnet operation was conducted for albacore in the North Atlantic in 1990 and stopped at the end of that year. The beginning of driftnet operations in 1991 by Ireland and Great Britain have been confirmed. The observer of Ireland reported during the meeting a catch of about 2,000 MT for 1992. This figure is not included in the catch table because it was received after the assessments were completed.

A minor fishery is conducted by the U.S. in the northwestern Atlantic. Catches are mainly made by the rod and reel recreational fishery, with a lesser amount by coastal pelagic longline vessels. A new exploratory pair trawl fishery that began in 1992 has been successful and is under some restrictions for concern of by-catch of other pelagic species. (SCRS/93/27)

-- Longline fishery

The longline fleet catching albacore in the north Atlantic is mainly comprised of Taiwanese vessels. This fleet has been markedly reduced since 1987, due to economic factors and to a change in the target species to bigeye tuna. Japanese longliners still catch albacore as a by-catch of fishing operations targeting bigeye and bluefin tunas **(ALB-Figures 2a and 2b).** Korean longliners stopped fishing albacore in the Atlantic in 1992 (SCRS/93/126). All longliners mainly exploit both the pre-adult and adult albacore stock.

Size frequencies of fish caught by surface gears and longlines are shown in **ALB-Figure 3** for two series of reference years, 1980-1982 and 1989-1991.

South Atlantic

The south Atlantic albacore stock has been mainly exploited by longliners for 30 years. The Taiwanese longline fleet, which succeeded the Japanese fleet during the early 1970's, is currently the dominant fishery. Japanese longliners fish albacore as by-catch. There are also Brazilian and Uruguayan longline fisheries that make minor catches of adult albacore.

A surface fishery is conducted by the South African baitboat fleet off the southwestern coast of South Africa and Namibia. This fishery began in 1980 and exploits juvenile and young adult fish from

November to May annually. Vessels in this fishery also target other resources, such as squid or coastal species, depending on availability.

Size frequencies of fish caught by baitboat and longline are shown in **ALB-Figure 4** for two series of reference years, 1980-1982 and 1989-1991.

Mediterranean

According to the 1992 GFCM/ICCAT meeting, various small fisheries operate along the French, Italian, and Greek coasts, using baitboats, driftnets, longlines or other unclassified gears. Minor opportunistic fishing by Spanish baitboats and trollers in the western Mediterranean occurred during 1990-1992. The size frequencies of the Italian albacore catch are shown in SCRS/93/87.

ALB-1.b Catches

ALB-Table 1 and **ALB-Figure 5** show the historical series of catches for the total Atlantic, and for the north and south Atlantic and Mediterranean stocks from 1962 to 1991.

North Atlantic

ALB-Figure 6 shows the historical series of catches of this stock, by main gear, from 1963 to 1992. In general, the total catch has followed a decreasing trend from 1960 to 1992. This decrease has resulted from a general reduction in fishing effort of the traditional gears (troll, summer baitboat), as well as from a significant reduction in longline effort since 1987. The recent increase of catches by the recently introduced French gears (gillnet and paired trawl) should be noted.

In 1992, the total albacore catch in the north Atlantic was 29,700 MT, an increase compared to the 25,200 MT of 1991. The surface fisheries caught 26,600 MT in 1992 compared to 22,200 MT in 1991 and 33,800 MT in 1990.

This decline in 1991 and subsequent recovery (in 1992) of the surface catches can be explained in various ways:

-- A low catch made by the Spanish troll fleet (7,300 MT in 1992 following the 9,000 MT in 1991, compared to 10,300 MT in 1990).

-- Other surface fisheries show increases in the recent years. A slight increase for Spanish baitboat: 10,800 MT compared to 8,300 MT in 1991 and 15,400 MT in 1990. Of the 1992 total catch, 1,200 MT were taken by the Spanish baitboat fleet operating during the fall in the SW of Portugal. A notable 1992 Portuguese baitboat catch of 1,600 MT in the Azores and Madeira, as compared to 700 MT in 1991. Catches by the new French gears increased to 6,924 MT in 1992, compared to the 3,300 MT in 1990. Gillnetters caught 4,465 MT, and mid-water trawls caught 2,459 MT.

South Atlantic

ALB-Figure 7 shows the historical catch series, by gear, for the south Atlantic stock. In general, south Atlantic albacore annual catches have shown relatively large fluctuations between 13,000 MT and 38,000 MT during the last three decades. The total 1992 south Atlantic albacore catch was 28,800 MT compared to 25,700 MT in 1991 and 29,700 MT in 1990.

Longline catches decreased slightly from 22,100 MT in 1991 to 21,600 MT in 1992. Catches by the South African surface fishery decreased from 5,500 MT in 1989 to 3,410 MT in 1991, principally as a result of reduced access to fishing areas off Namibia. This access was granted again in 1992 when catches reached 6,400 MT.

Mediterranean

Reported catches of albacore in the Mediterranean are still minor, ranging between 1,500 MT to a maximum of 4,200 MT in 1985. Catches have been lower since 1990, stabilizing at about 2,000 MT. In 1992 catches were 2,200 MT. Main fishing countries were: Italy (1,400 MT), Greece (500 MT), Spain (200 MT) and France.

ALB-1.c Fishing effort

North Atlantic

ALB-Table 2 and **ALB-Figure 8** show the changes in nominal fishing effort of Spanish and French

baitboats and trollers, as well as French gillnet and mid-water trawlers in the North Atlantic since 1975.

-- Trollers

A continuous and significant decrease in nominal fishing effort was noted for trollers from 1967 to 1975, followed by a moderate decrease from 1976 to 1984. The general decline in effort that began in 1967 and continued through 1984 has resulted mainly from the gradual withdrawal of the French troller fleet.

From 1986 to 1990, effort was constant at a slightly higher level than for the previous period, at an average of 21,500 fishing days. In 1991-1992, nominal troll effort decreased again, to 12,500 fishing days in 1992.

-- Baitboats

Nominal fishing effort for baitboats decreased slowly over the 1967-1977 period, but was rather constant from 1978-1990, at an average of 10,750 fishing days. It dropped to 7,900 fishing days in 1991 and recovered to 9,400 fishing days in 1992.

-- Gillnets

Nominal effort, measured in fishing days, (which is not the most appropriate effort unit for such a gear) of the new French gillnet fleet has increased since its introduction in 1988 and 1989. Effort decreased in 1990, increased to 1,904 fishing days in 1991, and again increased to 2,600 fishing days in 1992. Two new fleets from Ireland and Great Britain entered this fishery in 1991, but their fishing effort in 1991-1992 is not yet known.

-- Mid-water trawlers

Nominal effort of the new French mid-water trawl fleet increased since its introduction in 1988 and 1989, reached 2,900 fishing days in 1989, decreased until 1991 (306 fishing days) and subsequently increased to 3,000 fishing days in 1992.

-- Longliners

Nominal fishing effort for longliners in the north Atlantic (**ALB-Table 2** and **ALB-Figure 9**) showed two periods of high effort, 1976-1977 and 1983-1986. Since 1987, effort of the Taiwanese longliners declined to a low level in 1989, then increased again in 1990.

However, this increase in nominal effort was produced in conjunction with a change in the target species to bigeye tuna and with a change in fishing strategy through the use of deep longlines at lower latitudes.

In 1990, nominal effort was 29.1 million hooks (12.2 for regular longline), compared to 31.8 millions hooks (7.7 for regular longline) in 1991. In 1992, nominal effort was 25.9 millions hooks (9.9 for regular longline only).

South Atlantic

In the south Atlantic, longline effort by Taiwan remained rather stable (**ALB-Figure 10**), but an abrupt increase to the historically highest point occurred in 1987, when there was a decrease in Taiwanese longline effort in the north Atlantic. Subsequently, effort has been sustained at a high level since 1987, and reached a nominal effort of 87.2 million hooks in 1990, 92.8 million hooks in 1991 and 86.3 million in 1992.

Nominal fishing effort of the South African baitboat fleet increased from 1987 to 1989. In 1990 and 1991, there was a decrease in the nominal effort of this fleet due to restricted access to fishing areas off Namibia. Effort in this area was resumed in 1992.

Mediterranean

In the Mediterranean, trends in fishing effort are still difficult to determine due to the absence of a sufficiently long series of statistics.

ALB-1.d Catch rates

North Atlantic

-- Surface fisheries

Nominal catch rates of the surface fisheries are shown in **ALB-Figure 11**. The catch rate for the trollers was relatively stable during recent years.

The baitboat catch rate increased in 1976, possibly due to an increase in fishing power resulting from the adoption of sonar equipment, and then remained rather constant until 1990. Catch rates dropped markedly in 1991 and recovered in 1992.

The recently introduced gears (driftnets and pelagic trawls) have been developing since 1987. The catch rate of gillnets expressed in tons per fishing day which may not be an appropriate unit, increased during 1988-1991, then declined in 1992. The catch rate of mid-water trawls decreased from 1988 to 1989. Catch rates increased during 1989-1991 and decreased in 1992 to the 1989 level.

-- Longline fisheries

The catch rates, nominal and standardized by General Linear Modelling (GLM), of Taiwanese (targeting albacore until 1986) and Japanese longliners (not targeting albacore) are shown in **ALB-Figure 12**. Nominal longline catch rates for both countries show a slightly decreasing trend since 1982.

South Atlantic

ALB-Figure 13 shows the nominal and standardized (by GLM) catch rates for the Taiwanese and Japanese longliners fleet in the south Atlantic. Nominal longline catch rates for Taiwan exhibit a continuous decrease since 1976, whereas Japanese catch rates are stable at a low level.

ALB-2. State of the Stocks

ALB-2.a North stock

-- Abundance indices

Surface gears

The standardized available abundance indices for surface gears are the age-specific standardized CPUE indices for Spanish surface fisheries from 1983 to 1992 (SCRS/93/93). GLM procedures were used to derive these indices from trip data of Spanish trollers and baitboats stratified by year, quarter, gear and area (SCRS/92/150).

In order to develop indices by age, catch-at-age for the different trips was estimated from the corresponding length composition by applying "Yearly Age Length Keys" (YALK's) derived from the MULTIFAN analysis of document SCRS/92/48. The 1990 YALK was used in developing the 1991 and 1992 CPUE indices by age. **ALB-Figure 14** displays the indices of abundance for ages 1-4.

Age-1 indices show large fluctuations that are difficult to relate to fluctuations in recruitment since this age group is not targeted, and is even occasionally avoided.

Abundance indices for the main target groups, age 2 and age 3, were considered to be the most reliable and may be considered to be estimates of the relative trends of these age groups in the population.

Age-2 indices show a slow increase from 1985 to 1988, a decline in 1989, an increase in 1990 and 1991, reaching the highest level of the time series in 1991 and slight decrease in 1992.

Age-3 shows a relatively stable period from 1984 to 1986, a sharp increase in 1987, followed by a slight and continuous decline until 1991 and a slight recovery in 1992.

The difference of trends between the two indices, age 2 and age 3 was noted. It could be explained by several different hypotheses. One was a decrease in the catchability of age 3 albacore as a result of interaction with new surface gears. Another was a real decrease in abundance of age 3 albacore as a result of increased mortality on age 2, as indicated by some results of VPAs.

Longline gears

Standardized CPUE indices derived from the Taiwanese and Japanese fisheries were developed during the meeting, using GLM. **(ALB-Figure 12)**. They are considered as representing the abundance of age 4+. The index of abundance for the Japanese fishery was standardized to include an effect of the change of targeting to bigeye; the Taiwanese index does not include correction for this change.

The Taiwanese index shows rather large fluctuations, with an increasing trend from 1972 to 1982, followed by a decreasing trend. The Japanese index is smoother, decreasing from 1975 to 1987, and is stable thereafter.

-- Production model

A non equilibrium production model program (ASPIC) was used to assess the North stock (SCRS/93/105). This work was extended by additional trials during the meeting. Data used were nominal CPUE statistics from Spanish and French baitboats and troll fisheries (1968-1991), French gillnets and mid-

water trawls (1988-1992), standardized CPUE for the Taiwanese longline fishery (1968-1992) and standardized CPUE from the Japanese longline fishery (1975-1991). Results from these analyses are given in **ALB-Table 3**. The apparent conclusion from ASPIC trial is that the stock is in a state of low to moderate exploitation. **(ALB-Figure 15)**. It is noted that only nominal CPUE data were used for the surface fisheries, because the standardized indices covered fewer years, and that these fisheries dominated the catches all over the years analyzed. It is not known with certainty the effect (in absolute magnitude) of the use of nominal indices of abundance. It is possible that if such indices were standardized the image of the actual state of the resource would be less optimistic.

-- Virtual Population Analysis (VPA)

The MULTIFAN program was used with the 1975-1991 catch at size data to generate parameters of growth and a catch at age table. Growth parameters from this analysis were used to extend the catch at age to 1991-92 **(ALB-Table 4)**. The status of the north Atlantic stock was examined using VPA calibrated with indices of abundance from the surface and longline fisheries **(ALB-Table 5)**. Multiple analyses were conducted to examine the performance of the model under various assumptions about ages to include in the plus group, the number of age specific abundances in 1993 to directly estimate as parameters in the VPA model, and the specific indices to include. For all analyses natural mortality rate was assumed to be 0.3 across age.

Separable virtual population analysis (SVPA) was used to examine the selectivity pattern during two periods. The first period of 1988-1992, when surface fisheries dominated the catch and longline catches were small, was examined to estimate the selectivity in the terminal year for calculating 1993 abundances for ages not directly estimated as separate parameters in the VPA **(ALB-Table 6)**. The second period of 1975-1986, when both surface and longline fisheries accounted for substantial portions of the total catch, was examined to investigate the relationships among selectivities at older ages for use in examining the relationships between fishing mortality rates at the oldest age during that period.

The use of two plus groups, one with ages 11 and older and the other with ages 7 and older, was considered. The Committee considered that the ageing of fish above age 6 might be less reliable than for younger ages. The estimated coefficients of variation for the 1993 abundances estimated as parameters in the model were generally larger for the 11+ analyses while no consistent pattern of higher or lower estimates of abundance was observed between two sets of analyses **(ALB-Table 7)**.

The Committee considered the index of abundance of age 1 from the surface fisheries to be less reliable than the other indices available. Inclusion of that index substantially increased estimates of 1993 abundance for age 2, but no consistent pattern was observed for other ages. During the years 1975-1986 the Taiwanese longline CPUE was considered to have been based on effort targeted at albacore. During 1987-1992, the target shifted. This change in targeting was not accounted in development of the GLM index and therefore the Committee considered the 1975-1986 index more useful.

Little change in estimates of abundance, and their CV's was observed when up to four age-specific 1993 abundances were estimated, so the Committee selected the analysis with all indices, except the surface fishery age 1, with direct estimates of 1993 abundances for ages 3, 4, 5, and 6 for its base VPA (Run 12). The estimated relative abundances are shown in **ALB-Table 8** and **ALB-Figure 16**, and the fishing mortality rates are shown in **ALB-Table 9** and **ALB-Figure 16**. This analysis and the sensitivity analyses all showed increases in F on the younger ages and decreases for older ages in recent years, associated with a decline in recruitment. However, the confidence intervals for the estimates of these parameters (particularly mortality on age 1-4) in recent years are large **(ALB-Figure 16)**, and apparent increase of F on younger age could be illusive. The 1992 estimate of recruitment is also very preliminary.

When these results were compared with the historical analysis reviewed in SCRS/93/117 some inconsistencies appeared; apparent current recruitment levels seem to be substantially lower than those estimated for the historical period. **(ALB-Figure 17)**. Possible explanations of this situation are:

i) Systematic underestimation of recent recruitment by the tuned VPA runs used;

ii) A real decrease in the average level of recruitment since 1983. Such a decrease could be associated with the decline in the adult stock, but also

with hypothetical environmental changes in the spawning area, (roughly centered in the Sargasso Sea).

iii) A small decrease in recruitment that (by chance) appears large because of the inherent variability of the recruitment estimates.

-- Yield per Recruit (Y/R)

The theoretical yield per recruit was analyzed using the classic Ricker model. The F vectors were calculated as the average of the fishing mortalities for the period 1988-1991 derived from run 7 (**ALB-Figure 18**).

The conclusion of the Group on the current state of the north Atlantic stock is affected by the reservations mentioned above:

-- If the decrease of the recruitment is real, the stable trend in surface gears catches would result in an increase of fishing mortalities, and consequently of exploitation of age classes 1-4. It should be noted that the current pattern of exploitation concentrates effort mainly on immature fish, and this trend seems to be increasing. From such evidence, it could be concluded that the north Atlantic albacore stock is currently in a highly exploited state.

-- If the recent recruitment decline is an artifact of the VPA analyses, then fishing mortality in the recent years was moderate, and the stock is in a rather moderately exploited state, that is consistent with non-equilibrium production model analysis using ASPIC.

The Committee was unable to distinguish between the alternatives, because of the variability in estimates of current F.

ALB-2.b South Stock

Prior to 1992, the only abundance indices available for the southern albacore stock were derived from CPUE data for the Taiwanese longline fishery, which exploits adult fish between 70cm and 120 cm fork length. No indices were available for the Japanese deep longline fishery, exploiting larger adult fish, or the South African surface fishery, exploiting young adults from 70-100 cm fork length. Standardized abundance indices from the Taiwanese data (using the Honma Method) have previously been used in equilibrium production model assessments, suggesting that the stock was exploited slightly above an estimated MSY of 26,000 MT. It has since been shown that such equilibrium production models produce positively biased estimates of MSY under conditions of declining CPUE (SCRS/92/171).

In 1992, a further series of CPUE data was provided for the Japanese longline fleet (SCRS/93/86), and the Taiwanese CPUE data were restandardized using GLM analysis, as applied to other tuna species, to account for the effects of gear, area, and time period (SCRS/93/70). The analysis of these two data series using an age structured dynamic production model developed by Punt (SCRS/92/171) indicated that the MSY was closer to 20,000 MT, with a replacement yield in 1992 of approximately 15,000 MT. It was noted, however, that both Taiwanese and Japanese longline effort had increasingly been targeted on more profitable bigeye tuna and that the declining CPUE series resulted to some extent from inclusion of deep longline effort directed at bigeye tuna. This is particularly true for the Japanese fishery, which switched from an albacore targeted fishery in the mid 1960's to a bigeye tuna fishery in the mid 1970's, and now only makes a small albacore by-catch in areas peripheral to the main albacore fishing areas.

For this meeting, the effect of increased targeting on bigeye tuna was corrected for in different ways for the Taiwanese and Japanese data. The Japanese CPUE data series were restandardized, adding an index of bigeye tuna catch as a factor in the GLM (SCRS/93/86). This resulted in a marked decrease in estimates of effective Japanese effort on albacore, particularly in recent years. The resulting CPUE series shows strong fluctuations, but suggests some slight increase in albacore CPUE between 1979 and 1991. The Taiwanese data were reviewed to investigate the proportion of albacore in catches from various areas in the south Atlantic Ocean, showing that, whereas catches in the eastern area included a high proportion of bigeye tuna, catches from the central and western areas consisted primarily of albacore. A new CPUE index, standardized using GLM, was therefore developed to represent the principal albacore fishing area. This index showed more moderate fluctuations than the 1992 index for the entire southern Atlantic, but still suggests a decline since 1985, after a relatively stable fishery from 1972 to 1985 (SCRS/93/70).

The revised Japanese and Taiwanese CPUE indices were analyzed using two dynamic production

model options. The age-structured dynamic production model developed by Punt estimates MSY to be 24,000 MT, with a current replacement yield of 24,000 MT as well.

The mean size of albacore caught by Japan has increased steadily from 15 kg in 1975 to 24 kg in 1991, suggesting a shift in selectivity towards larger fish as this fishery increasingly targeted on bigeye tuna with deep longlines. This suggests that the Japanese index may not be representative of southern albacore abundance. No abundance index was available for the young adult fish caught by the South African baitboat fishery either. Consequently the Taiwanese CPUE data, even if not fully corrected, was selected as the most suitable abundance index to analyze using the age aggregated dynamic production model program ASPIC. **(ALB-Table-10).**

The ASPIC analyses suggested a MSY of 25,000 MT, but with a biomass in 1960 of approximately double the unexploited biomass. If the ASPIC model is constrained to assume that the biomass in 1960 was equal to the unexploited biomass, the estimate of MSY is 24,300 MT, providing close agreement with the Punt model analysis. Bootstrap estimates of MSY from 500 trials using the unconstrained model produced estimates of MSY (for 80% confidence interval) of 23,620 MT to 26,970 MT.

For the first time, a catch-at-size table was produced for southern albacore. A few errors remain to be corrected, requiring a close review of the basic data. As a result of these anomalies, no attempt was made to develop a catch-at-age table from these data using MULTIFAN or other length decomposition methods, or to conduct VPA analyses.

All available assessments suggest that the MSY of southern albacore is no more than 25,000 MT. The estimated 1992 biomass relative to biomass at MSY ranged from 0.85 to 1 **(ALB-Figures 19a and 19b)**, while the ratio of F/F_{msy} has exceeded 1 since 1985. These analyses therefore indicate that annual catches exceeded the estimated MSY level a number of times since 1985.

ALB-2.c Mediterranean

No evaluation of the state of the Mediterranean stock has yet been possible because of the lack of sufficient data on these fisheries.

ALB-3. Effects of Current Regulations

No regulations are presently in effect for albacore in the Atlantic Ocean.

ALB-4. Recommendations

ALB-4.a Statistics

1) The ICCAT criteria for data submission must be strictly observed by national scientists in the collecting and presenting Task II catch and effort and catch-at-size data. It would be desirable to obtain all surface fishery data stratified by at least $5^{\circ} \times 5^{\circ}$, and by $1^{\circ} \times 1^{\circ}$ if possible.

2) Complete ICCAT tagging files should continue to be maintained and special efforts should be made to recover and review the historic data file (1968-1977) by Albacore Program scientists involved.

3) For the following fisheries, actual or historical effort should be developed for submitting at the next meeting of the Albacore Research Program, together with all the basic data and statistics requested for GLM, standardized indices of abundance by age.

- Traditional Spanish fisheries of troll and baitboats, separated if possible (1983-1993).
- Autumn baitboat targeting big fish (1991-1993).
- Historical French troll fishery (1968-1979).
- New surface gears from France (1988-1993), in particular gillnets.
- Taiwanese longline for north Atlantic (1968-1986).

4) The use of bigeye CPUE as a variable in the GLM (as used for Japanese longline data) seems a valuable way to control for the targeting effect on the others tunas. It should be applied to every standardization of longline CPUE.

5) Countries fishing albacore should review and report final complete historical catch and effort (nominal and standardized) and length frequency. This

recommendation holds particularly for Taiwanese longline fisheries.

6) Concerning the U.S. albacore fishery, it is noted that preliminary conversion formulae have been used to convert dressed-weight frequencies and the resulting data of catch at size. However, final formulae should be developed. The U.S. catch at size must be incorporated in the international catch at size table for 1994.

7) A data file of historical nominal effort of surface gears fishing for North Atlantic albacore should be maintained by the ICCAT Secretariat.

8) The use of MULTIFAN software to obtain catch-at-age data has proved to be useful. Application of such distribution mixture methods should be continued for the north stock of albacore and, when possible, should also be applied to the southern stock.

9) Task I and II data on albacore caught by Great Britain and Ireland in 1991-1993 should be requested by the Secretariat from these countries.

ALB-4.b Research

1) The Committee encouraged the use of ADAPT VPA assessments, or similar analyses, for further assessment of northern and southern stocks. In particular, application of such tools to the preliminary catch-at-size database (when corrected) for the southern stock is desirable.

2) Standardized abundance indices in weight for surface gears (using the GLM method) should be developed in order to calculate the overall standardized effort index for surface gears for the longest period possible.

3) Standardized longline abundance indices by age group, in as much detail as possible, should be developed in order to calibrate the VPAs for fish older than 4 years. At least, yearly indices separating young adults (4-6 year old) and old adults (7+) groups should be computed.

4) The apparent general decrease in recruitment of northern stock for years 1983-1991 should be investigated to determine if it reflected the real situation.

5) A comparative study with the stock of north Pacific albacore, its recruitment history and environmental data should be prepared for the mid-94 meeting.

6) Research must be continued to establish ageing methodology using hard parts for large fish in the north Atlantic. Verification of research results should be carried out to complete age validation requirements by the end of the Albacore Research Program.

7) Actual ageing research on the Mediterranean stock should be reported to the Albacore Research Program.

8) The ageing program done for the south stock using hard parts (SCRS/92/108) should be compared to alternative methods using stochastic ageing methods such as MULTIFAN.

9) Analysis of information from Spanish tag-recapture data as in SCRS/93/96 and SCRS/93/97 must continue.

10) A final meeting of the Albacore Research Program (PSG) is necessary. This meeting should be one week long and be held in a research center equipped with computer resources for VPA, production models, and GLM software. The suggested time and place is June, 1994, in northern Spain.

11) Data from observer cruises on Spanish and French tuna boats during 1989 and 1990 should be analyzed and results submitted to the 1994 meeting.

12) Data from French observers on gillnetters during 1991 and 1992 should be analyzed and results made available for the 1994 meeting.

ALB-4.c Management

No specific management recommendations were proposed.

However, for the north Atlantic stock, in view of the uncertainties on conclusions reached, a continued close monitoring of this stock is strongly recommended by the Committee.

For the south Atlantic stock, current analysis suggests that the stock could be exploited beyond MSY. These results should be verified using improved indices of abundance, through development of catch at age, and calibrated VPA assessments. Should the results of further analyses indicate that the southern albacore resource is exploited beyond MSY, appropriate actions aimed at limiting fishing mortality to sustainable levels should be considered.

BFT - B L U E F I N T U N A

INTRODUCTION

Bluefin tuna are taken in coastal fisheries on both sides of the Atlantic and in the Mediterranean using a wide variety of gears, and by longline in coastal and offshore areas. The size of fish taken differs according to the gear and area.

The total catch in 1992 was 29,270 MT (provisional) comprised of 2,190 MT in the west Atlantic (division at 45°W), 7,560 MT in the east Atlantic and 19,520 MT in the Mediterranean (**BFT-Table 1, BFT-Figure 1**). The total was 1,910 MT more than the 1991 catch, due to an increase of 820 MT in the east Atlantic and of 1,890 MT in the Mediterranean. In contrast, the catch in the west Atlantic declined 810 MT, reflecting the reduction in catch limits decided by the Commission. The landing figures for some countries are based on assumptions about landings that have not yet been reported. Where catches have not yet been reported for the fisheries regularly fishing bluefin tuna for the latest year or years, the most recently reported annual value is carried forward.

There are concerns that catches by a number of countries are not being reported or may be under-reported. Some support for this concern comes from information about the source and amount of bluefin imported to Japan. The import figures may represent transshipments through, rather than catches by, the exporting country but there are apparently imports from countries not reporting catches. In other cases there would appear to be imports in excess of reported catches. In addition, even when Japanese imports are less than national statistics, the size composition of the imports suggests that the medium- to large-sized components of national statistics may be under-reported. It is not possible to assign all these imports to species (southern or northern bluefin) or to ocean; however, it appears that in 1991 and 1992 as much as two thousand tons of these imports were Atlantic bluefin, that were not reported in national statistics. The SCRS examined the Japanese import information and attempted to assign an origin to the bluefin. Most of the catches appear to have been made in the Mediterranean. The total of such unreported catches in 1992 was estimated at 1,530 MT with 20 MT from the west Atlantic, 0 MT from the east Atlantic, and the rest from the Mediterranean.

In 1990, the Commission accepted an SCRS proposal that, since bluefin populations showed little change from year to year, detailed assessments would be undertaken at two-year intervals rather than every year. Based on the working hypothesis of two stocks in the Atlantic, the SCRS in 1993 undertook an assessment of the western Atlantic stock and scheduled an assessment of the eastern Atlantic and Mediterranean stock for 1994. The SCRS did, however, review the information from the 1992 fisheries on the latter stock to determine whether there was any evidence of significant change. The assumptions about stock structure are discussed in section BFT-2W.g.

EAST ATLANTIC AND MEDITERRANEAN

BFT-1E. Description of fisheries

BFT-1E.a East Atlantic

The total catch in the east Atlantic in 1992 was 7,560 MT. This was an increase of 12%, compared to 1991.

Baitboat catches were 1,570 MT and continued the downward trend that started 10 years previous. The trap catches (1,355 MT) decreased by 25% with respect to the previous year, due to the decline in Moroccan catches. Longline catches recorded 3,770 MT, representing about a 20% increase since 1991.

Fishing by other gears (OTH) increased substantially to 820 MT (obtaining the highest catches since 1979), due to the increase in Moroccan and French catches.

BFT-1E.b Mediterranean

The GFCM/ICCAT Joint Consultation (Crete, September 1992) contributed to the improvement in the data base.

Mediterranean catches in 1992 were 19,520 MT, an 11% increase from 1991. These are the highest catches of the entire historical series.

The most important increase was in the purse seine catches (13,970 MT), due to the increase by Spain (69%) to 1,366 MT and France (31%) to 5,970 MT. Most non-ICCAT member countries have not yet provided their 1992 catch data.

The 1992 trap catches were 770 MT, a 20% increase from 1991. Longline catches were 2,150 MT, an 11% decline from 1991.

As regards the NEI-1 category, although the catch dropped slightly with respect to the 1991 level, catches remained at a high level (1,510 MT). Estimates of unreported catches in this NEI category were revised according to the Japanese import statistics (**BFT-Table 1**).

WEST ATLANTIC

BFT-1W. Description of fisheries

Catches in the west Atlantic (**BFT-Figure 2**) have been restricted by regulation since 1983 to 2,660 MT annually, about half the average during the period 1973-1981 (in 1982 the catch limit was 1,160 MT). The catch limit for 1992-93 was reduced to an average of 2,394 MT per year with a maximum of 2,660 MT in 1992. The catch in 1992, including estimates of catches not reported to ICCAT, was 2,190 MT, about 800 MT less than in 1991. It appears that most of these catches being imported to Japan, but not reported by flag nation, have been made by longliners fishing at long distances from their flag states and/or actual owners' states. The unreported catches from the west Atlantic may be no more than 30 MT in recent years, with the estimate for 1992 being less than 20 MT.

New regulations were put into effect in 1992 in conformity with ICCAT recommendations. These new measures may have affected catch and effort.

BFT-2W. State of the stocks

BFT-2W.a Natural mortality and Growth

The growth equation was modified slightly to take into account further analysis of tag recapture data (SCRS/93/65). A value of 0.14 was assumed for the instantaneous rate of natural mortality.

BFT-2W.b Catch at age

Catch at size was available from 1960-1992. Since 1984 the SCRS has decided to restrict its virtual population analyses to the years since 1970, primarily because of concern that there was only a limited number of size samples available for earlier years. The catch at size was converted to catch at age using the age slicing system established by the SCRS in 1990. That system is primarily based on the growth curve estimated by Turner *et al* (1991), though in some year-month strata visually determined boundaries between modes in the size data are used to separate younger age groups (ages 1-3), which are not as distinctly separated by the growth curve. For 1992 the lower and upper limits of size at age were judged adequate for separating apparent year classes, so boundaries from modes were not used. The estimated catch at age, through age 10+, is shown in **BFT-Table 2**.

BFT-2W.c. Abundance indices

Fourteen abundance indices were examined (**BFT-Table 3, BFT-Figure 3**). Seven of these were used in 1991 for calibration of the VPA, and the same seven were selected for this purpose again in 1993, together with two more which had been rejected previously but for which additional analysis had now been completed and data added, so that the series were now deemed acceptable (U.S.A longline by-catch of large fish in the Gulf of Mexico and Japanese longline catch rate for the Gulf of Mexico 1974-81 for large tuna). The seven series were catch rates for the Gulf of St. Lawrence tended line fishery for very large tuna, the U.S.A. Atlantic coast rod-and-reel fisheries for small and large bluefin (separate indices) and the Japanese longline fisheries for small, medium and large fish (separate series), together with the Gulf of Mexico larval bluefin index, a fishery independent index that is considered to provide information on the spawning component (large fish). Two other indices (U.S. rod and reel ages 6-7 and U.S. Gulf of Maine captains' logbook records for large fish) were considered to require further analysis and/or data points before they could be considered for tuning. These two series, together with two other sets of indices were used in sensitivity tests. The latter two series included a set of six age-specific indices from the

U.S. observer data on small and mid-size fish by age taken by Japanese longliners operating within the USA 200 mile zone during 1984-1989 and an earlier index of Japanese longline data 1960-81. This earlier index, although not appropriate for tuning the VPA, allowed investigation of earlier trends in population abundance.

The abundance indices were given equal weight in the calibration as in 1991.

BFT-2W.d Partial recruitment

The Committee studied the partial recruitment pattern in 1992 using separable virtual population analysis (SVPA) as it has in the past. Catches for ages 1-15 from 1990-1992 were used to estimate the selectivity pattern. Ages 8-15 were used to obtain an indication of the relationship between the fishing mortality rate (F) on age 9 and the fishing mortality rate on older ages. The selectivity pattern was used in the VPA to define fishing mortality rates in 1992 on year classes for which the 1992 rates were not estimated directly.

The Committee also used SVPA to examine the relationship between the relative selectivities of ages 10-15 to age 9 in earlier years. Three periods were considered for these examinations, because it was considered that this relationship may have been relatively stable during those years. Those periods were: 1970-1973 when there was little or no directed fishing on bluefin in the Gulf of Mexico, 1974-1981 when the Japanese longline fishery for bluefin in the Gulf of Mexico was active, and the period since the imposition of catch limitations 1982-1992. The F's on ages 10+ were estimated to be 1.87, 0.95 and 0.85 times the F's on age 9 during those three periods, respectively.

BFT-2W.e Population Analysis

ICCAT introduced substantial restrictions on the catch for 1983 which resulted in a 50% drop in total catch compared to the period prior to 1982 (in 1982, the measures were more restrictive). This reduction was expected to result in a slow stock increase spread over a period of 30 years (SCRS 1984). It would be expected that any recovery would first be seen in the small fish component, with the extent depending both upon the portion of the total catch taken from this size component and upon the numbers of young fish recruiting to the stock. Increase in the numbers of medium fish would be influenced by the same factors as for small fish, and in particular the numbers of tuna surviving to age 6. Consequently, any increase in medium fish would start some years later than the start of an increase in young fish, particularly because the numbers of young fish would already have been fished hard prior to 1982. This lag in the onset of an increase applies to an even greater extent to the large fish component. It thus could be expected that any increase in large fish would not be detectable for at least eight years, and then beginning only with the youngest year classes (ages 8 and 9) reaching this age. The large fish component comprises fish of many additional ages, since bluefin can live to 25 years or more. Consequently this size category overall would continue to decline for a considerable number of years after the introduction of the 1982 regulation.

The refinement of the bluefin assessment methodology and data base continues, reducing some of the uncertainties associated with past assessments. The general conclusions are similar to those presented previously. The 1993 assessment from the VPA is illustrated in **BFT-Figure 4**. The estimated numbers, biomass and fishing mortality, at each age are given in **BFT-Table 4**.

-- Retrospective Analysis (VPA)

This assessment is largely based on a form of Virtual Population Analysis (VPA) which utilizes catch at age and indices of abundance. Estimates of stock size in the most recent year obtained from VPA are subject to more uncertainty than are the estimates in the same analysis for the stock size two or three years earlier (see **BFT-Figure 4**). For this reason, investigation of the VPA results was made to examine them for possible underestimation or overestimation. Similar to the 1991 assessment, estimates of stock size in recent years, as implied in the present VPA, were shown to depend upon the number of years of data in the analysis. The direction of change was upwards for older fish, i.e., each successive year's estimate of stock size in a particular year was higher than the previous estimate. **BFT-Figure 5** illustrates this by graphing the current estimate of stock size during the years 1984-92, together with the estimates that would be made on the basis of this year's analysis had data not been available for 1992, in one case, for 1991 and 1992 in another and continuing to the case where data were not available for 1989-1992. The figures indicate the need to

consider whether or not the estimate of the 1992 stock size will change in future years. As an example it would appear that, had exactly the same mathematical model been used each year, the estimates for the 1984-89 age 8+ stock sizes would have increased each successive year that the estimate was made. Analysis of the trends in the estimates of the abundance of the different size components (e.g., 8+, **BFT-Figure 5**), shows that the extent of the change varies from year to year for the different components, with some of the current estimate of age classes in subsequent years being smaller than they would have been estimated previously. Thus the next analysis could produce lower estimates of 1992 stock sizes for certain ages than those made this year, while the estimate of the overall abundance in 1992 may be increased over the next several years.

-- Additional population models

The trends in stock size estimated by alternative analytical techniques are similar to that shown by the VPA. **BFT-Figure 6** shows the estimates of relative population size (exploitable biomass) over time that result from two types of non-equilibrium production models, an age structured and a non-age structured (pooled biomass) analysis. Production models generally provide relatively precise estimates of recent abundance patterns even though there is often considerable uncertainty regarding the absolute level of population size. One source of uncertainty in production model results is change in the age-specific exploitation pattern over time, and there is considerable evidence for change in exploitation pattern during the period considered. The age-structured production model explicitly assumes a constant selectivity pattern, while the non-age-structured model assumes that changes in selectivity pattern will not significantly affect the overall biomass dynamics. The degree of sensitivity of model results to violation of these assumptions is not known. The results of both production models run from 1950 do suggest that there had been considerable reduction in the biomass level by 1975 (**BFT-Figure 6**), ranging from 33-50% below mid-1960 levels.

MSY was estimated by three methods: age-structured and lumped-biomass non-equilibrium production models (SCRS/93/68, SCRS/93/71), and a VPA-based method using a combination of spawning biomass-per-recruit, spawner-recruit and yield-per-recruit calculations (SCRS/93/72). The age-structured production model assuming that initial biomass (biomass in 1950) was equal to carrying capacity, was fit to the base case CPUE data used for the VPA and catch data from 1950 and resulted in a point estimate of MSY of 3,942 MT/yr. The lumped biomass non-equilibrium production model (ASPIC) in which initial biomass was also assumed equal to K in 1950, was fit to a combined biomass CPUE from 1960-1990 and catch data from 1950. This method resulted in a bias-corrected median estimate of MSY of 5,530 MT/yr with an approximate 80% confidence interval of from 4,650-6,730 MT/yr from 300 bootstrap trials. The results of the base-case VPA were also used to estimate MSY via the methods described in SCRS/93/72. For these estimates, a Beverton-Holt stock recruitment relationship was used, fit to the spawner and recruit data from the VPA for each of the 500 bootstrap trials. The selectivity vector assumed was the average of 1989-1991, modified to reflect the estimated impact of the most recently implemented ICCAT regulatory recommendations for bluefin. This method resulted in a median estimate of MSY of 6,755 MT/yr with an approximate 80% interval range of from 5,600-9,380 MT/yr. Corresponding estimates of recent biomass levels are between 6% and 12% of the stock level that can provide MSY; estimates of recent fishing mortality rates are from 3.5 to 5.5 times the rate that provides MSY from a stock of optimum size. Current replacement yield (the yield that can be taken without change in stock size) is estimated as 1,000 to 1,300 MT/yr. The preceding ranges include sensitivity tests of assumptions about biomass levels in 1950.

Analysis using the stock synthesis model to estimate abundance trends was investigated in SCRS/93/74. The estimated trends were similar to those calculated by the SCRS in 1991.

-- Sensitivity tests on the use of abundance indices in the VPA

As noted in the section describing the abundance indices used in the assessment (Section BFT-2W.c), the VPA analysis was tuned using a suite of nine abundance indices. Tests were carried out on the sensitivity of the results to the use of the abundance indices which had been judged to be inappropriate for inclusion in the base case. Similar tests were carried out on the sensitivity associated with certain annual values within particular abundance indices.

The sensitivity tests showed in general the overall trends of the VPA were not altered by inclusion or exclusion of the non-base case abundance indices, or of certain annual values in the base case indices. The Committee judged that, on the basis of the information available, and the statistical characteristics of this information, no adjustment to the base VPA was warranted. The sensitivity tests showed that the greatest changes to the results of the VPA would have resulted from the following:

Excluding the 1983 value (the first year of the series) from the US rod and reel large fish index was one of the sensitivity tests. This point had been excluded from the 1991 assessment because it was so much higher than subsequent annual values that the accuracy of the estimate was in doubt. At the current meeting, information was available for 1982 which, while incomplete, supported the 1983 value. The 1983 value was therefore included in the new assessment. The sensitivity test showed that excluding it, as was done in 1991, would have resulted in slightly higher estimates of 8+ relative stock size (19% of the 1975 level compared to 15% in the base case), with higher absolute estimates of 8+ numbers in the latest year (32% higher than in the base case). The changes would however have been within the 80% confidence limits established by bootstrapping.

The U.S. rod and reel medium size tuna index was not included in the base case suite of abundance indices in either 1991 or this year, due to concerns about the tendency of the recreational fishery to concentrate in small areas of good fishing that were not consistent over time. This fishing pattern could result in the catch rates reflecting local aggregations of fish not their overall abundance. Additionally in 1992, the USA prohibition of the sale of fish less than 178 cm may have altered fishing patterns. Inclusion of the series resulted in an estimate of 1993 relative age 8+ stock size that was 12.2% of the 1975 level, compared to 14.7% in the base case, and estimated age 8+ numbers in 1993 which were 15% below the base case. The changes would have been however within the 80% confidence interval about the base mean estimates, as judged by the bootstrap technique.

A set of age-specific abundance indices not used in 1991 involved catch rate information collected by observers aboard Japanese longliners operating within the USA 200 mile zone during 1984-1989. The tuna caught were small and mid-sized fish so the series is considered to represent a subset of the separate Japanese longline data series for ages 3-5 and ages 6-7. However, as a sensitivity test, the two Japanese data series were replaced with the US observer series. The effect was to produce an estimate of 1986 recruitment (age 1 stock abundance) which was 44% lower than estimated in the base case, an estimate of 1993 relative age 8+ that was 6.2% of the 1975 level compared to 14.7% in the base case, and an estimated absolute age 8+ estimate of numbers in 1993 which was 50% lower than the base case. These changes were outside the range of the confidence intervals about the mean estimates for the base case, as judged by bootstrapping, but because of the shortness of the series ending in 1989 and the duplication of the data, the longer series were retained in the base case.

A new series of catch rate information was available based on logbooks from 11 captains fishing in the Gulf of Maine (USA). The series was not included in the base case because of concerns about the representativeness of the sample, because of the short time series and because the data could, in principle, be included in the existing U.S. rod and reel large fish CPUE series. Substitution of the new series (1988-92) for the US large fish index (1983-92) produced somewhat higher estimates of relative 8+ stock size, (22% of the 1975 level compared to 15% in the base case), and considerably higher estimates of absolute 8+ numbers in the final year (56% higher than the estimate from the base case). Only the latter was outside the 80% confidence limit of the VPA mean value, as judged by bootstrapping.

The Committee notes that there is a general lack of fit for several of the indices when they are all weighted equally. One method to address this is to perform iterative reweighting which weights the indices in proportion to the inverse of their variance. When this was done, the abundance estimates were similar to the base case, but slightly higher (although lower than the sensitivities noted above). The variance of abundance using iterative reweighting is lower. Re-weighting

puts more emphasis on the 10+ and smaller fish (1-7) indices and reduces the emphasis on the 8+ indices. Including all of the indices with equal weights (in spite of lack of fit) has contributed to the overall variance in the estimates.

-- Sensitivity test on VPA model parameters

A further sensitivity test involved investigation of the implications of changing the assumptions about the pattern of fishing mortality on fish older than age 10 in earlier years and of doing analyses of ages up to age 15 rather than age 9 before pooling estimates of older ages in a plus group. VPAs were run using the same inputs as for the base case except for the maximum age specification and for a different pattern of fishing mortalities on these ages (selectivity increasing from ages 9-15), than that assumed in the base case (F on age 10+ equal to F on age 9). The results (**BFT-Figure 7**) are very similar for the period after 1975, but suggest considerably lower abundance prior to that. An intermediate test run on the base case assessment using alternative ratios of F 10+ relative to F 9 changed only the interpretation of selectivities in the period 1970-1974 and resulted in a somewhat lower estimate of stock size in 1970 compared to 1975. It was noted that estimating older ages individually, rather than as a plus group, can cause considerable errors due to the likely increasing inaccuracy of age determination with increasing age, particularly when using the "age slicing" method to convert length to age.

These two tests are indicative that the pattern of stock size in the early 1970's, and presumably prior to that if the VPAs could be run for earlier years, is subject to assumptions about the pattern of fishing mortality on older fish relative to that on younger fish. As noted earlier in the section on Partial Recruitment (BFT-2W.d) there is doubt about this pattern. It was concluded that the information on catch rates for the early 1970's, while limited, generally supported the declining trend since 1970 rather than an increase in the early 1970's. There was, however, some indication in the production model analyses of a period of increasing biomass at about this time.

-- Population trends

The conclusions from the VPA are that the overall exploitable biomass has declined, as previously estimated, to between 8% and 26% of the 1975 level. Comparisons are provided on the basis of current estimates compared to levels estimated for 1975. This is a change from the 1991 report in which comparisons were based on estimates for 1970. The change has been made because of the un- certainty about the trend in the population size and other parameters between 1970 and 1975, as shown by the sensitivity analyses and supported by the production model analyses, particularly the non-age-structured model. The VPA permits consideration of trends in abundance of the various size groups following the introduction of the 1982 and 1983 management measures and of the levels of fishing mortality of the different groups.

Small fish (ages 1-5). The catches by number of fish age 1-5 (**BFT-Table 2**) declined markedly after the introduction of the regulations, but increased considerably in 1985 although only to a level about half of that in the late 1970's. Since then catches have fluctuated around the 1985 level before declining sharply in 1992, reflecting lower catches, made by US anglers, of fish less than 115 cm, following changes in regulations in 1992. In terms of fishing mortality on ages 2-5 (**BFT-Figure 4**), there was an initial decline, followed by a slow increase to levels of the late 1970's by 1991. The mortality level in 1992 was, however, almost as low as in 1982.

The year classes of the 1980's appear to have been considerably smaller than those in the early 1970's. The 1987 year class was previously considered the largest since that period although in comparison to the estimates of 1969-75 year classes, it appeared to have been smaller than any of them and it now appears to have been of the same size as the 1985 year class. The 1982 year class was the next largest in the 1980's and the 1986, 1988 and 1989 year classes may have been very small. The preliminary information about the 1991 year class is that it may be the smallest on record. The estimate depends upon only one index value for 1992, that from the US rod and reel index for small fish, which may have been affected by the introduction of new regulations governing the capture of small fish for the 1992 season. There is, therefore, no evidence of any strong year-classes that would have contributed

substantially to the young fish component. Overall for this age component, there is no marked trend in recent years (**BFT-Figure 4**), although there may have been a slight recovery in the mid-1980's and a slight decline in 1993 reflecting the first estimates of a very small 1991 year class.

Medium fish (ages 6-7) The catch of medium fish dropped markedly after 1981 (**BFT-Table 2**), and while it increased sharply in 1988, it has decreased since then to the 1982 level. The abundance (**BFT-Figure 4**) of this size category increased in 1991 with the entry of the stronger 1985 year class but has declined somewhat since then reflecting the poor year classes now in the category. Fishing mortality dropped sharply in 1982 but quickly increased to levels similar to those in 1980-81. Since 1988 there has been a steady decline to a level close to that of 1982, by 1992.

Large fish (Ages 8+). The catch by numbers of large fish also dropped greatly in 1982 (**BFT-Table 2**), given the very low quota in that year and increased in 1983 commensurate with the increase in the quota. The catch fell somewhat in 1984, recovered steadily for a few years, and increased again in 1988-91 to levels similar to 1983-84. The 1992 catch was somewhat lower. These catch levels are however much below levels in the late 1970's. The abundance has declined since the early 1970's although it appears that it increased by 1993 as the 1985 year class recruited. In terms of fishing mortality (**BFT-Figure 4**) there has been a considerable increase because the catches, which are in conformity with a regulation based on weight, have been taken from a declining biomass.

Given the large number of ages in this category and the expectation that the benefits of the catch restrictions would be detected first for the youngest ages in the category, the recent trends in abundance were examined for ages 8 and 9 separately from ages 10 and older.

The abundance of ages 8 and 9 fish (**BFT-Table 4**) appears to have been very low in 1992 but to have increased by 1993 to the level of 1982 as the 1985 year class recruited.

The abundance of fish aged 10 and older (**BFT-Table 4 and Figure 4**) must be expected to decline given that most year classes contributing to it were fished heavily prior to 1982. The numbers can not increase until the year classes reaching age 10 do so in strength. It is noted that the 1985 and 1987 year class will recruit to this age category in 1995 and 1997, respectively.

BFT-2W.f Projections

Document SCRS/93/72 presented a method of calculation of long-term potential yield (MSY). The Committee elected to use this approach to examine the impact of future catch levels on projected adult 8+ biomass for the next ten years. Projections were made under four scenarios of catch in the years 1994 to 2002: (1) 1,995 MT each year; (2) 1,995 MT in 1994-1995, and 1,200 MT thereafter; (3) 1,200 MT each year; and (4) no catch (**BFT-Figure 8**). The 1,995 MT catch option was examined because the 1991 Commission Recommendation (paragraph 1b) envisioned that catch limit for 1994-1995. The 1,200 MT catch option was examined because that was the estimate of replacement yield in recent years from production model analyses. The option with 1,995 MT in 1994-1995 followed by 1,200 MT thereafter was examined to consider the effect of the Commission's confirming the 1991 resolution, followed by the adoption of the current estimate of replacement yield as the catch level. The effect of a moratorium starting in 1994 was examined to illustrate the effect of the most restrictive action possible.

The basis for these projections came from the bootstrapped base case VPA (**BFT-Figure 4**). No adjustment for retrospective patterns was made, however it was noted that the range in estimated stock sizes from the bootstrapped VPA's were considerably broader than the range of retrospective population estimates.

The selectivity pattern used was based on recent patterns adjusted to take into account the 1992 changes in regulations governing the capture of small fish.

Estimates of maximum sustainable yield (MSY) and subsequently of spawning stock biomass (SSB) at MSY were computed for comparison with spawning stock biomasses projected under the various catch scenarios.

The projections of stock biomass require assumptions about the level of recruitment. The base assumption was the stock recruitment relationship (**BFT-Figure 9**) which implies that at low stock sizes there will be low recruitment. As an alternative, the projections were made assuming that recruitment in each year would be the geometric mean of recruitment seen in 1983-1992. Under both alternatives the values of

recruitment used were based on bootstrap techniques.

The difference between these two assumptions, in terms of projections of spawning stock size, are shown in **BFT-Figure 10.** The main effect of assuming recent average, and hence higher, recruitment does not show until the year 2000, when the 1992 year class becomes mature, with subsequent year classes maturing thereafter.

The projections incorporate also the estimated value from the VPA for the 1991 year class. This value may prove to be an underestimate because it depends upon a single CPUE value from the US rod and reel small fish fishery, and the 1992 value for this index may have been compromised as discussed in the section on small fish population trends. Faced with such uncertainty, a widespread practice is to assume that the year class is no smaller than the smallest observed previously. The implications of making this assumption, instead of using the actual value coming from the VPA, are shown in **BFT-Figure 11.**

Historical stock sizes and the results of the projections to the year 2002 under a constant catch of 1,200 MT beginning in 1994 are seen in **BFT-Figure 12.** Estimates of spawning stock size at the MSY population level range from 56,000 to 94,000 MT. The probability that spawning stock (8+) biomass in any year will be greater than in 1993 under the catch scenarios are shown in **BFT-Figure 13.**

Additionally, four probability distributions of spawning biomass ratios are shown in **BFT-Figure 14.** The comparisons are the year 2002 relative to 1994, 2002 relative to 1975, 2002 relative to SSB at MSY, and 1975 relative to SSB at MSY. Each of the first three assumes a constant catch of 1,200 MT from 1994-2002. The results indicate that there is approximately a 50% chance that the spawning stock biomass will be greater in 2002 than in 1994. They also indicate that the probability is very small that spawning stock biomass in 2002 will have recovered to 1975 levels.

The 1992 spawning stock biomass is estimated to be the lowest observed (**BFT-Table 4c**) in the available time series. This is cause for considerable concerns because it is feared that at such low SSB's, recruitment could decrease very quickly.

However, environmental conditions are also likely to affect recruitment and it is possible that good recruitment could be produced despite low spawning stock biomasses. The environmental conditions favorable to bluefin recruitment are unknown and it would be imprudent to expect that such good recruitment will occur in the near future.

BFT-2W.g Stock structure

The working hypothesis for the assessment is that there are two stocks in the Atlantic, with the exchange of individuals considered too limited to affect the results of management on each side of the Atlantic. The Committee reviewed the available information (including SCRS/93/62 and SCRS/93/77) and based on the review, could not reject the working hypothesis of two stocks with limited mixing. Other information relevant to these studies includes the pattern of longline catches across the ocean and tagging data which show that some fish do migrate across the ocean.

The eastern Atlantic stock has been considerably more productive than the western Atlantic stock during 1980 to 1991. During this period, the estimated average recruitment to the eastern stock has been at least 20 times bigger than the recruitment to the western stock.

Transatlantic exchange rates

The implications of trans-oceanic movement for the assessment of the western population were investigated in SCRS/93/68 by conducting VPA's for both the western and eastern populations, with the inclusion of terms reflecting fixed fractions of fish migrating west-to-east and east-to-west respectively each year. The status of the western population tends to improve under assumptions of east-to-west migration, but deteriorates for west-to-east migration. Relatively large (2% per age and per year) east-to-west migration of the eastern stock in each year are needed to change substantially the estimated status of the western population compared to that indicated by the base assessment which ignores migration effects. However, such high levels for this migration resulted in population trends which are generally inconsistent with the CPUE data for the west.

Tag-recapture data may provide information on trans-oceanic migration rates (both west-to-east and east-to-west), but quantitative assessments of these rates need to take account, *inter alia*, of the consequences of different levels of fishing mortality on the two sides of the Atlantic. An approach to do this in terms of the "two-population-with-migration VPA" approach of SCRS/93/68 was developed during the

meeting. The preliminary nature of this work means that it is not yet possible to determine whether or not the tag-recapture results are consistent with the standard VPA assessment of the western population tuned by CPUE data only nor was it possible to evaluate at the meeting, methodology for determining the reliability of such calculations. Further investigations of this matter were recommended strongly. (see Research Recommendations BFT-4W.b.)

This could require a meeting between scientists involved in the assessment of the eastern and western stocks. In order to do this, all release data, particularly the information on tags released but not recovered, must be submitted to the ICCAT Secretariat and included in the tagging database.

-- Stock boundary

The convention that the eastern limit to the distribution of the western stock north of 10°N is open to question in light of the recent development of a longline fishery in the adjacent area to the east. Japanese longliners have increased the harvest of bluefin in the central Atlantic (30-45°W), particularly since 1989, with the catch in 1991 reaching 1,390 MT (1,070 MT in 1992).

There is essentially no information to determine whether the fish being exploited in the central Atlantic are from the western stock or from the eastern stock, however, as a first approach to assessing implications of this fishery, if indeed it is based on the western stock, the available catch information was incorporated into the production model. The catch rate was assumed to be similar to that observed in the Japanese longline fishery west of 45°W. The results indicated very little change to either the estimates of MSY for the population or of the replacement yield, that is the catch that would result in maintaining the biomass constant on an annual basis. This is largely because there has been little harvest of bluefin in the central Atlantic until three years ago, and the production model therefore assumes that the catches came from the biomass previously exploited west of 45°W, and that the removals are additional to removals west of that line.

It is not possible to determine, however, whether in fact there has always been bluefin in the area. If there has been, and they are part of the western stock, then the production model and VPAs may have been estimating only the portion of the stock west of 45°W, and the new fishery might not represent any increase in fishing mortality depending upon the rate of mixing. Conversely, if this represents a change in distribution of the western stock then the estimates of fishing mortality and of recruitment may change. Further consideration of the fishery impacts must await additional study of historic information on occurrence, information on biological parameters, and the results of studies on the overall Atlantic stock structure, particularly those envisaged on the exchange of fish between east and west. This latter initiative might provide the most promising avenue for review of the central Atlantic resource, and its relationship to bluefin elsewhere.

BFT-3W. Effects of current regulations on west Atlantic bluefin

A regulation prohibiting the catching and landing of bluefin tuna less than 6.4 kg for the entire Atlantic went into effect in August 1975; an exemption allowed incidental catches of 15% (by number). After the regulation went into effect, the percentage of individuals less than 6.4 kg in the catch was low in the western Atlantic from 1976 to 1981 (1.7% to 7.2%), but it increased to 23.2 and 18.2% in 1982 and 1983 (**BFT-Table 5**). The percentage then fluctuated between 2 and 10% before dropping to the lowest level seen in 1992 (1.3%).

A regulation limiting catches in the western Atlantic to 1,160 MT was introduced for 1981 and increased to 2,660 MT for each year from 1983 to 1991. Directed fishing was prohibited on the spawning stock in the Gulf of Mexico. As a result, catches have been below or slightly above the catch limits set for scientific monitoring since that date. The 1991 catch was estimated to have been about 2,990 MT (**BFT-Figure 1**). This contrasts with catches that had averaged approximately 6,100 MT from 1976 to 1981. The catch limit for 1992-93 was reduced to an average 2,394 MT for each of the two years. Preliminary estimates of the catch in 1992 are 2,190 MT.

A third regulation for the west Atlantic, limited catches of bluefin tuna less than 120 cm straight fork length (FL) to no more than 15% of the catch (by weight) after 1983. The percentage (in weight) of bluefin less than 120 cm SFL steadily decreased from 1975-1983, and since then has varied between 6 and 15%. This regulation was modified for 1992 and later.

The limit was changed to 30 kg or 115 cm and the tolerance to 8% by weight of national catches. The overall catch of such fish is estimated to have been 5% in 1992.

BFT-4W. Recommendations for west Atlantic bluefin tuna

BFT-4W.a Statistics

i) The continuation of the provision of data on Japanese imports of bluefin by country of origin should be encouraged. The Secretariat is asked to establish appropriate contacts to obtain specific information on the actual area of capture of the imported fish since this is not yet available and cannot be deduced on the basis of country of export, as well as to collect individual fish size information.

ii) Continued efforts are needed to obtain catch and biological data from non-reporting countries, which could include mechanisms to involve commercial as well as government contacts.

iii) Catch and effort data should be collected for as many fisheries as possible, an example being the Canadian tended line fisheries other than that off Prince Edward Island.

iv) Despite the intention to carry out the next assessment of western bluefin only in 1995, countries should submit size sampling information for 1993 according to the usual schedule in 1994 so that the Secretariat can undertake the necessary substitutions to produce the full catch-at-size table for use at the 1994 SCRS meeting.

BFT-4W.b Research

i) The proposed Bluefin Year Research Program provides a listing of research requirements, together with an indication of their importance. In particular, for stock assessment, it is recommended that:

a) The quantity of information available for stock assessment and for investigation of associated questions such as stock structure, would be enhanced greatly by institution of a long-term program involving dedicated, fishery independent research effort using commercial longliners, other commercial fishing vessels or research vessels. The program would be designed to maintain existing data series irrespective of year-to-year changes in commercial activity due to management controls. One possible scheme is documented in SCRS/93/47 which contains also an example of a logbook that should be considered by personnel designing new logbooks or improving existing systems.

b) Further investigation of age structured non-equilibrium production models and in particular the impact of changes in the age composition of the catch over time, together with refinement of CPUE series dating back prior to 1970.

c) Investigation of the retrospective patterns detected in VPA analysis using the bluefin data base.

d) Continued investigation of the impact of targeting and by-catch strategies on the CPUE in longline fisheries, and in particular with reference to the data prior to 1975 and to the age 8+ catch rate series in all years.

e) Examine all indices of abundance for their fit to the assumption of linear relationship between abundance and catch rate.

f) Further studies of size at age and its incorporation into the population analysis, given that any systematic error due to the use of age slicing would cause systematic distortion of population estimates. In particular further work is required on length at age and the variability of this over time and geographically. A technique to determine age directly would greatly facilitate such studies.

g) Steps should be taken to obtain as much biological information as possible from bluefin fisheries in the central north Atlantic, including from fisheries around the Azores, as part of studies of the stock affinity of fish in the area 30-45°W.

h) Pursuit of on-going studies of bluefin maturity and fecundity, particularly the maturity of medium-sized fish.

i) Stock identification research should be given high priority.

i) It is recommended strongly that the study be continued on transatlantic exchange, as may be shown by tag returns. This would involve:

a) appraisal of the statistical precision (probably by means of bootstrap methods) of both the VPA-model-predicted and data-based ratios of west:east recaptures both for fish tagged in the west and those tagged in the east, so as to assess the statistical confidence associated with any difference between the point estimates of these ratios;

b) thorough testing of the sensitivity of such results to, *inter alia*, variations in input values for certain parameters and to alternative assumptions about the structure of the eastern population.

c) a meeting of scientists working in the west and in the east Atlantic and in the Mediterranean.

ii) Particular attention is required to verify the completeness and availability of records on all tags released, and not only for recaptures. Users of the data base are warned to be aware that double tagged fish are entered twice.

iii) Results of mitochondrial DNA analysis should be made available as soon as possible and these should be used to erect hypotheses on stock structure and or population exchange. Tagging studies to investigate these hypotheses specifically should be designed and implemented.

j) The analysis of the sensitivity of the assessments to which series or years are included is complicated by the absence of an objective method to identify outliers. The swordfish report recommends the "development of *a priori*, objective criteria for outlier detection and objective criteria for rejection of data on biological or fisheries grounds for the various time series data sets used in assessments." Such criteria are also needed for bluefin and many other species.

BFT-4W.c Management

It is noted that in 1991 it appeared that there were encouraging signs that the decline of ages 6-7 had perhaps stopped. These indications do not appear to have been supported by the new analysis. However, the new minimum size regulations do appear to have reduced the catches of small fish, and there is indication of an increase between 1992 and 1993 in the numbers of ages 8 and 9.

Taking into account the uncertainties of the data and models applied and the caveats about them, the results of VPA and production model analyses indicate that the current exploitable biomass of western Atlantic bluefin is between 8% and 26% of the level estimated for 1975. Production model analyses indicate that recent exploitable biomass is between 6% and 12% of that which could produce MSY, which itself is theoretically about half the pre-exploitation level. Analyses also indicate that catches at current (1992) levels are likely to result in continued decline in spawning stock biomass.

The assessment gives no basis for recommending that catch limits in the western Atlantic for 1994 should be returned to the pre-1992 level as envisaged in paragraph 1.b of the 1991 Commission resolution. The VPA and production models all indicate that a catch of 1,200 MT in 1994 and beyond, would result in about a 50% chance of no further reduction in spawning biomass. Higher catches will increase the probability of spawning stock decline. However, lower catches would increase the probability of the spawning biomass remaining stable or increasing. As mentioned earlier, the 1992 spawning stock biomass was the lowest observed. Therefore, it is probable that recruitment will be below average and stock rebuilding is predicted to be slow even with severe catch restrictions. However, if environmental conditions are favorable to the survival of eggs, larvae and juveniles, it is possible that recruitment will be higher than predicted from the stock-recruitment relationship.

The impacts of management actions have been expressed in terms of the spawning (8+) biomass, because of an apparent stock recruit relationship for this stock, especially at current low spawning stock sizes.

The Commission requested SCRS to provide options for rebuilding the stock in a reasonable time period. The analysis and management options discussed above illustrate the potential for increasing spawning stock size. Even if the spawning stock were allowed to increase on the basis of zero catch, by 2002 it would still be well below the level associated with MSY (56,000-94,000 MT). There is an estimated 10% probability of reaching the lower end of the range (56,000 MT) of spawning stock biomass producing

MSY by the year 2010. The MSY is estimated to be 4,000-9,400 MT, based on VPA using data from 1970-92 and on production model analyses using the long-term catch history including the substantial longline harvests of the early 1960's off Brazil. The relationship between historical stock sizes and the projected stock size in 2002, under a constant catch option of 1,200 MT is seen in **BFT-Figure 12.** Consistent with the Commission's goal to rebuild the spawning biomass to levels producing MSY, the SCRS recommends that future catches should be below 1,200 MT.

Should severe catch restrictions be imposed, it is possible that the biomass of young non-spawning ages could increase rather rapidly. However, it should be remembered that the objective is to rebuild the spawning biomass.

It is noted that no management options have been presented with respect to changes in the minimum size regulations. This is because any further increase in minimum size, without compensatory changes in catch limits, will result in further displacement of removals on to the older age classes, until such time as the newly protected sizes reach legal size.

SUPPLEMENTAL INFORMATION CONCERNING BLUEFIN TUNA -- 1993 SCRS REPORT

Subsequent to the Western Atlantic Bluefin Assessment Meeting (September 24 to October 1, 1993), Commissioners from the U.S. (October 21), Canada (October 27) and Japan (November 1) requested further information from ICCAT. Answers to the questions are provided below.

RESPONSES TO SPECIFIC QUESTIONS FROM COMMISSIONERS

-- Request of the Commissioner from the USA

1. *The effect on the western Atlantic bluefin tuna stock of the large catches by longliners just to the East of, and in close proximity to 45 degrees West longitude, between latitudes 30 degrees North and 60 degrees North.*

It is not known if the longline catches (**BFT-Suppl. Table 1, BFT-Suppl. Fig. 1**) of bluefin tuna in the central Atlantic come from the western stock, from the eastern stock or from a combination of both stocks. The possible importance of these catches on the western Atlantic stock has been assessed by assuming that all the central Atlantic catches were in fact coming from the western stock.

If the central Atlantic catches are added to the assessment and the abundance indices are the same as the base case, the absolute population numbers are essentially unchanged, but the fishing mortality is estimated to be much higher. If in addition, an abundance index derived from the central Atlantic fishery is added to those of the base case, the absolute population numbers are slightly lower than the base case and the fishing mortality even higher.

From stock dynamics and fisheries management perspectives, if the catches in the central Atlantic indeed come from the western stock, they obviously cause population abundance to be lower than it would have otherwise been. Therefore, these catches could negate the beneficial effects expected from restrictive management actions in coastal waters. If the catches come from the eastern Atlantic, they would not have any effect on the western stock under the working hypothesis of the assessment of two stocks with exchanges of individuals considered too limited to affect the results of management on each side of the Atlantic.

There is continued interest in the subject of the stock structure of bluefin tuna, including further analyses of the tagging data as well as genetic analyses. In order to do the tagging analyses, all release data, particularly the information on tags released but not recovered must be submitted to the ICCAT Secretariat. If this information is available sufficiently early, preliminary results could be available for the next assessment of the bluefin stock(s).

2. *The effect of the retrospective pattern on forward projections of the western Atlantic stock size under various assumed management regimes.*

Retrospective patterns have been identified in VPA based assessments. They have been seen in a variety of assessments, including many stocks in the North Sea and in Canadian groundfishes. The retrospective patterns go in both directions depending on the stock, sometimes abundance appears consistently underestimated, similar to bluefin, while in other

cases, it appears overestimated. However it is not known if the population estimates obtained from the most recent assessments have converged to a true value. The causes of these retrospective patterns are not known and it is therefore not possible to correct for them at this time. Scientific opinions vary as to the advisability to adjust for retrospective patterns.

For western Atlantic bluefin tuna, the average ratio of the population estimate in each of the successive assessments and their coefficient of variations were calculated (SCRS/93/121). The results are presented below by age:

Age	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10+*
Ratio	1.595	1.431	1.498	1.264	1.242	1.199	1.392	1.087	1.231	1.257
CVs	1.021	.917	1.184	.484	.417	.481	.457	.233	.175	.174

The ratios are all positive, suggesting that estimates of year-classes are progressively larger in subsequent assessments. For younger ages, the tendency is not clear and many of the individual ratios (SCRS/93/121) are smaller than one, pointing to an apparent overestimation in some cases. In these cases the variability (CVs) about the estimated ratios is high.

Although an apparent average underestimation of 10+ numbers by about 25% can be seen in the present assessment, it is not known if the current assessment suffers from the same problem. If it did, it would mean that the stock size may in reality be larger than estimated. The effect would be carried over almost directly into short term stock projections. Therefore, the stock projections presented in the report would also be underestimated initially by the same percentage. However, the difference would become larger with time because the retrospective adjustment for younger ages is larger than for 10+.

3. *The sensitivity of the assessment to combinations of indices used in tuning in particular the difference between the use of an optimistic and a pessimistic scenario, and the effect on the projections of future trends in the stock size under various catch scenarios.*

The sensitivity of the assessment to various combination of indices and years has been thoroughly investigated. The results show that the population estimates in the most recent years are indeed sensitive to the choice of indices and years used. The range in population 8+ estimates in 1993 (14,000 to 57,000), compared to the actual estimate of 32,795, is an indication of the considerable uncertainties in the estimates of abundance in 1993. However, the scientific judgement of the scientists involved in the assessment is that the base case represents the best combination of indices and years.

The analysis of the sensitivity of the assessment to various series or years is complicated by the absence of an objective method to identify outliers. The swordfish report recommends the "*development of a priori, objective criteria for outlier detection and objective criteria for rejection of data on biological or fisheries grounds for the various time series data sets used in assessments*". Such criteria are also needed for bluefin and many other species.

BFT-Figure 12 of the bluefin section presents the results of projections with 80% confidence interval. The lower and upper confidence intervals could be interpreted as pessimistic and optimistic scenarios.

-- Request of the Commissioner from Canada

1. *What is the effect on the western Atlantic stock of the fishery for bluefin within 10 degrees east of the dividing line between the two stocks and what would be the effect of the assessment on the western stock should these catches be considered as part of the stock?*

The response to question 1 from the Commissioner from the U.S. applies here as well.

2. *What would be the implications of stock recovery if catches of bluefin tuna under age 9 were reduced to insignificant levels?*

It would be possible to make stock and catch projections to the year 2002 using the base case assessment results and assumptions similar to the base case projections, but with no catches of ages 1 to 8 fish. This would be similar to an increase in the minimum size and the general expectation would be a more rapid recovery of the spawning stock biomass.

However, the SCRS main text mentions that increases in minimum size are not advisable at this time. This is because they will result in a further increase in exploitation of the older ages unless total catches are substantially reduced. In addition, it is very unlikely that a regulation reducing the catches of ages 1 to 8 to insignificant levels could be effectively implemented in the fisheries. Such a regulation would likely result in increased discards, therefore defeating the purpose of the regulation.

-- Request of the Commissioner from Japan

1. *Identification of origin of the bluefin tuna caught in the central Atlantic, or intermingling rate of the potential two stocks in the central Atlantic.*

It has not been possible to identify with certainty the stock of origin of the bluefin catches in the Central Atlantic.

An investigation of the spatial distribution of catches by month and 1 degree square suggest that two concentrations of bluefin tuna form in the central and northwestern part of the north Atlantic between November and January. It was hypothesized that the two concentrations are separated by waters originating from the cold Labrador current. Fishermen report that the fish in the northwestern concentration are fatter than those in the central aggregation. Based on the behavior of the aggregations when they start departing from the grounds, the central concentration could contain fish from both the eastern and the western stock. These are preliminary results based on few years of data and should therefore be interpreted with caution because additional data may change the hypothesis.

If it is found that east and west Atlantic bluefin may be distinguished by genetic techniques, then it could be possible to use this technique to identify the stock of origin of the catches. The methodology, however, could not be applied in the short term.

2. *In addition to the analyses to be conducted on the hypothesis that all catch in the central is of western Atlantic origin,*

   i) assessment of the effects of this catch on the eastern Atlantic stock under the hypothesis that all catch in this area is of eastern Atlantic origin,

The most recent (1992) eastern Atlantic assessment includes these catches made in the Central Atlantic.

   ii) assessment of the effects of this catch on the entire Atlantic stock under the one stock hypothesis.

The average recruitment in the eastern Atlantic stock during 1980-1991 is at least 20 times bigger than recruitment in the western Atlantic stock. This means that an overall assessment including the western bluefin catches would be very close to the results of the present eastern Atlantic assessment.

BIL - B I L L F I S H E S

BIL-1. Description of Fisheries

Billfishes (Istiophoridae) are distributed throughout the tropical and temperate waters of the Atlantic Ocean. Blue marlin, white marlin, sailfish, and longbill spearfish are commonly caught by many fisheries, both directed and incidental, throughout their ranges. Black marlin landings from the Atlantic, if any, are negligible. Major catches of billfishes are incidental to the tuna and swordfish longline fisheries of many countries.

Other major fisheries are the directed recreational fisheries of the United States, Venezuela, Dominican Republic, Senegal, Mexico, Jamaica, Bahamas, and Brazil. Smaller recreational fisheries also exist in Cuba, Bermuda, Trinidad and Tobago, Portugal (Azores, Madeira), Côte d'Ivoire, and numerous other countries in the Caribbean Sea and eastern Atlantic. Artisanal fisheries for sailfish along the west African coast are becoming increasingly important, especially in Ghana and Senegal, but also in the Caribbean island country of Grenada. Artisanal fisheries for marlins and sailfish also exist in Côte d'Ivoire, Barbados, Trinidad and

Tobago, Brazil, Aruba, Curaçao, and in most other Caribbean island countries.

Recent development and the geographical expansion of major longline fisheries in the Gulf of Mexico for tuna, Caribbean Sea for swordfish, and expansion of fisheries in the south Atlantic (south of 5°N) for swordfish and tunas have been reported by various nations (mainly Spain and the U.S. for the eastern and western Atlantic, respectively). Other countries that report expanding longline fisheries in the Caribbean include Venezuela, Barbados, Grenada, and Trinidad. Development of industrialized longline fisheries using small diesel powered boats (11-14 m) and modern equipment, targeting yellowfin tuna, has also recently been reported in St. Vincent and Grenada. Because these regions are known to have significant concentrations of billfishes, incidental catches of these species can be expected to increase in areas of concentrated fisheries. The incidental nature of some billfish catches (mainly for the U.S. and Spanish longline fleets, and tropical purse seine fisheries of numerous countries) also results in discards which are difficult to document and result in uncertainties in the billfish catch statistics.

BIL-2. State of the stocks

The most recent stock assessments presented to the SCRS for blue and white marlin were in 1992; eastern Atlantic sailfish assessments were last presented in 1988. However, as a result of the work accomplished at the Second ICCAT Billfish Workshop in July 1992 (SCRS/92/16), and further refinements in the data base during 1993, an updated assessment for western Atlantic sailfish was presented to the SCRS in 1993. A complete review of data preparations and assessment methods were provided in the 1992 Billfish Workshop Report and the 1992 SCRS Billfish Report. These are summarized below by species.

Stock structure for each species of billfishes were reviewed during the 1992 Billfish Workshop and hypotheses were formulated, in part, based on tag recapture information. However, other information was also considered, including distribution of catches, distribution of larvae, spawning areas, and some preliminary genetic analyses. Tag recapture data for blue marlin indicates that this species makes transatlantic crossings; almost 10% of the tag-recaptured blue marlin moved from the U.S. Virgin Islands in the western Atlantic to the west coast of Africa in the eastern Atlantic (**BIL-Figure 1a**). Interesting tag return data for 1993 includes two instances of first time trans-equatorial movements for blue marlin and one interocean movement, when a blue marlin tagged off the U.S. East Coast was recaptured near the island of Mauritius in the Indian Ocean. Tag returns of white marlin indicate movements of some fish between the U.S. east coast to off the northern tip of South America (**BIL-Figure 1b**). Tag returns of interest for 1993 include the first transatlantic (U.S. Virgin Islands to Morocco) and transequatorial (U.S. east coast the Gulf of Guinea) movements documented for white marlin.

BIL-2.a Blue marlin

Total reported Atlantic landings of blue marlin (**BIL-Table 1, BIL-Figure 2a**) increased rapidly from 1960, reaching a peak of more than 9,000 MT by 1963. Landings generally declined until 1967 and remained relatively stable through 1977, fluctuating between 2,000 and 3,000 MT. From 1977 to 1988, landings declined to a somewhat lower level, fluctuating between 1,300 and 2,700 MT. Landings increased to almost 4,000 MT in 1989 and since then have fluctuated between 3,200 and 2,500 MT through 1992. The north and south Atlantic regions show trends similar to those for the total Atlantic. Most of these catches are incidental to the longline fisheries for tuna and swordfish; the general trends in catches have followed the intensity of these fisheries. It should also be noted that estimates of blue marlin (as well as other species of billfish) by-catch mortality in the U.S. longline fishery in the western Atlantic for 1989 through 1992 are considered under-reported. The eastern Atlantic tropical purse seiners' by-catch may also be significant, but these data have not been updated since 1983.

New series of historical landing data for blue marlin and other billfishes were submitted for Trinidad and St. Vincent and updated historical landings were reported for Grenada and Barbados. A question concerning possible Taiwanese billfish landings in the longline catch reported from Trinidad needs to be resolved. In addition, updates of Venezuelan landings for all billfish species should be done for longline, recreational, and unclassified (artisanal) gears and the historical recreational landings for blue marlin from Cote d'Ivoire should be added. Clarification of Korean

billfish landings is also needed since recent landings are low, considering the size of the fleet, target species, and areas fished.

Production model assessments of Atlantic blue marlin presented to the SCRS in the early 1980's generally showed declines in the stock(s) biomass from the early 1960's to the mid-1970's, with some stabilization for the total Atlantic from the mid-1970's through 1980, but at values far below the 1965-1975 average. These results suggested that blue marlin were at least fully exploited and likely over-exploited by about 1980 or so. The updated assessments presented to the 1992 SCRS included an additional 10 years of data compared to assessments carried out in the early 1980's (CPUE's for each stock hypothesis are given in **BIL-Figures 3, 4 and 5**) and used a more flexible model structure (ASPIC). The general results from the analysis for each stock hypothesis (**BIL-Figures 6a-c, 7a-c**) suggest that biomass is below B_{msy} and in this respect the results are very similar to those of earlier stock assessments.

Reported landings of north Atlantic blue marlin are lower in 1991 and 1992 than the estimated equilibrium replacement yield (approximately 1,600 MT in 1990). These recent levels of landings are expected to have resulted in some improvement in stock status since 1990. On the other hand, landings of south Atlantic blue marlin in 1991 and 1992 were in excess of estimated equilibrium replacement yield (approximately 700 MT in 1990). These recent catch levels are expected to have resulted in continued decline in stock biomass. For the total Atlantic hypothesis, reported landings in 1991 and 1992 were also somewhat larger than estimated equilibrium replacement yield (approximately 2,500 MT in 1990). These levels of landings are expected to have resulted in some decline in stock biomass.

The Committee is concerned about the continuing high level of fishing mortality which has depressed stock biomass to levels below that which could produce MSY in most stock hypotheses examined here.

BIL-2.b White marlin

Landings reported from the total Atlantic (**BIL-Table 2, BIL-Figure 2b**) increased rapidly from 800 MT in 1961 to almost 5,000 MT by 1965 and then gradually declined to 900 MT, with fluctuations, during the following 15 years. Landings during the last decade have been comparatively stable, fluctuating between 1,000 to 1,825 MT.

As was the case for blue marlin, the white marlin stock assessments presented to the SCRS in 1992 were the first since the early 1980's. Early assessments generally showed a sharp decline in the stock(s) biomass from the early 1960's through 1970, with continued but more moderate declines (with variation) to low levels through 1980. The stock(s) were considered to be at least fully exploited and likely over-exploited by the later part of this time series (mid to late 1970's). The differences between early assessments (1979-1982 SCRS) and those presented to the 1992 SCRS, in terms of methodology and available data, for white marlin are the same as stated previously for blue marlin and the CPUEs for each stock hypothesis are given in **BIL-Figures 8, 9 and 10**. The general results from the analysis for each stock hypothesis (**BIL-Figures 11a-c and 12a-c**) illustrate declines in stock biomass to levels well below estimated B_{msy} and corresponding increases in fishing mortality above estimated F_{msy} through 1990.

Recent landings of north Atlantic white marlin (1991 and 1992) were lower than the estimated equilibrium replacement yield for this stock hypothesis (approximately 500 MT in 1990). These landings are expected to allow for some improvement in the status of this resource since 1990. In contrast, recent landings (1991 and 1992) of white marlin in the south Atlantic and total Atlantic have been in excess of estimated equilibrium replacement yields, approximately 325 MT and approximately 875 MT in 1990 for the south Atlantic and total Atlantic stock hypotheses, respectively). These levels of landings are expected to have resulted in further reduction of biomass under these stock hypotheses.

For the south Atlantic and total Atlantic hypotheses, the fishing mortality rates are far too high to allow any recovery. As a result, the Committee considers these stocks to be overexploited.

The Committee felt that in spite of remaining uncertainties about the data base, substantial increases in available information and refinement in assessment methodology (compared to previous assessments) resulted in improved assessment of the current status of white marlin stock(s). The Committee remains concerned about the depressed state of white marlin

biomass and the high levels of fishing mortality, which has been continuing for about two decades.

BIL-2.c Sailfish /spearfish

Landings reported for the total Atlantic (**BIL-Table 3, BIL-Figure 2c**) increased from about 300 MT in 1960 to almost 3,000 MT by 1965. Landings fluctuated around 2,000 MT through 1972 and then declined to less than 1,200 MT by 1975. Landings increased again to about 3,300 MT by 1979, declined to less than 2,000 MT by 1982 and then increased to over 3,700 MT the following year. After 1983, a steady decline, with some fluctuation, in landings has occurred through 1992. The long-standing problem of separating sailfish from spearfish landings from offshore longline fisheries of many countries remains unresolved. However, some of the database problems were addressed at the 1992 Billfish Workshop. For example, sailfish Task I data from Japanese (1961-1990) and Taiwanese (1967-1979) longline fisheries that had previously been reported for the total Atlantic were broken down into eastern and western Atlantic, using average size, and converting the number of fish to weight. Despite these improvements, these data should still be considered provisional until problems are further clarified.

West Atlantic

Previous production model assessments for western Atlantic sailfish (1982 SCRS) indicated that this resource was moderately exploited. The updated assessment submitted to the 1993 SCRS includes an additional 10 years data compared to assessments carried out in the early 1980's and used a more flexible model (ASPIC), as discussed for blue and white marlin. Following significant refinements in data preparation, the western Atlantic database in the new assessment consisted of catch and effort data from the Japanese longline fishery (fully standardized CPUE's), all other longline fisheries combined, and the Venezuelan, Mexican, and U.S. recreational fisheries (**BIL-Figure 13**). Models were fit to simultaneous time-series of catch and effort statistics using four different approaches: (A) separating by decade for the 1970's and 1980's, fitting model parameters independently, and relinking; (B) estimating separate catchability coefficients (q's) between the 70's and 80-92 for each of the longline fisheries; (C) estimating separate q parameters between the 1960's, 1970's, and 1980-1992 for the longline fisheries; and (D) estimating separate q parameters between 1960-1979 and 1980-1992 for each longline fishery.

Point estimates of maximum sustainable yield for western Atlantic sailfish ranged from 606 to 707 MT (eastern Atlantic sailfish MSY is about 2,700 MT) for the four assessment approaches (**BIL-Figure 14**). Bootstrapping techniques were used to construct bias-corrected estimates and approximate confidence intervals for MSY, as well as relative biomass and fishing mortality trajectories for each assessment approach (**BIL-Figures 15 a-d, 16 a-d**). Annual values for the first 2 years for biomass and fishing mortality trajectories were omitted due to extreme imprecision, as was the case for similar analyses for blue and white marlin presented to the 1992 SCRS. All approaches estimated similar trends in biomass trajectories, with greatest biomass at the beginning of the time series and lowest values near the end of the time series. In addition, relative biomass trajectories exhibited a stable trend over the most recent years with respect to MSY. The opposite trend, as expected, was generally true for fishing mortality trajectories. Of the four approaches used in this assessment, (B) and (D) were designated as the "best" of those examined due to fit and variability of the models (**BIL-Figures 15b and d, 16b and d**). Model B (**BIL-Figures 15b and 16b**) indicates the stock is near or at the fully exploited level over the last 7 years (1986-1992), while model D (**BIL-Figures 15d and 16d**) suggests over-exploitation during this period. These results should be interpreted with the caveats that the offshore longline landings still include an unknown proportion of spearfish in the sailfish catch and that the "other longline " section of the analysis assumes the Japanese CPUE is representative of stock abundance. Considering these and other uncertainties of the data base, the Committee agreed that a reasonable conclusion from this analysis is that the stock is currently at least fully exploited, with a possibility of being overexploited.

Correlation analysis of relative biomass estimates from 1972 to 1992 for approaches (B) and (D) was conducted to provide insight into the reasons for the different conclusions (**BIL-Figure 17**). Results of this analysis indicates that although estimates of q differ between the two models, both models are very similar with respect to trends during these years, and that the major discrepancy is a matter of scaling. Thus, there is support that these two models are essentially the same

for this time period, and both models represent population trends for this fishery with some degree of precision, regardless of the time-series used.

Sensitivity analysis was also conducted, similar to analyses for blue and white marlin reported to the 1992 SCRS, to evaluate model assumptions related to under- or over-reporting of the landings. Results indicate that any fixed adjustments in yield will cause corresponding shifts in estimated quantities derived from K (carrying capacity), therefore will not affect relative trajectories. These results are essentially the same as those reported last year for blue and white marlin. However, the model could be sensitive to unfixed adjustments in yield, although this type of problem has not been documented in the data base nor evaluated at this time.

The Committee previously expressed concerns that the downward trend in recent CPUE indices for western Atlantic sailfish (**BIL-Figure 13**) maybe indicative of substantial declines in biomass from the levels of the late 1960's and early 1970's. The results of the new exploratory assessments reported to the 1993 SCRS confirm that biomass trends have declined to fully exploited or over exploited levels, particularly near the end of the time series. In addition to analyzing ten more years of data, the use of the flexible non-equilibrium ASPIC model allows for simultaneous incorporation of more data series than the equilibrium production model analyses previously performed for this species. In this respect, the 1993 analysis is greatly improved. However, the Committee is cautiously optimistic that the problems related to separating spearfish from the sailfish landings in the offshore longline fishery can be resolved. This would allow more definitive conclusions on the status of the stock. In addition, the "other longline" section of the analysis should be better represented by respective countries, rather than assuming the Japanese CPUE is representative of stock abundance. Until these problems are resolved, uncertainties will remain in any analysis of this fishery.

East Atlantic

No new stock assessments for eastern Atlantic sailfish were presented to the 1993 SCRS. The most recent equilibrium assumption production model results, i.e., those presented to the SCRS in 1988, suggest that the coastal eastern Atlantic stock of sailfish is not yet fully exploited. Results of a cohort analysis conducted at the same time were not conclusive because of uncertainties with recruitment trends and since there was a need for improved quality of the data before more definitive stock evaluations can be made. According to these assessments, the 1988 estimates of MSY for eastern Atlantic sailfish are about four times higher than those recently made for western Atlantic sailfish (**BIL-Figure 14**). Perhaps an updated assessment for eastern Atlantic sailfish, using a more comprehensive analysis (including Japanese longline data) will lend insight into this discrepancy.

The most recent Japanese longline sailfish CPUE indices (not fully standardized) for the central and eastern Atlantic fishing grounds were those presented to the 1988 SCRS. These indices indicated a steep declining trend from the late 1960's to the mid-1970's, followed by a more gradual decline through 1986. Recent progress in updating and standardizing the Japanese longline CPUEs for western Atlantic sailfish (**BIL-Figure 13**) suggest that this could also be accomplished for eastern Atlantic sailfish in the near future. Standardized recreational CPUE from Senegal that were presented to the 1988 SCRS indicated stable tendencies from 1970-1980 (in the same fishing zone as the Japanese indices), then showed gradual declines through 1986. The Committee noted that Senegalese recreational data also need to be updated and interpreted with caution because of potential interactions with the artisanal fishery for sailfish in Senegal, which occurs at the same time, and results in higher catches of sailfish. These factors may contribute to the downward trend in recreational CPUE for this fishery during the most recent years (1987-1990). The CPUE indices from the Senegalese artisanal fisheries were presented at the 1992 Billfish Workshop (**BIL-Figure 18a**). These showed a continuous increase in CPUE's, particularly during the most recent years (1986-91). Nominal CPUE's for the artisanal fisheries from Ghana were also presented at the 1992 Billfish Workshop. Although these CPUE's are for all species of billfish combined, sailfish represent over 80% of the total, and a moderate decline, which stabilized in the last three years, was shown from 1984 to 1991 (**BIL-Figure 19b**).

The Committee is encouraged by the increase of information on eastern Atlantic sailfish and the potential availability of data from the offshore longline fishery in the eastern Atlantic, as evidenced by the recent assessment for western Atlantic sailfish. After this information is updated and analyzed further for complete standardization of each CPUE series, and

corrections of the landings and effort statistics are made, an improved assessment for this species in the near future should result.

BIL-3. Effects of Current Regulations

No ICCAT regulations are currently in effect for billfishes. However, two ICCAT Contracting Parties (the U.S. and Venezuela) and one non-Contracting Party (Mexico) established domestic regulations involving Atlantic billfishes in 1988 and 1990-1991. Venezuela initially prohibited commercial fishing in the area of La Guaira in 1988 and in 1990, and stricter regulations were established to minimize Venezuelan recreational landings of billfishes and prohibit their sale. In addition, Mexico prohibited commercial longliners within 50 miles of her coast in 1990 and revised billfish regulations to eliminate the commercial sale of billfish in 1991. The 1988 regulations in the U.S. have affected billfish landing statistics (number and size of fish landed) in the commercial longline fisheries for tuna and swordfish by eliminating possession and sale of billfish. These changes are presented in the 1990-91 U.S. National Reports and in various SCRS documents presented in 1990 and 1991. In addition, regulations on minimum size for each species were also established for the U.S. recreational fishery in 1988. Volunteer release policies for U.S. recreational billfish tournaments, as well as for the recreational billfish fisheries of Venezuela, Jamaica, Mexico, Brazil, Bermuda, Trinidad and Tobago, and St. Lucia have progressively increased over the last decade and have no doubt helped to reduce fishing mortality from this segment of the fishery.

BIL-4. Recommendations

BIL-4.a Statistics

The Committee recommended:

i) That accurate estimates of total landings (Task I data) by all types of gears be made, by species, for Atlantic blue marlin, white marlin, sailfish, and spearfish. In particular, the collection of billfish landing records from non-Contracting Parties, that do not normally report to ICCAT, should be continued and expanded.

ii) That catch, effort, size statistics and, if possible, landings by sex from all countries be reported by five-degree area and by month, as outlined in the ICCAT sampling instructions for billfish (SCRS/88/28) and the ICCAT Field Manual.

iii) That catch statistics for sailfish and spearfish, particularly from offshore longline fisheries, be reported separately in order to facilitate stock assessment of both species.

iv) That sailfish/marlin discards for historical longline and purse seine fisheries, as well as more recently developed fisheries, be evaluated and updated, especially for those fisheries catching swordfish in the Gulf of Guinea.

BIL-4.b Research

The 1994 Program Plan for the Enhanced Research Program for Billfish (**Appendix 6 to Annex 23**) describes the general areas of recommended research. Many of the specific task assignments proposed for the 1992 Billfish Workshop (SCRS/92/16, Collective Volume of Scientific Papers, Vol. XLI) were accomplished for marlins and western Atlantic sailfish but not for eastern Atlantic sailfish (these included elements for both research and statistics). Research emphasis for these tasks should now be placed on eastern Atlantic sailfish. General recommendations of the Committee include but are not limited to the following:

i) Age and growth studies of marlins and sailfish should be continued. Active sampling of juvenile marlin and sailfish should be continued.

ii) Commercial and recreational fisheries data for billfishes (particularly for eastern Atlantic sailfish) should be analyzed to develop standardized abundance indices. This is particularly important for the offshore longline fisheries, so that relationships between present abundance of sailfish and that for the 1969-75 period can be evaluated. In this analysis, gear type, gear deployment, and target species should be taken into account.

iii) Full implementation of the ICCAT billfish tagging program will require special efforts regarding tag-recaptured fish. These procedures are described in detail in the 1994 Program Plan for the Enhanced Research Program for Billfish (Appendix 6). All ICCAT Contracting Parties and reporting nations are encouraged to make a special effort to distribute tag-recapture cards, particularly to the larger offshore longline vessels, so tag recapture data and biological samples can be recovered by ICCAT. Tag release as well as tag recapture efforts in Brazil and in the eastern Atlantic off Senegal should be enhanced.

iv) The intensity of studies on the reproductive biology of billfishes in the eastern and western Atlantic needs to be continued and expanded. This will require analysis of data collected in the past, as well as obtaining new information.

v) Studies of telemetry or hook timing should be initiated to evaluate the short-term survival of billfish caught and released from longline vessels.

vi) Studies to investigate possible alternative gear and deployment schemes that could reduce fishing mortality of billfishes from longline fisheries targeting other species should be initiated.

BIL-4.d Management

Recent stock assessment results for blue and white marlins and western Atlantic sailfish, which indicate that these species are either fully or over-exploited, warrant consideration for development of methods to reduce fishing mortality rates on billfish at this time. Development of effective management measures for these stocks are particularly difficult, since the major portion of the landings is a result of off-shore longline fleets targeting tuna and swordfish. Thus, any mortality reduction measures implemented for billfish risk affecting the targeted species as well. A relatively large volume of available information indicates that about 1/4 to 1/2 of the marlin and sailfish caught by longline vessels appear to be alive when brought along side of the vessels. Therefore, releasing these may be one approach that could reduce the currently high rates of fishing mortality without affecting landings of the target species. The Committee believes that such an approach would first have to be implemented on an experimental and selective basis while additional research is conducted (perhaps telemetry or hook timing studies) to determine the rate of survival of billfish caught and released off longline vessels. If the short-term survival of billfish released from longline vessels is sufficiently high, then this approach, in combination with an observer program to verify survival estimates, may be one practical method for reducing fishing mortality on these species.

In light of the recent assessments for blue and white marlins presented at the 1992 SCRS and the assessment of western Atlantic sailfish presented to the 1993 SCRS, the Committee recommended that the fisheries for billfishes be monitored closely.

SWO - SWORDFISH

INTRODUCTION

In 1993, the Committee has been requested to assess the effects of current regulations. This report only contains studies related to the effects of current regulations, an update of new information, and recommendations for conducting the next assessment. The next full population assessment will be conducted in 1994.

Little new information on the Mediterranean was received. A high percentage of Mediterranean fishing countries did report swordfish landings for 1992. The Committee continues to be gravely concerned about the high landings in the Mediterranean, particularly of small fish, and hopes that a full population assessment can be conducted at the next GFCM/ICCAT meeting.

ATLANTIC

SWO-ATL-1. Description of Fisheries

Total Atlantic landings of swordfish reached an historic high of 33,606 MT in 1989 and have declined by 29% to 23,779 MT in 1992 (**SWO-Table 1** and **SWO-Figure 1**). Swordfish are taken throughout the Atlantic by directed fisheries and as a by-catch of the tuna longline fisheries. The Japanese tuna fishery starting in 1956 has operated throughout the Atlantic (**SWO-Figure 2**) and in 1992 had an 8% swordfish by-

catch (SCRS/93/85). Directed longline fisheries in Spain, the United States, and Canada have operated since the late 1950's or early 1960's, and harpoon fisheries have existed since the late 1800's. There are other directed swordfish fisheries (i.e., Portugal, Venezuela) and by-catch fisheries which take swordfish (i.e., Taiwan, Uruguay, Korea, Brazil).

In the north Atlantic, the directed swordfish fisheries on both sides of the ocean have operated primarily by deploying longlines at night. Minor landings are attributed to the driftnet, harpoon, and trap fisheries. Since the mid-1980's, the U.S. and Spanish longline fleets have extended their operations offshore, and now their fishing grounds overlap in the central north Atlantic (**SWO-Figs. 3 and 4**). North Atlantic catch and effort for swordfish increased continuously after 1978 when U.S. mercury standards were revised. Since the historic high of 19,959 MT in 1987 (**SWO-Table 1 and SWO-Figure 1**), the landings declined 33% to 13,352 in 1992, which is about the same as 1991 landings. Major fishing nations, Spain and the U.S., have decreased their peak north Atlantic landings by 54% since 1987 and 38% since 1988, respectively. The decreases have been at least partially attributed to a significant shift of Spanish effort to south of 5°N starting in 1988, and to the U.S. implementation of an annual quota, which in 1992 was 4,561 MT.

Since 1988, the Spanish longline fishery has expanded its fishing grounds towards the south and southwest, as far as the Gulf of Guinea (**SWO-Figure 3**). More than 50% of Spanish landings (in weight) are from south of 5°N. Since the peak in 1989, Spanish landings from the south Atlantic decreased by 27% and by 22% for the total Atlantic. In the southwestern Atlantic, South American longline fisheries target either swordfish or tunas, depending on the relative catch rates. Total landings in the south Atlantic, were relatively low (generally less than 5,000 MT) until the early 1980's. Since 1988, reported landings have exceeded 10,000 MT, reaching a peak in 1989 (16,610 MT). This was followed by a 37% decline to 10,427 MT by 1992, due in part to a shift of part of the Spanish fleet to the Pacific in 1990 and 1991, and to a reduction in the Japanese swordfish by-catch (SCRS/93/85). The Committee noted that the landings reported for Korea and Taiwan might have been in error. For this reason, the 1992 landing values for these nations were assumed to be the same as the 1991 levels. The Taiwanese reported landings of over 5,000 MT for 1992, if true, represent a substantial increase in swordfish landings by Taiwan. The Committee also noted some discrepancy between the national report presented to the SCRS (e.g. SCRS/93/30) and the landings shown in **SWO-Table 1**, which are based on officially submitted Task I catch statistics.

SWO-ATL.2 State of the stock

SWO-ATL-2.a Catch at size

The Secretariat proposed updating the catch-at-size data base by the seven major sampling areas (1-3, 4A, 4B, 6-7) of the Atlantic up to 1992 (SCRS/93/9), including substitutions of size data for the catches that have no matching data, and raising these to the Task I catch. After reviewing the proposed data matching, substitutions and raising, the Committee approved the procedure. The catch-at-size data were updated during the session and were further examined for the proportion of landings of fish less than 125 cm LJFL (lower jaw fork length) to evaluate the degree to which different nations were in conformity with the ICCAT minimum size recommendation.

The Committee noted that to conform with the minimum size regulations implemented, some catches made by different countries are not landed, but are discarded at sea. SCRS/93/103 provided estimates of dead discarded catch in the U.S. fleet of between 37,000-42,000 fish in 1992.

Document SCRS/93/94 concluded that voluntary discard of swordfish was not common in the Spanish fleet, although there was some catch (about 2-4% of the total catch) which was either shark damaged, eaten on board, or discarded, and thus was not counted in the historical landed catch statistics. Discarding is also thought to be low in the Japanese and Canadian fleets.

SWO-ATL-2.b Catch Rates

North Atlantic

Updated catch rate information was provided from three major longline fisheries. Those are the Japanese (SCRS/93/84), Spanish (SCRS/93/114) and U.S. (SCRS/93/104) abundance indices standardized by the General Linear Modelling approach. The basic data are aggregated catch and effort data by month and 5-degree blocks for the former fishery and catch per

trip information for the latter two fisheries. As in past analyses, age-specific indices were developed for all these fisheries by the age-slicing method using the ICCAT Gompertz growth equation for pooled sexes. Five age-specific indices (age 1, 2, 3, 4, and 5+) were obtained from the Spanish and U.S. fisheries. An index for age 5+ was estimated from the Japanese fishery.

The relative trends of these indices for the north Atlantic are tabulated in **SWO-Table 2** and shown in **SWO-Fig. 5a**. The U.S. indices in 1992 for fish ages 1 and 2 were much lower than the values in previous years due mainly to the implementation of the ICCAT minimum size regulations. Since these catch rates were based on landings, catches discarded in 1991 and 1992 are not included in the analysis. The 1992 abundance index values for older fish (ages 3 to 5+) are higher than the 1991 abundance value. However, caution is needed for the interpretation of the changes in the index values since these could be caused by, among other factors, changes in catchability not adequately accounted for in the analysis.

The Spanish indices indicate almost the same level of relative abundance in 1992 for age 2 and 4 fish and a slightly lower value for age 3 fish. The same indices for age 1 and 5+ are slightly higher in 1992. Trends of indices between the Spanish and U.S. fleets are consistent for the age 5+ (**SWO-Fig. 5a**).

The Japanese index shows a continued decline in 1992. However, it should be noted that the 1992 statistics are preliminary. As regards this index, the Committee suggested that catch information other than swordfish be included in the model since the Japanese longliners do not target swordfish. This was accomplished at the meeting and the revised preliminary index value for 1992 also indicates a continued decline.

South Atlantic

The Committee expressed concern about the status of swordfish in the south Atlantic because of the large increase in landings in recent years. The absence of additional standardized abundance indices other than those from the Japanese and Spanish fisheries hinders stock assessment. The Japanese longline CPUE with preliminary 1992 statistics for ages 5+ shows a declining trend from 1975 through 1992, while the age 5+ index from the Spanish fleet shows a flat trend since 1989 (**SWO-Fig 5b**). Spanish CPUE for the south Atlantic stock was derived mainly from the areas adjacent to 5°N. Therefore, it is recommended that the scientists who are familiar with the other fisheries in the south Atlantic countries participate in developing standardized abundance indices.

SWO-ATL-2.c Population parameters

No new information on sex specific growth rates was made available during the meeting. However, U.S. scientists indicated that a large set of anal fin spines recently collected in the northwestern Atlantic is being analyzed for validation and estimation of growth rates by sex. Results may be available for the 1994 swordfish assessment. The Committee also reviewed the report of the July 1993 ICCAT Workshop on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age (COM-SCRS/93/17). That workshop resulted in the distribution of simulated and real data sets that could be used to evaluate the performance of various aging or assessment methods with embedded growth models. Several such methods were presented at the workshop (e.g. SCRS/93/51 and SCRS/93/56) which show good potential for incorporating variability in length at age into the assessment. The Committee noted that a second workshop was recommended to be held in 1994, the results of which will be useful for the next swordfish assessment meeting.

New biological and biometric information was presented for swordfish caught off Madeira (SCRS/93/57). The data indicate that sex ratios at size are of similar pattern to those observed in adjacent waters and that the area is not a spawning ground for the area time analyzed.

Document SCRS/93/57 also showed that a conversion factor between gutted weight and round weight of 1.11 (RW = 1.11 GW) was more appropriate than the factor of 1.14 traditionally used by ICCAT. Because different fisheries have different ways of gutting and heading swordfish, the Committee recommends that fleet-specific conversion factors be estimated for future use.

The Committee reviewed reports updating sex ratio-at-size data and analyses. Document SCRS/93/106 evidenced differences in sex ratio at size for three areas (tropical, subtropical and temperate) and supported previous estimates of spawning seasonality and location (subtropical area in the

winter), and maturity ogives (50% maturity at 116 cm and 189 cm LJFL for males and females, respectively).

In 1992, the Committee recommended that further work should be carried out for understanding the temporal and spatial dynamics of sex ratio-at-size data so that the catch at size could be separated by sex for sex-specific assessments. Document SCRS/93/113 used hierarchical clustering methods to identify similarities in sex ratio-at-size patterns in 13 areas of the northeast and south Atlantic. The analyses showed that certain adjacent groups of areas and times could be grouped together. However, the Committee recommended that further work be conducted to identify similarities in the patterns over time for each of these area groups. The document also showed that areas off the east coast of South America were very dissimilar to all other areas analyzed so far in that the proportion of females at sizes below 175 cm LJFL was very small. In order to test the hypothesis that female swordfish move close to the coast(among other possibilities), the Committee recommended that sex ratio-at-size data be collected and analyzed for coastal areas south of 10°N in South America.

SWO-3. EFFECTS OF CURRENT REGULATIONS

Prior to the ICCAT recommendations in 1990, several national regulations were adopted by different countries, mostly for the regulation of gear and licensing control. Canada limited entry into the swordfish fishery in 1984, has strict vessel replacement regulations and does not permit gillnetting of swordfish. Driftnets targeting swordfish have also been banned by Spain (1990).

The ICCAT recommendations for swordfish took effect in July 1991. They include the following specific measures among others:

> *First:* That the Contracting Parties whose nationals have been actively fishing for swordfish in the North Atlantic take measures to reduce the fishing mortality of fish weighing more than 25 kg in the area north of five degrees North latitude by 15 percent from recent levels. The reduction in fishing mortality shall be determined by the catch in 1988 or may be a reduction of fishing effort that will result in the equivalent reduction of fishing mortality.
>
> *Second:* In order to protect small swordfish, the Contracting Parties take the necessary measures to prohibit the taking and landing of swordfish in the entire Atlantic Ocean weighing less than 25 kg live weight (125 cm lower jaw fork length); however, the Contracting Parties may grant tolerances to boats which have incidentally captured small fish, with the condition that this incidental catch shall not exceed 15 percent of the number of fish per landing of the total swordfish catch of said boats.
>
> In addition, the Contracting Parties are encouraged to take other appropriate measures within their national jurisdictions to protect small swordfish, including, but not limited to, the establishment of time and area closures.
>
> *Third:* The Contracting Parties that are directly fishing for swordfish shall take the necessary measures to limit the fishing mortality of swordfish in the entire Atlantic Ocean to the level of catch in 1988, or will limit the fishing effort that will result in the equivalent level of fishing mortality.
>
> *Fourth:* That, notwithstanding the first and third paragraphs, Contracting Parties whose recent catch levels are small shall keep their annual catches within levels that are reasonable and abide by conservation measures mentioned in paragraph two.

In response to the 1990 ICCAT recommendations for swordfish regulatory measures in the Atlantic, the United States, Spain, Japan, South Africa, and Canada have adopted national regulations in conformity with the ICCAT recommendations.

At the 1992 Commission meeting, the recommendations included the following:

1) The Commission advise all nations involved in fisheries which harvest swordfish in the Atlantic Ocean to make every effort to maintain their catch levels or fishing capacity for the immediate future (1993-1994) at recent levels;

2) That the SCRS be instructed to consider the impact of various management measures on Atlantic swordfish at the 1994 meeting that will enable the stock to rebuild over a reasonable period of time and be maintained at MSY levels.

Regarding the reduction of fishing mortality (catch or the equivalent amount of fishing effort), for fish weighing more than 25 kg or fish larger than 125 cm LJFL, in the north Atlantic, (1990 recommendation 1), estimated total F in 1991 (from the 1992 analysis) has decreased 15-42% (from production and VPA model analysis, respectively), relative to 1988. Landings accordingly had also decreased from 19,331 MT in 1988 to 13,301 MT in 1991, a decrease of 31%. Landings in 1992 (13,352 MT) were similar to those in 1991. **SWO-Table 3** lists the weight of swordfish ≥ 125 cm LJFL landed by nation along with an index value relative to 1988. The United States and Spain have reduced their landings in weight of fish equal to or larger than (≤) 125 cm LJFL by 30% and 38%, respectively.

With respect to the 1990 recommendation (no. 2) to protect small swordfish, **SWO-Table 4** lists the percentage of undersized fish landed (LJFL less than (<) 125 cm) by nation in the north and south Atlantic. **SWO-Table 5** provides a summary of the major areas, including the Mediterranean. In 1992 the percentage of swordfish less than 125 cm LJFL was 14.8% for all nations fishing in the Atlantic. Recent changes in the percentages of swordfish less than 125 cm LJFL may reflect the regulations or changing effort distributions and stock dynamics. The Committee noted that the only significant decline in landings of swordfish less than 125 cm LJFL since 1991 was for the U.S. fleet. Estimates of discards in the U.S. fishery were presented and this source of mortality will be considered in the 1994 assessment. Additional information on discards was provided by Spain. Given relatively high landings of small swordfish, particularly in the north Atlantic, and dead discards in the northwestern Atlantic, the intended effect of the minimum size regulation has probably been reduced. The Committee noted that changes in selectivity patterns should be addressed during the 1994 assessment.

With respect to the 1990 recommendation (no. 3) to limit fishing mortality from minor fishing nations, available information indicates that fishing mortality rates attributed to nations other than the United States, Spain, and Japan could be increasing. A length-based sequential population analysis for the north Atlantic swordfish presented at this meeting (SCRS/93/51) provided results consistent with the previous assessment. That analysis also indicated a significant partial fishing mortality that can be attributed to catches by fishing nations other than Spain, the United States, and Japan. That proportion of total fishing mortality has increased significantly since 1985. These minor fishing nations now (1992) account for slightly more than 20% of the swordfish landings in numbers and in weight (**SWO-Table 4**) in the total Atlantic.

With respect to the 1990 recommendation (no. 4) for fisheries which do not target swordfish, **SWO-Table 6** provides estimates of the proportions of swordfish in the total catch of tuna and billfish from the Japanese, Korean, and Taiwanese longliners in the north Atlantic. These proportions are lower than the recommended 10% by-catch level.

The Committee reviewed landings data from the south Atlantic along with the Japanese and Spanish CPUE indices for that region. The Committee continued to express concern with the high landings and the lack of progress on developing standardized CPUE indices from several of the fisheries in that region. The Committee emphasized the need to conduct a full assessment of the assumed south Atlantic stock at the 1994 assessment meeting. South Atlantic landings increased to a peak of 16,610 MT in 1989 and have since declined to 10,427 MT in 1992. The Committee also discussed the need to carry out the sensitivity analyses relative to different hypothesized stock boundaries.

SWO-4. Recommendations-Atlantic

An assessment of swordfish stock status was not conducted this year. However, the Committee notes the following comments on the current status of the stock. The estimated equilibrium replacement yield for north Atlantic swordfish in 1992 from the most recent stock assessment was 13,800 MT. Reported catches in 1992, in combination with estimates of the discarded catch were about the same as the estimate of equilibrium replacement yield. Catches at this level are expected to maintain stock biomass at about the 1992 level. The Committee noted that several studies have been carried out in response to 1992 recommendations, both in biological and methodological aspects of stock assessments including the "Workshop on the Technical

Aspects of Methodologies Which Account for Individual Growth Variability By Age" held in Canada. Most of the recommendations made by the 1992 SCRS were made again this year. Several additional recommendations were also made. Considerable time was spent discussing plans for the 1994 assessment. It was recommended by the Committee that a prioritized agenda for the 1994 assessment be developed and circulated to member nations well in advance of the 1994 swordfish stock assessment meeting.

SWO-4.a Statistics

i) All countries catching swordfish (directed or by-catch) should report catch and effort statistics by five degree rectangles or by smaller areas, and by month.

ii) All countries should carry out an adequate level of size sampling, and when possible, sampling by sex and utilizing lower jaw fork length (LJFL), preferably by month and by five degree rectangles. The Committee also recommended that the ICCAT Billfish Program continue to cover the Venezuelan longline fishery and that appropriate conversions from pectoral fin fork length (PFL) to LJFL be developed.

iii) Efforts by the national scientists should continue to collect critical fishery statistics not covered by the ICCAT data collection systems, especially for various Caribbean countries, Mexico, and large Portuguese longline boats.

iv) Information on the number of undersized fish caught, and the numbers discarded dead and alive should be reported so that the effect of discarding is included in the stock assessment. The Committee noted that an observer sampling program had been implemented by Spain since 1990 and by the U.S. in 1992. The results of these data collection activities were presented to the Committee. Other countries should establish sampling programs that will acquire these data. In many cases, implementation of such a program will require observer coverage.

v) All countries with driftnet, trawl, and pair-trawl fisheries should report their catch, effort and size data.

vi) Deadlines for reporting Tasks I and II catch and size data must be strictly adhered to in order to facilitate timely stock assessments. Submission of late, unsized and unraised data may not be accepted after 31 July for inclusion in the current year assessment. A catch-at-size table must by available when the stock assessment session begins.

vii) It was recommended that fishery-specific conversion factors be developed for various measurements and weights.

SWO-4. b Research

The Committee recommended the following research items:

i) A validated growth model by sex should be developed with the use of hard parts since the growth analysis based on the direct ageing method using anal spines has not been validated and the analysis was based on data collected more than 15 years ago.

ii) Studies on stock structure must have high priority since stock assessments have been conducted mostly for the hypothetical north Atlantic stock. Genetic techniques to identify stock(s) and quantify mixing rates should be continued and expanded. Samples for mtDNA analysis from various parts of the Atlantic and other ocean basins should be provided to develop the stock identification analysis. However, in view of the time needed to conduct such studies, the sensitivity of the assessment results and management advice to various assumptions about the stock structure needs to be thoroughly evaluated.

iii) Except for the Japanese and Spanish longline fisheries, reliable standardized CPUE series are not available for the south Atlantic. Given the high catches of swordfish in recent years in the south Atlantic, comparable to those in the north Atlantic, it is strongly recommended again this year that standardized CPUEs be developed from all fisheries for south Atlantic swordfish.

To improve the situation, the Committee recommended that effort should be made, either through official ICCAT channels or the national scientists, to hold a preparatory workshop prior to the 1994 swordfish assessment to develop standardized CPUEs from the South American fisheries. It is further

recommended that this workshop be held in a South American country. The Committee also recommended providing appropriate manuals for developing standardizing CPUE. The Committee agreed that the Convener of the Sub-Committee on Statistics will be in charge of making the necessary arrangements to achieve this objective.

iv) Development of scientific tagging experimental designs to test hypotheses of growth and stock structure should be initiated. Development of cooperative tagging experiments by all nations should be encouraged.

v) Research should be continued on maturity and fecundity at age and sex ratio at size. Sex-specific analyses, at least as an alternative to the traditional VPA, should be attempted at the 1994 assessment. A coordinated study should be carried out, examining sex ratio data by areas and seasons among the U.S., Spain, Japan as well as other countries to allow separation of the catch at size by sex. A coordinator (Dr. G. Scott) was selected to facilitate these analyses.

vi) More data should be collected and analyses are needed regarding sex ratio by size for areas off Brazil.

vii) Sensitivity analysis is needed on VPA and other assessment techniques or models that will allow evaluation of the impact of the mixing rates for stocks exploited over vast areas of the Atlantic. This should include approaches that consider geographical expansion and change in fishing patterns with respect to production models. Procedures for comparing appropriate stock characteristics from VPAs and production models should be addressed.

viii) Further evaluation of Canadian catch and effort information over the available time series and development of age-specific indices from these data are recommended.

ix) Development of a weight-based, standardized CPUE series from the Japanese longline data prior to 1975 was recommended.

x) Development of *a priori*, objective criteria for outlier detection and objective criteria for rejection of data on biological or fisheries grounds for the various time series data sets used in assessments was recommended.

SWO-4.c Management

The Committee urges all Atlantic fishing nations to institute regulations consistent with previous Commission recommendations.

SWO-MED-4. Recommendations - Mediterranean

SWO-MED-4a. Statistics

While recognizing the marked progress made in reporting catches, size and effort data, the Committee recommended that:

i) all catch and effort as well as size data available be sent to the ICCAT Secretariat by the Task I and Task II data submission deadline dates, regardless of whether or not the GFCM/ICCAT meeting is held.

ii) catches (particularly Task I) be reported in round (live) weight;

iii) all countries catching swordfish, report catches and effort by small areas and month (in the ICCAT format);

SWO-MED-4b. Research

i) The Committee recommended that the ad-hoc Working Group on the Mediterranean Large Pelagic Fish between GFCM and ICCAT meet in 1994, before the next swordfish stock assessment meeting. ICCAT should provide information for developing standardized CPUE indices to the GFCM/ICCAT members.

ii) The Committee concurred with all the recommendations made by the Second GFCM/ICCAT Consultation concerning joint research on swordfish in the Mediterranean Sea, including tagging and genetic studies.

iii) A proper factor(s) for converting gilled and gutted weight to round weight of fish should be developed, which might vary from one fishery to another.

iv) The CPUE series should be reviewed, updated and standardized.

v) Existing CPUE series should be updated each year (particularly for the Italian longline and gillnets and for the Greek longline series).

vi) No GFCM member countries, except for Spain, participated in the 1992 swordfish stock assessment session. This hindered the implementation of any meaningful stock assessment on the Mediterranean stocks. The Committee urged GFCM countries, even if they are not ICCAT Contracting Parties, to participate in future stock assessment sessions.

SWO-MED-4.c. Management

The Committee recommended that small fish catch levels be reduced.

SBF - SOUTHERN BLUEFIN

SBF-1. Description of Fisheries

Southern bluefin tuna (SBF) are distributed exclusively in the three oceans of the southern hemisphere. The only known spawning ground is located in the waters off Java, Indonesia, and off northwestern Australia. The habitat of young southern bluefin tuna is located in the coastal waters of western and southern Australia, and as the fish grow, they migrate circumpolarly throughout the Pacific, Indian and Atlantic Oceans.

Historically, the stock has been exploited by Australian and Japanese fishermen for more than 36 years. During the course of this period, the Japanese longline fishery, taking older aged fish, recorded its peak catch of 77,927 MT in 1961 and the Australian surface catch of young fish peaked at 21,500 MT in 1982. In the 1970's, New Zealand participated in harvesting this species by handline, troll and longline in coastal waters. In 1991, catches by these three countries were 4,162 MT, 7,360 MT and 160 MT for Australia, Japan and New Zealand, respectively. In 1992, the Japanese catch (preliminary) was 6,973 MT. In recent years, catches of countries other than the aforementioned three increased and were estimated at 1,224 MT in 1990, 1,757 MT in 1991, and 1,446 MT in 1992. As regards the Atlantic Ocean, southern bluefin tuna are caught by the longline fishery, mainly in the area off the southern tip of Africa. The Atlantic catch has varied widely between 400 MT and 6,200 MT during the 1978-1992 period (**SBF-Table 1** and **SBF-Figure 1**), reflecting the shifts of the Japanese longline fishery between the Atlantic and Indian Oceans.

SBF-2. State of the Stocks

The most recent twelfth southern bluefin tuna scientific meeting of Australia, Japan and New Zealand was held in Hobart, Australia in October, 1993. A representative from Taiwan attended the meeting as an observer for the first time. Fishery indicators were examined to provide a description of events in the fishery. The status of the stock was re-evaluated by the VPA in two ways based upon: (a) the updated and conventional catch at age matrix and (b) the newly estimated catch-at-age matrix derived from results of the recent ageing, maturity and growth studies (which suggested faster growth of fish). Different results were obtained.

-- The continuous very low abundance of the parental biomass is cause for serious biological concern. The present parental biomass is considerably lower than the biological safe level of 1980.

-- Previously, the changes in CPUE of different size classes of juvenile fish were interpreted as indicating a general rebuilding of the juvenile age classes. However, when the new biological information is incorporated, it is concluded that several year-classes have not contributed to stock rebuilding. The recent biological results are regarded as providing a more realistic description of the biology of southern bluefin tuna than previous biological assumptions. These conclusions suggested serious and detrimental consequences on the prospects of stock rebuilding.

-- VPA results for the parental biomass on the historical biological assumptions resulted in interpretations that are very similar to those of last year. The parental biomass is still declining very slowly or has stabilized; there are slight recent increases in the calculated number of young adult fish; and the fishing mortality on fish older than 11 year-old has increased substantially. VPA results using the recent biological understanding are different. The parental biomass is still decreasing steadily; no convincing evidence exists of recent increase in the estimated number of young mature fish; and the fishing mortality on oldest age classes has been increasing slowly.

SBF-3. Effect of Current Regulations

Since 1971, as a first stock management action, Japanese longline fishermen have adopted a voluntary measure of restricting southern bluefin fishing in areas where young fish are abundant, to increase the age at first capture so as to expect a better yield per recruit. Since the 1984 fishing season, Australia has maintained a national quota of 14,500 MT and a seasonal-area closure of its fishery off western Australia. Japan and New Zealand introduced national quotas of 23,150 MT and 1,000 MT, respectively, for the 1985 fishing season. Since the 1987 fishing season, Australia and Japan reduced their catch limits to 11,500 MT and 19,500 MT, respectively. In 1989, the Tripartite Administrative Meeting decided to reduce the catch limits to 6,065 MT for Japan, 5,265 MT for Australia and 420 MT for New Zealand. In 1990, 1991 and 1992, the Administrative Meeting decided to continue their catch limits. In 1993, the scientific Meeting recommended the interim catch level to the Administrative Meeting until the new results of the VPA with new biological information derived by Australian scientists are verified. It was further recommended that this interim catch level should be set so that annual catches will be initially limited to an agreed fraction of the current annual catch.

SBF-4. Recommendations

The Committee noted that the ICCAT statistical system will continue to be important for monitoring the fishery for this species in the Atlantic Ocean.

The Committee made no recommendation for the management of southern bluefin tuna in the Atlantic Ocean, since the stock in the Atlantic is a part of the total population and it has been monitored by the other international body.

SMT - SMALL TUNAS

SMT-1. DESCRIPTION OF FISHERIES

Small tunas are exploited mainly by the coastal artisanal fisheries, although substantial catches are made either as target species or as by-catch by coastal purse seiners and mid-water trawlers (i.e. pelagic fisheries in West Africa - Mauritania). About ten species make up the small tunas category, but only five of these species accounted for about 76 percent of the total catch weight in 1992. These five species are: Atlantic bonito *(Sarda sarda)*, Atlantic black skipjack *(Euthynnus alletteratus)*, frigate tuna *(Auxis thazard)*, spotted Spanish mackerel *(Scomberomorus maculatus)*, and king mackerel *(Scomberomorus cavalla)* **(SMT-Figs. 1-6)**. The historical landings of small tunas are given in **SMT-Figs. 7-13**. The reported total landings of all species combined increased from about 65,000 MT in 1963 to over 115,000 MT in 1969 **(SMT-Figure 1)**. Reported landings remained stable between 1970 and 1979 at about 85,000 MT, increased to 145,000 MT by 1982, followed by a steady decline to about 100,000 MT in 1986, and a subsequent increase to nearly 140,000 MT in 1988. Reported landings for the 1989-1992 period have remained relatively stable at about a mean value of 123,000 MT **(SMT-Figure 1)**. Preliminary 1992 estimates of total landings of small tunas amounted to 117,500 MT **(SMT-Table 1)**.

Review of work carried out in 1993

a) Statistics

As in 1992,, the Committee noted some improvements in the available statistics in 1993. The Committee noted that five CARICOM member States have begun to review their catch statistics and significant improvements were made in the ICCAT

data bases (SCRS/93/29, SCRS/93/30). Continued ICCAT meeting participation by CARICOM staff should ensure that their statistics are regularly updated.

In addition, the creation of an Ad Hoc GFCM-ICCAT Working Group on Large Pelagic Fishes in the Mediterranean (COM-SCRS/93/22) could improve the catch statistics for small tunas from the Mediterranean.

Document SCRS/93/111 refers to mixed species catches of small tuna made by a new pattern of baitboat fishing in Senegal, during the 1980-1991 period. Atlantic black skipjack *(Euthynnus alletteratus)* is often found in schools associated with this fishery in significant quantities, but the catch is always discarded at sea (probably alive).

Document SCRS/93/118 summarized fishing statistics of small tunas caught by purse seiners off the African coast based in Abidjan during the 1981-1993 period. Part of this fishery operates around artificial flotsam (fish attracting devices) placed for the purpose of increasing the catch rates. The mixed species landings of juvenile tunas and tuna-like species from this fishery have increased from about 3,000 MT in 1981 to more than 11,000 MT in 1992, most of them being sold on the local market. Species composition data has been provided for the first time.

b) Research

Only one research document was presented to the Committee this year (SCRS/93/89). This document presented the results of a pilot study which investigated the relative utility of five hard parts for ageing of blackfin tuna *(Thunnus atlanticus)*. Comparison of length-age regressions indicated good fits obtained from use of otoliths, vertebrae and dorsal fin spines. However, due to observed variation in the vascularized area of the dorsal fin spines with the size of fish, this structure could potentially be unreliable for use in ageing. Data obtained from examination of anal fin spines and pectoral rays were more variable. Taking this into account, as well as the ease of collection and processing of samples, the study concluded that vertebrae and otoliths were most appropriate for ageing of blackfin tuna.

SMT-2 STATE OF THE STOCKS

There is no information to determine the actual structure of small tunas stocks and current available information generally does not allow an evaluation of the status of the hypothetical stocks assumed for most of these coastal pelagic species. The available information submitted in 1992 was reviewed by the Committee and is summarized below.

Annual, age-structured stock evaluations of spotted Spanish and king mackerels are carried out for coastal areas of southeastern United States and the Gulf of Mexico. The results of these assessments show that several of these stocks could have been over-exploited and that reductions in fishing mortality rates would allow the stocks to recover to levels that can provide high average long-term yields and provide adequate safeguard against recruitment failure. Currently the Gulf of Mexico spotted spanish mackerel and Gulf of Mexico king mackerel stocks are considered overfished. Risk assessments, which take into account the uncertainty in the stock evaluation analyses, are used to provide scientific advice about catch levels that could meet the objectives of the U.S. Fishery Management Plan which regulates allowable harvest of these species from U.S. waters.

Information submitted by Brazil in 1992, corresponding to the 1963-1986 period, indicates that the Spanish mackerel stock off the Brazilian coast may have been over-exploited by 1986. No more recent information on this stock is available.

SMT-3. EFFECTS OF CURRENT REGULATIONS

A "U.S. Fishery Management Plan (FMP) for coastal pelagic species in the Gulf of Mexico and Atlantic Ocean Region" has been in effect since 1983. Under the FMP, fisheries management procedures were established for king *(Scomberomorus cavalla)* and Spanish *(Scomberomorus maculatus)* mackerels through implementation of catch quotas. The objective of the FMP is to maintain these stocks at abundance levels that could provide long-term yield as close to MSY as possible, while not allowing spawning biomass to fall so low as to negatively impact recruitment. Annual total allowable catches from these stocks are based on recommendations from a panel of scientists who conduct the annual stock evaluation analyses. These

regulations appear to be effective in rebuilding the over-exploited stocks and in preventing the stocks from declining to levels that could negatively impact recruitment.

SMT-4. RECOMMENDATIONS

SMT-4.a Statistics

Catch and effort statistics for small tunas are incomplete for many of the coastal and industrial fishing countries. Therefore, the Committee recommended:

i) That special efforts be made to improve the catch data and corresponding nominal effort data on small tunas, by species, gear, and by fisheries (artisanal, industrial, recreational), inasmuch as possible.

ii) That estimates of discards, particularly off the African coasts, and estimates of other unreported catches of these species be made and provided to ICCAT.

SMT-4.b Research

There is a general lack of biological information needed for stock assessment of these species. For this reason, the Committee recommended:

i) That studies related to stock evaluation of small tunas be continued, as much as possible.

ii) That additional length-weight data be collected on small wahoo, and an estimate of the relationship between length and weight for this species be obtained.

iii) That standardized catch-per-unit-effort series be developed with the Brazilian small tuna catch and effort information presented at the Data Preparatory Meeting for Southwest Atlantic Tuna and Tuna-like Species Fisheries, held in Recife (Brazil) in 1992.

iv) That age and growth investigations of blackfin tuna be continued to validate the ages and to develop a reliable length-age relationship for this species.

v) That studies be conducted to determine small tunas stock structure.

11. Report of Sub-Committee on Environment

The Report of the Sub-Committee on Environment was presented by the Convener, Mr. J. Pereira (Portugal). The SCRS reviewed the Report and adopted it together with all the recommendations contained therein. The Report is attached as **Appendix 8.**

12. 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 Convener, Dr. S. Turner (U.S.A.). The SCRS reviewed the Report and adopted it with all the recommendations included. The Report is attached as **Appendix 4.**

13. Progress made in the collection of information on sharks

The Committee noted that the Sub-Committee on Statistics had discussed briefly the data collection of tuna fisheries by-catches, based on the summary of the responses received for the questionnaires (SCRS/93/10 and 19). These questionnaires were circulated early 1993 by the Secretariat following the recommendations of the 1992 SCRS.

The Committee had recommended to hold a working group in the 1993 Session but due to the Committee's full agenda, this could not be carried out. The Committee deferred the working group to next year's agenda, whose terms of reference should be to establish the Committee's policy on the collection of information on marine animal by-catches in the tuna and tuna-like species fisheries, including the possibility of this working group becoming a Sub-Committee in the near future. A half day session should be prepared and a special note for call of papers on this specific subject should be made well in advance by the Secretariat.

14. Review of ICCAT publications

The ICCAT policy on scientific publications were reviewed by the Executive Secretary. The Committee also noted and concurred with the recommendation made by the Sub-Committee to give priority to the publication of the Collective Volume of Scientific Papers.

Good progress was noted in the preparation of the publication of Billfish Workshop Report.

15. Draft of the scientific opinions to be submitted, if necessary, at the 1994 CITES Conference

The Executive Secretary referred to the Document SCRS/92/23 and explained that, although the request was made to the CITES Secretariat to provide the final draft of criteria, prepared for listing endangered species in its Appendices, this was not received by the time of the SCRS meeting. He mentioned that the Deputy Secretary General will be attending the ICCAT Plenary Session when the CITES item is discussed. He further noted that a proposal had been made to expand the Commission Agenda Item concerning CITES to include various points concerning CITES. He commented that, although it is not yet known how much time will be given by the Commission to this subject due to a very crowded agenda, the SCRS may consider providing some scientific information to the Commissioners.

Considering the importance of the matter and in the absence of the Draft criteria to review, the Committee decided to form a Scientific Advisory Group which shall meet during the Commission. This Group shall also advise the SCRS Chairman to prepare the scientific view on the criteria or any other matters related to CITES. This Group will consist of scientists from Canada, Japan, U.S.A. and any other member countries' scientists who wish to join. The Group might continue working through the year, even after the meeting, through correspondence, to draft scientific comments to CITES when necessary.

16. Review of future SCRS activities

The overall organization of the SCRS sessions and the inter-sessional scientific meetings for 1994 were discussed together. The Committee recognized that the following inter-sessional meetings have been proposed next year:

- Second Consultation on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age (to be held in the first half of 1994).

- Conference to culminate the Albacore Research Program (to be held in June, 1994, in northern Spain).

- Ad-Hoc GFCM/ICCAT Joint Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea

- Coordinating Working Party on Fishery Statistics (to be hosted by ICCAT in July, 1994, in Madrid).

- Possible Workshop on the Development of Abundance Indices for South Atlantic Tunas and Tuna-like Fishes (to be held in South America).

It was reported that the Ad-Hoc GFCM/ICCAT Joint Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea has been formalized since the last GFCM Council meeting (July, 1993, Malta). During this SCRS session, a small group met to discuss as to when would be the most effective date to hold the Ad-Hoc Working Group Meeting and concluded that the ICCAT west Atlantic bluefin stock assessments and the stock assessment of Mediterranean swordfish stocks can be held concurrently with this Ad Hoc Working Group, sometime in September or early October. In this way, the joint ICCAT session can take full advantage of the participant of experts invited to the Ad Hoc Working Group. As the Assistant Executive Secretary is currently serving Technical Secretary of the Working Group, he was asked to contact the GFCM Secretary to make necessary arrangements to realize this plan. The meeting may require as much as two full weeks. The venue of the meeting depends on what country offers to host this meeting as well as the availability of funds at FAO for the Working Group. The SCRS Chairman and pertinent scientists shall be kept duly informed of the developments on the logistical details. The participation of scientists from all areas (including the west Atlantic) should also be encouraged.

It was noted that if the above plan materializes, the stock assessment of Atlantic swordfish could be carried out for a one-week period prior to the 1994 SCRS Plenary Sessions. Since bluefin data will most likely become available sooner than swordfish data, this order of holding the meetings may be also convenient from that point of view.

The Committee decided that in the event the Joint Working Group cannot hold its meeting in 1994 or had to meet earlier than proposed above, the Committee will still hold its stock assessment session on east Atlantic bluefin in September or early October, but for approximately a one-week period.

It was noted that the Second Consultation on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age is willing to meet somewhere on the eastern side of Atlantic this time, and possibly after April 1, 1994.

The Committee requested the Secretariat, in consultation with the SCRS Chairman and the Conveners to make the detailed arrangements (i.e., meeting venue, exact dates, agenda, etc.) for each meeting mentioned previously, and that the invitations be issued well in advance of the meetings.

A detailed 1994 Plan for the Enhanced Research Program for Billfish was presented by Dr. E. Prince (U.S.A.), the West Atlantic Coordinator. This Plan was approved by the Committee and is attached as **Appendix 6** to the SCRS Report.

17. Cooperation with non-Contracting Parties and other organizations

The Committee noted that this item had been substantially dealt with at the Sub-Committee on Statistics, and under SCRS Agenda Item 14.

The Executive Secretary expressed his appreciation to various non-member countries and international organizations for their cooperation in carrying out the Commission's scientific work, particularly in the collection of statistics. Particular mention was made of very close collaboration maintained with FAO, CARICOM, IATTC, EEC, and Taiwanese scientists.

The Representative of the Food and Agriculture Organization of the United Nations (FAO) expressed his appreciation, on behalf of FAO, for the assistance provided by the Commission on various occasions, e.g., concerning GFCM activities, statistics, and other matters, and noted that FAO values this cooperation highly. He also stated that in view of ICCAT accumulated experience in collecting high seas statistics, FAO was counting on ICCAT's participation in the meeting of the "Role of Regional Fisheries Agencies in Relation to High Seas Statistics, which is scheduled to be held in December, 1993, in La Jolla, California.

18. Election of SCRS Chairman

Nominations for the SCRS Chairman for the 1994-1995 biennial period was carried out by secret ballot. A vote was taken for two candidates, Drs. J. Powers (U.S.A) and Z. Suzuki (Japan) by secret ballot, and Dr. Z. Suzuki was elected Chairman. He was supported by all the participants by acclamation.

The newly-elected Chairman commented that he was deeply moved and honored by the confidence placed in him by the Committee members. He committed himself to carrying out his duties with good will and to the best of his ability.

19. Date and place of the next meeting of the SCRS

The Committee decided that the next regular meeting of the Committee should be held for a five-day period during the week prior to the 1994 Commission meeting.

20. Other matters

Proposals were made by the Delegation of Japan to the Commission to consider (1) a new regulation prohibiting fishing of east Atlantic bluefin spawning stocks during the months of June and July by large fishing vessels; (2) giving more attention and importance to the Bluefin Year Program; (3) carrying out a feasibility study on a surveillance and catch reporting system through a satellite system.

The Committee discussed at length the first proposal to prohibit fishing on the eastern bluefin spawning stock, as to whether or not there is any scientific basis for this recommendation. The Committee considered that the implementation of past SCRS recommendations on east bluefin stocks, particularly that for the protection of juvenile bluefin, would be most important from the standpoint of maximum utilization and protection of the stocks. On

the other hand, it was also recognized that the Japanese proposal intends to regulate the non-contracting parties vessels fishing in the Mediterranean on spawning bluefin stocks.

Concerning eastern bluefin tuna, the Committee has in the past recommended that the catch of fish weighing less than 6.4 kg be prohibited with 15% tolerance, in number of fish, and that fishing mortality should be maintained below the recent level (in 1975). The SCRS evaluated the effect of these regulations in 1992 and reported that neither of these recommendations have been fully implemented. The Committee considers that the full implementation of these recommendations are of the utmost importance for the bluefin stocks. The Committee is not recommending any further regulatory measures this year, particularly since no stock assessment on the eastern bluefin stocks was carried out in 1993.

Concerning the second proposal by Japan, the Committee noted that a lot of attention has been devoted to the BYP and that considerable progress has been reported at this SCRS session.

The Committee considered that the third proposal by Japan is not a biological issue.

21. Adoption of Report

The report was adopted with some modifications.

23. Adjournment

At the time of adjournment, the Delegate of France, on behalf of the Committee, commended the excellent leadership and scientific guidance of Dr. J. L. Cort, the out-going SCRS Chairman, which was unanimously supported by the Committee. Dr. Cort received a enthusiastic round of applause.

Dr. A. Fernández, the ICCAT Executive Secretary, thanked the SCRS Chairman for his work and guidance in research throughout his tenure. He also congratulated Dr. Suzuki, the newly-elected SCRS Chairman. Dr. Fernández expressed his appreciation to all the SCRS officers and the scientists for the significant progress achieved in tuna research, which provides the Commission with sound scientific advice. He thanked the scientists for their continuous collaboration throughout the year with the Secretariat. He also underlined the work carried out by the Secretariat staff during this meeting.

In his closing remarks, Dr. Cort congratulated his successor and wished him luck in this new endeavor. He noted that his responsibilities as Chairman of the SCRS represented an important part of his professional experience. In thanking the scientists, Dr. Cort pointed out that he could not have carried out the difficult job of SCRS Chairman without the cooperation and support of such highly-qualified scientists. He also expressed a special note of thanks to the ICCAT Assistant Executive Secretary for his support and advice. Dr. Cort thanked Dr. O. Rodríguez Martín and his successor, Dr. A. Fernández, for their assistance, and the Secretariat staff for their support. He also commended the high level of professionalism of our team of interpreters.

The 1993 meeting of the Standing Committee on Research and Statistics (SCRS) was adjourned on Friday, November 5, 1993.

YFT-Table 1. Atlantic yellowfin catches (in 1000 MT) by country, gear and region.

(OCT-26 18:00)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL	65.0	69.2	68.2	58.8	60.2	83.0	92.7	73.4	73.2	93.4	94.7	106.7	124.4	123.1	128.8	130.5	125.0	125.4	151.2	160.4	160.5	112.1	149.2	133.4	134.9	128.1	155.4	174.8	161.3	151.9
EAST ATLANTIC	42.4	47.3	54.4	43.3	52.6	73.7	80.4	59.2	57.5	78.2	79.8	92.2	108.1	109.3	115.3	115.7	111.7	112.4	134.8	135.0	123.4	75.6	111.8	105.0	110.0	99.4	123.3	149.8	124.6	119.3
-SURFACE	19.2	28.4	26.8	30.7	35.5	51.9	59.9	43.1	42.8	60.1	59.3	72.8	92.7	96.6	99.7	104.5	105.0	99.9	126.9	125.1	117.3	66.9	104.2	101.1	105.4	91.9	116.9	143.5	119.7	114.1
BAITBOAT	17.8	21.2	18.5	15.1	16.8	22.1	15.7	9.5	10.6	13.1	14.7	19.7	9.7	12.7	11.0	9.0	13.8	7.5	9.7	13.1	11.5	13.6	16.0	15.0	16.4	16.0	12.3	15.5	15.3	12.7
ANGOLA	2.1	3.6	1.9	1.3	0.9	1.1	0.4	0.3	0.5	0.6	0.6	0.8	0.1	1.0	1.9	2.0	0.8	0.5	0.7	1.4	0.7	0.2	0.3	0.1	0.1	0.2	0.1	0.3	0.5	0.4
CAP VERT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.5	0.4	0.4	0.4	0.1	0.1	0.5	0.6	0.9	0.6	0.8	0.9	0.9	0.7	1.3	0.9	0.5	0.9	0.5	0.7	0.2
FIS	12.3	13.2	12.7	13.1	14.4	18.6	14.0	7.4	7.4	7.4	5.5	6.3	2.9	3.7	3.4	2.8	2.2	2.1	2.9	3.0	2.7	3.4	2.9	3.8	3.8	4.4	2.6	3.8	4.4	3.0
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	0.3	0.7	0.8	0.6	0.3	1.2	1.7	2.5	5.6	5.0	5.5	8.9	8.2	8.9	8.4	6.9	8.2	7.1	7.2
JAPAN	0.9	2.1	1.3	0.5	1.3	2.2	1.0	0.8	2.0	3.5	6.5	7.1	1.1	4.9	2.6	1.4	1.0	0.5	1.7	1.2	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KOREA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.7	2.7	1.0	1.2	1.4	3.9	1.4	1.0	0.4	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	1.1	0.8	1.0	0.9	0.4	0.2	++.	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAFRICA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	0.0	0.0	3.8	0.3	0.1	++.	0.3	0.7	0.3	++.	++.	0.1	0.6	0.3	++.	0.1
ESPANA	2.5	2.3	2.6	0.2	0.2	0.2	0.3	0.7	0.4	0.7	0.8	2.0	1.0	0.2	0.3	0.2	0.1	0.1	0.1	0.4	0.7	2.4	2.8	1.6	2.7	2.3	1.2	2.4	2.6	1.8
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	0.0	++.	0.0	0.0	++.	++.	0.2	++.	++.	++.	0.1	++.	++.	++.	++.
PURSE SEINE	1.3	7.3	8.2	15.6	18.7	29.8	44.2	33.3	32.2	47.0	44.5	53.0	83.0	83.7	88.4	94.5	89.9	91.7	111.8	108.5	101.6	50.8	86.6	83.6	85.9	73.4	102.2	127.6	100.7	95.4
CAYMAN I	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIS	0.8	5.8	6.5	8.9	9.0	12.7	14.4	16.6	18.6	23.8	26.2	31.9	43.8	46.3	44.3	48.9	43.2	47.0	48.9	39.5	36.1	4.4	9.5	13.1	13.5	17.2	28.4	41.9	28.7	28.6
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.2	3.0	4.2	2.7	3.5	3.7	3.6	1.0	0.0	0.0	0.0	0.0	0.0
JAPAN	0.0	0.5	1.1	4.8	5.2	7.5	4.7	1.1	2.0	2.5	1.2	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2	1.3	2.6	2.3	2.8	2.2	2.1	1.7	1.4	0.8
MAROC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	1.6	2.2	3.4	3.0	3.2	4.8	4.5	2.3	0.6	2.3	2.3	1.5	0.0	0.0	0.0	0.0	0.0
NORWAY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	1.8	1.8	0.0	0.0
PORTUGAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.9	1.3	0.3	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0
RUSSIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	1.9
ESPANA	0.5	1.0	0.6	1.3	2.9	3.1	5.4	6.4	7.4	8.6	13.3	14.0	23.7	33.2	35.3	33.4	39.9	38.7	51.3	53.8	51.1	37.5	64.0	60.2	63.4	47.9	60.5	66.2	55.7	48.6
USA	0.0	0.0	0.0	0.0	0.9	5.8	18.8	9.0	3.8	12.0	3.0	5.6	14.0	1.7	6.4	8.1	2.9	1.6	1.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	++.	0.1	0.9	1.2	1.8	3.4	1.4	0.7	2.2	3.7	3.4	0.0	0.0
NEI_1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	5.4	1.1	0.0	0.0	2.1	3.1	5.4	12.5	11.7	15.5
OTHERS	0.0	0.0	++.	0.6	0.7	0.7	0.9	0.2	0.4	0.1	0.5	0.4	0.3	0.6	0.2	0.5	0.6	0.3	0.5	0.1	0.3	0.3	1.1	0.7	0.5	0.3	0.3	0.1	++.	++.
OTHER SURFAC	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.9	1.4	0.6	5.3	3.2	3.9	2.4	1.6	2.3	3.0	1.8	2.5	2.1	1.9	2.5
CAP VERT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	2.7	3.4	2.0	1.2	2.0	1.8	1.3	2.0	1.6	1.2	2.0
OTHERS	0.1	++.	++.	++.	++.	0.0	++.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.9	1.4	0.6	0.7	0.5	0.5	0.4	0.4	0.3	1.2	0.5	0.5	0.5	0.7	0.5
-LONGLINE	23.2	18.9	27.5	12.6	17.1	21.9	20.4	16.0	14.7	18.0	20.4	19.4	15.4	12.8	15.7	11.3	6.8	12.4	7.9	9.9	6.1	8.6	7.5	3.9	4.7	7.4	6.4	6.3	3.6	2.1
CHITAIW	0.0	0.0	0.0	0.8	1.9	6.6	7.0	3.9	3.4	3.5	1.5	1.0	1.3	0.6	0.2	0.2	0.2	0.1	0.4	0.2	0.4	0.1	0.1	0.2	0.2	0.2	0.1	0.9	0.4	0.2
CUBA	0.0	0.0	0.5	0.4	2.4	1.2	0.9	1.1	1.4	3.2	4.5	3.0	1.7	1.8	2.9	1.9	2.6	4.9	2.5	2.1	1.6	1.2	1.1	0.7	0.8	1.4	0.4	0.7	0.0	0.0
JAPAN	23.1	18.5	26.5	10.6	10.1	9.8	6.4	2.5	1.6	2.3	1.3	0.7	1.7	0.3	0.1	0.3	0.3	1.7	1.2	2.8	0.9	2.9	3.1	1.3	1.7	3.6	3.8	4.2	2.8	1.9
KOREA	0.0	0.0	0.0	0.0	0.0	1.6	4.2	8.0	6.9	7.8	8.3	10.1	7.6	6.6	9.8	7.3	2.6	3.9	3.3	3.6	1.5	1.7	1.6	1.0	1.2	1.2	1.5	0.3	0.3	0.0
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.6	2.1	1.2	1.9	0.9	1.1	0.5	1.6	0.3	1.1	1.6	2.2	1.3	0.3	0.2	0.0	0.0	0.0	0.0	0.0
USSR	0.0	0.1	0.5	0.8	2.7	2.7	1.9	0.5	1.4	1.1	1.2	2.5	1.9	1.6	1.8	0.5	0.5	0.1	0.2	0.1	++.	0.3	0.3	0.4	0.6	1.0	0.6	0.2	0.0	0.0
OTHERS	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.1	0.1	++.	++.	0.1	0.2	++.	++.	0.0	0.0	++.	++.	0.1	++.
-UNCL GEARS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7

YFT-Table 1. Continued..

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
WEST ATLANTIC	22.2	21.6	13.6	15.5	7.6	9.3	12.3	14.2	15.7	15.2	14.9	14.5	16.3	13.8	13.5	14.8	13.3	13.0	16.4	25.4	37.1	36.5	37.4	28.4	24.9	28.7	32.1	25.0	36.7	32.6
-SURFACE	0.2	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	3.4	2.3	1.6	2.0	0.7	1.5	4.7	3.6	5.7	4.8	15.1	29.4	27.0	25.8	14.5	14.5	13.7	18.2	14.5	26.2	19.7
BAITBOAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.4	0.0	0.0	1.0	0.6	0.4	1.9	2.9	3.6	3.7	4.3	2.5	3.9	6.0	5.0	4.9	6.3	6.5
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.9	1.0	1.8	1.3	2.2	0.8	1.6	1.6	1.4	1.0	1.2	2.7
JAPAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	1.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.0	1.9	1.8	2.4	2.1	1.7	2.3	4.4	3.6	3.9	5.1	3.8
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.2	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PURSE SEINE	0.2	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	3.4	2.3	0.3	1.6	0.7	1.1	3.6	1.1	5.2	2.8	12.1	25.8	23.2	21.0	10.7	8.4	6.8	12.2	8.9	18.6	15.3
FIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	1.7	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.8	0.0	0.3	1.0	0.8	0.0	0.0	0.0	2.0	4.0	1.0	0.0	0.0	0.0	0.0	0.0	1.5	1.3
USA	0.2	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.3	0.6	0.0	0.4	0.5	0.8	1.6	0.3	0.5	0.3	0.1	0.1	1.1	4.4	0.6	0.1	0.0	++.	0.3	1.0	0.4
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	2.5	12.0	23.5	17.8	15.6	10.1	8.3	6.8	12.2	8.6	16.1	13.6
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.0	0.0	0.3	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER SURFAC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	2.0	0.1	0.0	0.0	0.0	0.1	0.5	1.4	2.3	0.9	1.0	0.8	1.1	0.7
USA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	++.	0.1	0.2	1.3	2.2	0.9	0.9	0.6	1.0	0.5
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.4	0.1	0.2	0.1	++.	++.	++.	++.	0.3	0.1	0.1	++.	0.1	0.2	0.1	0.2
-LONGLINE	18.8	19.2	11.4	13.0	4.9	7.8	10.4	13.9	15.4	11.6	12.4	12.5	14.0	12.7	11.2	9.6	9.2	6.5	11.3	9.8	6.7	7.9	10.6	12.5	9.7	14.0	13.0	9.7	8.0	10.0
BRASIL	2.4	1.6	0.7	0.5	0.8	0.8	0.5	0.8	0.3	0.2	0.2	0.2	0.3	0.7	0.9	0.8	1.1	0.5	1.2	0.9	0.9	0.5	0.5	1.1	0.7	0.9	1.1	0.6	0.4	0.3
CHITAIW	0.0	0.0	0.0	0.3	0.8	1.3	3.8	3.2	1.0	1.2	1.2	1.3	1.1	1.1	0.1	0.2	0.8	0.5	0.4	0.4	0.1	0.5	0.6	1.0	0.6	1.2	0.5	2.1	0.9	1.6
CUBA	1.7	0.9	0.2	0.4	0.6	0.7	0.6	0.5	0.3	0.4	0.0	0.4	0.6	1.2	0.9	0.7	0.2	0.7	2.0	1.5	0.8	2.5	1.9	2.1	1.1	0.1	0.1	0.1	0.0	0.0
JAPAN	14.6	16.6	10.4	11.8	2.7	4.2	3.6	4.3	9.1	4.2	2.5	2.8	2.4	3.1	1.4	1.6	1.7	1.1	3.0	3.3	1.2	1.0	2.2	2.1	1.6	2.4	3.2	1.7	1.9	1.0
KOREA	0.0	0.0	0.0	0.0	0.0	0.7	1.8	3.5	3.0	3.3	4.5	5.4	7.7	4.6	6.5	4.3	4.4	1.9	3.3	2.2	1.9	1.0	1.7	0.9	0.2	0.1	1.1	0.5	++.	0.2
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	2.0	1.1	1.2	1.3	0.6	0.7	0.0	0.8	0.3	0.7	0.1	0.2	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0
USA	++	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	0.1	0.1	1.7	3.8	4.7	8.4	6.4	4.4	4.3	5.6
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.5	1.9	1.9	1.2	0.6	0.6	0.8	1.3	1.0	1.0	1.0	0.5	1.2	1.7	1.6	0.9	0.6	0.7	0.5	0.3	0.3	0.5
OTHERS	0.1	0.1	0.1	0.0	++.	0.1	0.1	0.0	0.2	0.4	0.1	0.1	0.1	0.1	++.	++.	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.3	0.1	0.2	0.1	++.	0.2	0.8
-UNCL GEARS	3.2	2.3	2.2	2.5	2.5	1.5	2.0	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.5	0.4	0.7	0.3	0.5	1.0	1.6	1.1	1.5	0.5	1.1	0.9	0.7	2.2	1.8
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.6	1.1	0.6	0.7	++.	0.3	0.3	0.1	0.4	0.4
TRINIDAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2
VENEZUEL	3.1	2.2	2.1	2.4	2.4	1.4	1.9	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHERS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.5	0.4	0.7	0.3	0.5	0.4	0.5	0.5	0.8	0.5	0.8	0.6	0.6	0.6	0.2
UNCL REGION	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-LONGLINE	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHERS	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

++: CATCHES: < 50 MT AND >= 1 MT

FOR EACH REGION-GEAR GROUP, COUNTRIES WITH <950 MT ANNUAL CATCH DURING THE ENTIRE PERIOD COVERED ARE INCLUDED IN OTHERS

YFT - Table 2. Carrying capacity (1000 MT), by gear, of east Atlantic surface fleets.

YEAR	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL BB+PS	36.5	32.2	42.3	54.1	46.0	53.5	68.4	62.0	67.6	69.6	77.1	81.8	61.3	52.3	49.5	45.8	43.9	44.3	46.5	56.6	55.7
TOTAL BB	7.3	7.6	13.0	13.2	9.7	13.7	15.5	14.7	12.8	11.0	11.7	11.5	11.3	10.8	11.0	8.8	9.2	9.6	9.9	9.9	9.9
FISM	2.7	2.1	2.0	1.8	1.5	1.3	1.3	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.0	0.5	0.7	0.8	0.9	0.6	0.6
TEMA-BASED	3.2	4.0	8.7	9.2	7.3	11.0	12.8	11.6	9.7	8.7	8.1	8.0	7.2	6.6	6.6	4.8	4.8	4.8	4.8	4.8	4.8
SPAIN (CANAR.)	0.6	1.0	1.9	1.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
ANGOLA	0.3					0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
CAP VERT.									0.2	0.2	1.0	1.0	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
PORTUGAL	0.5	0.5	0.4	0.6	0.3	0.3	0.3	0.6	0.6	0.5	0.3	0.3	0.9	0.9	1.2	1.4	1.6	1.8	2.0	2.3	2.3
SPAIN (TROP.)																		0.1	0.1	0.1	0.1
TOTAL PS	29.2	24.6	29.3	40.9	36.3	39.8	52.9	47.3	54.8	57.8	65.4	70.3	50.0	41.5	38.5	37.0	34.7	34.7	36.6	46.7	45.8
FISM	9.2	12.4	14.5	17.2	17.5	14.6	17.6	16.5	17.2	16.8	16.3	16.8	4.8	3.0	3.0	5.1	6.0	6.0	7.0	12.7	10.1
SPAIN	5.2	7.1	8.4	12.6	16.8	20.7	24.4	25.9	29.5	30.6	31.7	38.0	33.5	30.3	27.3	23.7	20.5	19.5	19.7	22.8	23.6
U.S.A.	11.9	2.9	5.5	10.4	1.7	4.2	10.5	3.2	2.2	1.6	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JAPAN	1.9	1.9	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.3
U.S.S.R.	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.0	3.0	3.9	4.9	4.9	4.9	5.4	5.4	5.4	5.4	5.4	4.2	4.2	4.2
OTH.**	0.9	0.2	0.2	0.4	0.2	0.2	0.2	0.7	2.9	4.9	10.8	10.2	6.4	2.0	2.0	2.0	2.0	3.4	5.3	6.6	7.6

* Provisional

** Ghana (1982-87), Mexico (1983), Congo (1980-81), Gran Cayman (1982-83), Portugal (1979-81), Venezuela (1983), and for recent years Morocco, Norway, Malta, Panama, Vanuatu.

YFT-Table 3. Data used to fit the production models. The CPUE correspond to the east Atlantic purse seine fleets, considering nominal effort in fishing days standardized to category 5 FIS purse seiners, and assuming a continuous increase of 3% in fishing power since 1980.

YEAR	CATCH	EFFORT	CPUE
1969	92.7	12.8	7.242
1970	73.1	15.9	4.597
1971	73.3	18.0	4.072
1972	93.5	17.5	5.343
1973	94.7	18.3	5.175
1974	106.7	22.6	4.721
1975	125.1	24.8	5.044
1976	123.1	26.6	4.628
1977	128.8	25.2	5.111
1978	130.5	26.1	5.000
1979	125.2	30.5	4.105
1980	125.3	34.5	3.632
1981	150.7	38.8	3.884
1982	159.7	49.2	3.246
1983	160.3	55.6	2.883
1984	111.2	50.2	2.215
1985	149.4	41.7	3.583
1986	134.2	33.0	4.067
1987	134.7	36.0	3.742
1988	127.5	36.6	3.484
1989	154.2	30.4	5.072
1990	173.2	36.8	4.707
1991	166.5	55.4	3.005
1992	152.0	52.6	2.890

YFT-Table 4. Estimates of MSY and f_{MSY} for total Atlantic yellowfin stock, from PRODFIT production model. The ratio of B_{MSY} to the unexploited biomass K is a direct consequence of the choice (or estimate) of the exponent m. PRODFIT fits the generalized production model under the equilibrium assumption. The exponent m was fixed in all cases but one (noted by footnote). All PRODFIT runs were made with the smoothing parameter K set to 4.0.

Model Used	Value of exponent m	Ratio of B_{MSY} to K	Estimate of MSY	Estimate of f_{MSY}	Sum of squared errors
PRODFIT	1.0	37%	150.7	54.4	0.305
PRODFIT	2.0	50%	146.2	43.3	0.279
PRODFIT	5.1[a]	67%	155.9	41.7	0.245

[a] Exponent estimated in this case.

YFT-Table 5. Results of two nonequilibrium production models of yellowfin tuna. Bootstrapping with 500 trials was used to obtain bias-corrected estimates and approximate 80% confidence intervals (shown).

	Run	
	A	D
Stock hypothesis	Total Atlantic	East Atlantic
MSY, 1000 MT/yr	147 (138–160)	115 (111–119)
f_{MSY}	48.1 (42.6–54.8)	41.0 (38.0–45.9)
B_{93}/B_{MSY}	0.89 (0.69–1.11)	0.65 (0.49–0.81)
F_{92}/F_{MSY}	1.12 (0.86–1.42)	1.47 (1.21–1.79)

Table 6. Yellowfin catch (in 1000 fish) at age for total Atlantic, 1956 through 1991. (The data for 1956 - 74 are rough estimates).

		AGES IN QUARTERS																							
YEAR	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TOTAL ATLANTIC																									
56	1738	1	1	1	422	522	1	1	408	328	1	1	34	1	1	3	4	1	1	1	1	1	1	1	1
57	2184	1	1	1	289	363	1	1	608	613	2	4	100	5	7	22	50	3	33	42	20	2	8	7	1
58	3121	1	1	1	222	287	1	1	931	1019	8	23	187	20	18	40	42	54	57	75	61	38	13	12	9
59	2800	1	1	1	156	202	1	1	692	802	55	79	215	27	40	67	54	56	127	119	18	37	30	18	1
60	3007	1	1	1	267	336	1	1	621	656	43	135	167	86	133	147	59	121	95	38	19	51	25	1	2
61	2577	1	1	1	222	277	241	25	347	348	223	70	94	108	118	80	46	161	85	19	16	69	23	1	1
62	2760	1	102	112	264	329	238	46	340	282	165	58	54	62	177	153	79	87	84	63	13	31	16	3	1
63	3517	1	77	84	281	356	293	60	501	720	220	71	110	97	146	112	92	89	79	44	16	48	17	2	1
64	4900	1	179	196	512	640	426	133	646	759	350	130	209	233	93	128	57	76	33	52	22	10	4	9	2
65	3691	1	111	1	281	374	307	64	544	726	257	182	104	169	80	83	36	201	60	41	29	29	3	5	3
66	3265	1	43	47	172	219	303	153	440	655	343	146	142	68	58	159	23	82	45	92	36	21	10	5	2
67	2850	1	113	28	172	246	129	256	193	306	195	450	249	93	37	84	94	63	38	29	20	24	20	8	2
68	4490	1	191	14	243	429	354	805	459	350	343	202	175	206	97	144	97	123	32	123	18	31	6	46	1
69	4285	1	169	94	238	130	168	454	346	589	475	582	184	197	127	134	106	73	57	54	48	20	16	21	2
70	4742	1	37	73	377	166	676	831	1088	125	201	215	101	289	130	140	42	34	63	92	13	7	14	24	3
71	5544	1	77	267	438	390	285	1200	831	341	414	571	259	45	47	73	31	79	54	58	19	32	11	17	4
72	6904	1	8	582	628	563	524	992	905	456	423	818	303	171	125	102	70	60	49	14	32	42	23	4	9
73	6845	1	357	1139	590	490	649	969	548	357	320	436	128	170	148	141	89	89	79	27	38	50	17	6	7
74	8839	1	60	564	2336	754	962	882	977	244	409	586	173	160	144	164	96	102	55	44	38	54	18	10	6
75	7966	1	48	1035	626	903	676	752	676	455	472	712	284	195	102	138	153	247	120	86	87	119	37	23	19
76	8767	2	26	1167	970	590	440	1588	1113	617	236	446	149	198	234	189	134	165	195	67	61	94	54	17	15
77	8829	1	35	688	642	940	607	1824	909	253	636	623	345	143	260	199	130	213	120	78	53	74	23	24	9
78	8863	3	90	546	884	877	1016	1182	722	685	485	685	315	244	228	206	232	204	93	44	50	43	14	9	6
79	8574	6	80	721	1023	959	967	1539	634	281	289	393	215	174	191	253	271	235	121	59	71	52	23	12	5
80	10028	6	122	1038	1845	1438	699	1123	1099	333	482	361	209	142	142	219	196	199	74	102	103	44	16	23	13
81	13863	6	1148	1991	2914	1461	1142	1077	866	652	449	374	230	249	125	183	107	394	167	103	48	102	41	22	12
82	12565	3	283	360	1373	2295	1945	1630	1385	401	466	379	268	380	214	202	179	332	184	57	52	102	51	17	7
83	12185	11	574	1035	2021	1580	1363	1140	884	403	454	536	555	301	224	222	128	411	74	74	36	114	23	16	6
84	12240	10	467	1082	917	1210	1405	2389	2101	592	421	570	242	266	129	120	94	94	38	38	17	22	7	7	2
85	11835	4	497	1714	1882	628	1598	1381	861	226	523	702	337	290	172	129	165	453	84	39	60	71	8	7	4
86	10806	16	324	917	2126	1246	1116	1566	730	320	301	387	207	383	177	167	244	309	76	38	63	69	8	8	8
87	12536	4	627	2171	2477	1496	862	1304	760	495	362	412	248	230	126	167	170	374	85	41	51	55	10	5	4
88	11894	1	353	1418	2227	1493	1677	1506	617	310	373	293	226	415	234	162	128	253	90	35	20	49	9	4	1
89	12382	10	1482	1392	1852	1417	2028	829	399	223	302	387	205	404	132	226	150	533	99	86	71	111	18	16	10
90	12521	1	158	2354	2400	795	1069	1788	759	295	217	370	220	379	246	181	207	542	182	86	48	162	33	24	5
91	13649	5	513	2171	2125	1302	1599	1599	1303	426	333	359	360	234	149	167	98	255	197	74	36	166	101	54	23

Table 7. Recruitment, total biomass, biomass of spawning stock and mean fishing mortality (ages 0-4) estimated in the two VPA runs (backward) carried out using, for 1991, exploitation pattern resulting from separable VPA and values of F for the reference age = 0.35 (a) and 0.4 (b) and a forward VPA with average 58.5 million fish recruitment for 1975-86, increased by 10% and average recruitment of 64.3 million fish for earlier years (1969 - 1974) and recent years (1987 - 91).

Year	Recruitments (1000 fish)	Total Biomass (MT)	Total spawners Biomass (MT)	Landings (1000 MT)	F-bar Ages 0-4	Stock Fecundity
(a) F = 0.35 (Backward VPA)						
1975	61956	422547	298602	125	0.2752	
1976	68356	423845	277985	123	0.2828	
1977	61014	405708	259708	129	0.2918	
1978	51828	385375	256622	131	0.2981	
1979	55086	397781	278034	125	0.2800	
1980	48639	398344	281379	125	0.2786	
1981	76443	409043	274886	151	0.3699	
1982	58424	362565	215909	159	0.4916	
1983	75076	341290	193894	160	0.5665	
1984	55054	336635	190614	112	0.3133	
1985	80067	391456	244317	150	0.3657	
1986	69891	402777	236271	134	0.3377	
1987	67155	411897	260045	135	0.3050	
1988	53570	430577	299415	128	0.2754	
1989	70257	481247	348699	154	0.3046	
1990	77848	460220	299729	173	0.3633	
1991	71977	462453	298279	166	0.3339	
(b) F = 0.4 (Backward VPA)						
1975	61956	422547	298602	125	0.2752	
1976	68337	423826	277985	123	0.2828	
1977	61018	405687	259708	129	0.2918	
1978	51794	385322	256599	131	0.2982	
1979	55068	397667	277984	125	0.2801	
1980	48585	398154	281266	125	0.2788	
1981	76355	408776	274777	151	0.3702	
1982	58260	362001	215625	159	0.4926	
1983	74719	340365	193540	160	0.5681	
1984	54548	334973	189922	112	0.3151	
1985	78918	388366	243035	150	0.3684	
1986	68312	397319	233889	134	0.3423	
1987	64988	403334	255706	135	0.3119	
1988	50778	417509	291960	128	0.2853	
1989	64302	459308	336350	154	0.3214	
1990	69183	426541	282468	173	0.3956	
1991	61850	411031	268266	166	0.3838	
(c) Forward VPA						
1975	60046	399000		125	0.2175	7582
1976	68003	373000		123	0.2330	6992
1977	58224	351000		129	0.2707	6394
1978	57021	320000		131	0.2805	5807
1979	58600	307000		125	0.3308	5426
1980	52605	288000		125	0.3070	4990
1981	78000	277000		151	0.3800	4942
1982	58405	253000		159	0.4213	4400
1983	75586	237000		160	0.4847	3748
1984	54904	251000		112	0.3112	3681
1985	73527	257000		150	0.3909	4230
1986	77308	270000		134	0.3710	4125
1987	64313	283000		135	0.3506	4246
1988	64335	316000		128	0.2936	5192
1989	64302	326000		154	0.3217	5905
1990	64335	304000		173	0.3459	5704
1991	64318	285000		166	0.4095	5096

YFT-Table 8a. The standardized relative cpue indices used for tuning FADAPT VPA. (Index = standardized cpue / maximum standardized cpue for series.)

YEAR	INDICES PS-AGE1	PS-AGE2	PS-AGE4	PS-AGE0-5	LL-AGE3-4	LL-AGE4-5
1970				0.98977	1.00000	1.00000
1971				0.60358	0.52966	0.85328
1972				1.00000	0.87712	0.72080
1973				0.96931	0.71328	0.63675
1974				0.75448	0.81638	0.92165
1975				0.66496	0.50282	0.68946
1976				0.63939	0.73023	0.54131
1977				0.74936	0.61582	0.36895
1978				0.50895	0.57062	0.60114
1979				0.52174	0.60876	0.49288
1980	0.41158	0.57741		0.43223	0.86723	0.44444
1981	0.28939	0.89121	0.29252	0.44501	0.71469	0.44729
1982	0.90997	0.63598	0.31293	0.37084	0.63701	0.44872
1983	0.29582	0.61925	0.37415	0.36317	0.83475	0.28917
1984	0.57235	0.53556	0.31293	0.30435	0.79379	0.49573
1985	0.10289	0.26778	0.19048	0.44501	0.73164	0.50855
1986	0.20900	0.78243	0.18367	0.62148	0.71893	0.37892
1987	0.64309	1.00000	0.55102	0.50895	0.73870	0.60114
1988	0.62701	0.17573	0.31973	0.57545	0.92373	0.55983
1989	0.21232	0.35565	0.46259		0.71751	0.43447
1990	0.44373	0.46025	1.00000		0.71186	0.43875
1991	1.00000	0.46025	0.90476		0.46610	0.37464

YFT-Table 8b. Recruitment and mean fishing mortality (ages 1-4) estimated from FADAPT runs carried out using, for 1991 the exploitation pattern resulting from separable VPA and assuming a constant natural mortality of 0.7.

YEAR	RECRUITMENT	F-bar (AGES 1-4)
1970	41782	0.36693
1971	43187	0.31
1972	39719	0.33745
1973	45716	0.30245
1974	42672	0.30373
1975	50615	0.45335
1976	57377	0.51333
1977	51192	0.56065
1978	48274	0.48487
1979	49861	0.44323
1980	42943	0.38203
1981	64048	0.50293
1982	49133	0.6232
1983	62356	0.79295
1984	49556	0.4411
1985	68413	0.60268
1986	64979	0.55713
1987	51900	0.47565
1988	34492	0.36025
1989	137777	0.47568
1990	182559	0.52425
1991	225056	0.88078

YFT-Table 9. **The resultant yield for recruitment values corresponding to low (10% more than minimum recruitment is considered) (A) and high (50% more than minimum recruitment) (B). F multiplier = multipliers of current fishing mortality.**

Age at 1st Capture	F multiplier 0.00	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50
A) Total F, average of the period, recruitment 64.4 million											
3.50	0.0	70.1	120.1	155.9	181.6	200.3	213.9	223.8	231.2	236.6	240.7
3.00	0.0	77.0	129.7	166.0	191.1	208.5	220.7	229.1	235.1	239.3	242.3
2.50	0.0	80.8	134.2	169.5	192.7	207.9	217.9	224.3	228.3	230.7	232.1
2.00	0.0	82.0	134.3	167.3	187.9	200.4	207.7	211.6	213.3	213.5	212.8
1.50	0.0	82.4	130.3	157.1	171.1	177.3	178.7	177.4	174.6	170.8	166.6
1.00	0.0	82.5	127.2	149.9	159.8	162.4	160.9	157.3	152.6	147.5	142.4
0.50	0.0	82.5	124.5	143.8	150.6	150.7	147.4	142.5	137.0	131.5	126.2
0.00	0.0	82.4	124.1	143.0	149.4	149.2	145.6	140.5	134.9	129.3	124.0
B) Total F, average of the period, recruitment 87.7 million											
5.00	0.0	10.9	21.5	31.5	41.2	50.5	59.5	68.0	76.3	84.2	91.7
4.50	0.0	16.1	31.4	45.8	59.4	72.3	84.5	96.0	106.8	117.1	126.8
4.00	0.0	32.8	62.3	88.9	112.9	134.5	154.0	171.6	187.4	201.7	214.7
3.50	0.0	39.9	75.2	106.2	133.6	157.8	179.1	198.0	214.6	229.4	242.4
3.00	0.0	46.6	86.7	121.3	151.1	176.8	199.0	218.1	234.6	248.8	261.1
2.50	0.0	50.9	93.8	129.9	160.3	185.9	207.4	225.5	240.7	253.4	264.0
2.00	0.0	52.7	96.3	132.1	161.6	185.8	205.6	221.7	234.7	245.2	253.6
1.50	0.0	54.8	97.8	131.3	157.1	176.7	191.5	202.4	210.2	215.5	218.8
1.00	0.0	56.3	98.6	130.1	153.2	169.7	181.2	188.9	193.5	195.9	196.6
0.50	0.0	57.6	99.3	129.0	149.7	163.6	172.5	177.7	180.1	180.5	179.5
0.00	0.0	57.6	99.2	128.6	149.0	162.6	171.2	176.0	178.1	178.3	177.2

* Actual situation

YFT-Table 10. **Yellowfin yields in the west Atlantic and east Atlantic spawners, as a function of the fishing mortality exerted on the juvenile stock in the east Atlantic. "F multipliers (adult)" represent those of accumulated fishing mortality for the western Atlantic and the adult stock in the eastern Atlantic. "F multipliers (juv)" represent the multipliers of fishing mortality on juvenile in the east Atlantic.**

F multipliers (juv)	F multipliers (adult) 0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00
2.50	49.6	67.9	73.6	74.3	73.1	71.2	69.2	67.1
2.25	54.7	74.8	81.0	81.8	80.4	78.3	75.9	73.7
2.00	60.3	82.4	89.3	90.0	88.4	86.0	83.4	80.8
1.75	66.5	90.8	98.3	99.1	97.3	94.6	91.6	88.7
1.50	73.3	100.1	108.3	109.1	107.0	104.0	100.6	97.4
1.25	80.8	110.3	119.3	120.1	117.8	114.3	110.6	106.9
1.00	89.1	(121.6)	131.5	132.3	129.6	125.7	121.5	117.4
0.75	98.3	134.1	144.9	145.7	142.6	138.3	133.6	129.0
0.50	108.4	147.8	159.6	160.4	157.0	152.1	146.8	141.7
0.25	119.5	162.9	175.9	176.7	172.8	167.3	161.4	155.7
0.00	131.8	179.6	193.8	194.6	190.3	184.1	177.5	171.0

( ) Present fishery.

BET-Table 1. Atlantic bigeye catches (in 1000 MT) by country, gear and region.

(NOV. 4, 1993, 12:00)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL	25.9	23.3	39.2	24.9	24.7	23.0	35.8	41.3	55.0	46.5	56.5	63.8	60.7	44.6	54.3	51.8	45.1	62.9	67.2	72.8	58.5	68.6	74.6	58.9	48.8	58.1	68.9	69.4	68.3	72.0
-SURFACE	10.9	5.6	9.8	5.2	11.6	4.2	12.7	13.8	15.8	14.0	18.5	24.6	19.7	17.2	25.0	23.3	17.9	21.4	25.7	21.0	25.2	27.2	25.8	24.5	19.9	17.0	19.1	24.8	35.0	33.1
BAITBOAT	10.9	5.6	9.8	5.2	11.5	3.8	9.7	10.4	11.8	9.4	13.6	18.0	14.5	9.9	12.8	14.5	9.5	12.1	9.6	6.8	9.9	11.0	17.7	15.0	12.3	9.1	12.4	15.2	13.5	12.7
FIS	2.4	0.8	++.	++.	1.7	0.2	2.3	1.4	1.3	1.1	1.2	1.0	1.3	1.4	2.6	3.6	2.0	2.4	2.2	1.8	2.1	2.1	4.0	3.2	2.7	2.5	2.2	2.7	2.2	1.7
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.5	0.4	0.3	1.1	1.4	1.2	1.3	1.1	2.1	2.5	0.1	0.1
JAPAN	++	++.	0.1	++.	0.4	0.6	0.3	0.2	0.5	0.9	1.7	1.9	0.1	0.9	1.0	0.6	0.2	0.4	1.0	0.6	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KOREA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.3	0.2	0.5	0.5	0.7	1.3	0.6	0.2	0.0	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORTUGAL	8.0	4.7	8.7	4.1	8.1	1.6	5.6	5.1	2.9	4.0	5.9	10.9	6.8	2.9	4.5	5.3	3.3	3.5	2.6	1.8	3.8	3.9	6.4	7.0	4.5	2.2	4.9	5.9	5.5	5.3
ESPANA	0.5	0.1	1.0	1.1	1.3	1.4	1.5	3.6	7.0	3.1	4.4	3.2	5.7	4.2	3.6	3.8	3.0	4.0	2.4	1.5	2.5	2.8	5.0	3.5	3.6	2.6	2.8	3.8	5.5	5.5
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.2	0.4	0.2	0.2	0.4	0.6	0.1	0.2	0.3	0.5	1.2	1.1	0.9	0.1	0.2	0.7	0.4	0.3	0.2	0.1
PURSE SEINE	0.0	0.0	0.0	0.0	0.1	0.4	3.0	3.4	4.0	4.6	4.9	6.6	5.2	6.9	11.5	8.6	7.9	8.7	15.3	13.9	15.2	16.0	8.0	9.2	7.1	7.6	6.3	9.4	21.3	20.1
FIS	0.0	0.0	0.0	++.	++.	++.	1.3	2.4	2.6	2.8	3.2	4.2	3.5	4.9	6.0	4.9	4.9	3.3	5.4	4.8	5.6	2.0	1.0	1.1	1.3	1.7	1.2	2.2	4.3	6.5
JAPAN	0.0	0.0	0.0	0.0	0.1	0.4	1.3	0.3	0.5	0.7	0.3	0.2	++.	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.5	0.5	0.3	0.4	0.4	0.1	0.2	0.9	0.6
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.4	0.9	1.3	1.3	1.6	1.7	4.8	3.0	2.4	4.4	7.6	7.5	6.2	10.8	5.4	7.4	5.3	5.4	4.9	6.1	12.6	11.6
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	++.	1.2	1.1	0.5	0.0	0.0	++.	++.	0.1	0.3	++.
NEI_1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	0.2	0.0	0.0	0.1	++.	0.1	0.8	3.2	1.4
OTHERS	0.0	0.0	0.0	0.0	0.0	++.	0.1	0.2	0.5	0.2	0.1	0.9	0.1	0.3	0.7	0.6	0.6	0.6	1.1	1.3	1.1	1.4	0.6	0.4	++.	0.1	++.	++.	++.	++.
OTHER SURFAC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.2	0.5	0.6	0.8	0.3	0.1	0.2	0.1	0.3	0.5	0.3	0.4	0.2	0.2	0.3
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.2	0.5	0.6	0.8	0.3	0.1	0.2	0.1	0.3	0.5	0.3	0.4	0.2	0.2	0.3
-LONGLINE	15.0	17.7	29.4	19.7	13.1	18.8	23.1	27.5	39.2	32.5	38.0	39.2	41.0	27.4	29.3	28.5	27.2	41.5	41.5	51.8	33.3	41.3	48.7	34.3	28.8	41.0	49.6	44.5	33.2	38.7
CHITAIW	++	++.	0.0	0.6	2.2	5.3	7.5	7.6	5.5	5.0	3.8	3.1	4.0	3.3	3.0	2.6	2.2	2.3	1.7	1.9	1.4	0.8	1.1	1.0	1.3	1.3	0.7	4.9	0.8	4.7
CUBA	0.0	0.0	0.1	0.3	0.2	0.9	1.0	4.1	3.2	2.0	2.6	2.4	1.9	1.3	1.8	2.3	2.3	1.4	0.7	0.5	0.4	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0
JAPAN	14.5	17.3	28.5	17.6	8.5	10.3	10.3	9.0	20.3	18.1	20.0	20.9	17.4	7.3	9.1	9.3	12.0	20.5	21.0	32.9	15.1	24.3	31.6	22.8	18.6	31.7	39.4	35.0	29.5	31.2
KOREA	0.0	0.0	0.0	0.3	0.3	0.3	1.9	4.1	7.4	5.7	5.8	7.4	10.2	6.7	7.6	9.2	7.3	9.0	11.7	10.6	9.4	8.9	10.7	6.1	4.4	4.9	7.9	2.7	0.8	0.9
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.7	1.8	2.0	2.0	1.2	2.0	0.5	4.5	2.5	2.9	2.7	2.0	1.1	0.6	0.4	0.0	0.0	0.0	0.0	0.0
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.4	0.0	0.0	0.0	++.	0.3	0.1	++.	++.	++.	0.0	0.0	0.0	0.5	0.5	0.5
USSR	0.0	0.0	0.4	0.7	1.8	1.7	2.2	2.6	2.7	1.6	3.0	3.4	3.7	4.9	4.1	2.1	2.0	2.6	1.7	0.6	0.4	1.2	0.9	1.1	1.9	1.1	0.4	0.1	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.5	0.2	0.3	0.3	1.5	1.0	2.4	2.0	1.7	0.9	0.1	0.1	++.	++.	0.1	++.
OTHERS	0.5	0.4	0.4	0.2	0.1	0.3	0.2	0.1	0.1	++.	0.1	0.2	0.3	0.4	0.6	0.8	0.6	0.9	0.7	1.1	1.4	1.7	1.4	1.6	1.9	1.7	1.1	1.2	1.5	1.4
-UNCL GEARS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2

++. CATCHES: = 1 MT

For each region-gear group, countries with less than 950 MT annual catch during the entire period covered are included in OTHERS.

SKJ-Table 1. Atlantic skipjack catches (in 1000 MT) by country, gear and region.

(NOV. 3, 1993, 18:15)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL	20.1	18.7	24.2	22.8	24.2	48.4	29.2	49.9	78.3	77.4	78.0	117.0	56.0	68.5	108.8	106.2	88.0	108.6	128.9	152.3	133.0	125.6	117.7	123.9	116.4	140.2	115.5	139.2	193.6	145.4
EAST-SURF	16.1	13.2	22.6	21.0	21.4	45.8	27.3	47.5	76.2	74.4	75.0	113.3	52.2	64.8	105.4	99.1	81.8	96.0	105.9	120.1	100.6	90.9	77.8	89.8	90.7	117.4	90.3	114.7	165.6	118.8
-PURSE SEINE	0.4	0.9	3.3	6.1	7.9	24.2	14.3	29.8	48.8	48.8	49.8	74.2	35.4	32.5	55.9	56.8	35.6	54.0	64.5	72.5	63.6	61.7	47.7	58.1	51.2	68.0	47.3	73.7	117.4	77.6
CANADA	0.0	0.0	++.	0.0	0.6	0.9	0.1	0.6	1.2	++.	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAYMAN I	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.8	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONGO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.2	0.0	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.
FIS	0.2	0.5	0.9	2.2	1.5	5.1	2.6	7.8	13.1	13.6	7.9	22.6	10.5	14.3	26.7	20.7	13.9	19.9	22.4	24.3	25.2	9.1	9.7	10.9	15.2	14.2	11.1	13.6	28.7	18.8
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.3	2.7	3.9	2.8	3.7	2.9	1.7	0.8	0.0	0.0	0.0	0.0	0.0
JAPAN	0.0	++0	1.8	1.4	2.2	6.3	0.7	3.5	6.2	3.4	1.5	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.1	2.1	2.0	2.0	3.2	2.2	2.6	4.8	2.4
MAROC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.7	1.9	1.9	5.0	3.0	4.0	2.3	0.9	1.0	1.2	0.9	0.0	0.0	0.1	++.	0.1
RUSSIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.1
ESPANA	0.2	0.4	0.6	2.5	3.1	8.7	6.2	6.1	11.9	19.5	17.8	30.6	16.9	15.6	21.5	24.5	17.4	24.2	31.3	34.7	27.6	44.6	29.4	39.5	29.7	44.2	29.5	43.2	65.2	42.8
USA	0.0	0.0	0.0	0.0	0.5	3.2	4.7	11.8	16.2	12.2	21.2	20.0	7.4	1.8	5.9	6.8	2.1	2.6	2.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.1	++.	0.0	1.5	0.6	1.0	1.4	1.7	0.5	1.8	1.9	3.6	0.0	0.0
NEI_1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.4	0.9	0.6	0.5	1.4	3.7	2.3	10.5	17.5	12.4
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.3	0.2	0.1	0.5	0.2	0.4	0.3	1.0	0.3	0.4	0.6	0.6	0.7	0.9	0.3	0.1	++.	0.0
-BAITBOAT	15.7	11.8	19.2	14.9	13.5	21.6	12.9	17.6	27.2	25.3	25.0	39.0	16.7	28.6	42.4	41.4	44.7	38.0	38.9	44.5	34.8	27.9	29.9	30.1	38.5	48.1	41.6	39.5	47.0	39.9
ANGOLA	2.3	1.0	1.3	2.8	2.0	4.2	1.8	0.9	1.9	1.5	1.3	3.4	0.6	1.5	3.8	3.2	3.6	3.5	2.3	2.2	0.3	++.	0.1	0.1	0.1	++.	0.1	0.1	0.1	++.
CAP VERT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.0	1.5	1.4	1.3	1.2	0.8	0.7	1.3	1.0	2.1	1.6	1.6	1.3	1.0	2.0	0.9	2.1	1.4	0.9	0.8	1.3	0.7
FIS	2.1	1.4	2.7	3.3	3.7	7.3	3.6	4.2	5.6	3.7	3.2	4.4	1.8	2.1	2.7	3.3	3.3	3.1	2.6	4.4	2.6	3.8	3.3	1.9	2.0	3.0	4.8	3.5	1.4	1.4
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.3	2.1	3.5	2.9	4.0	4.7	4.9	14.3	20.5	16.2	16.2	19.2	22.8	26.0	22.2	26.6	30.3	23.2
JAPAN	4.6	3.1	6.3	4.4	3.7	7.3	4.9	7.5	11.7	10.1	13.0	18.7	3.7	15.0	16.8	14.6	14.7	12.3	12.9	8.5	4.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KOREA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.1	4.5	1.9	3.6	8.1	12.0	6.7	7.5	2.8	1.6	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAROC	0.0	0.0	3.2	1.5	0.9	0.9	0.1	1.1	0.1	++.	0.1	++.	0.3	++.	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.2	1.0	1.9	2.5	4.0	3.0	1.8	1.7	0.1	2.5	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORTUGAL	3.4	3.1	2.2	2.3	2.5	1.1	1.7	1.0	4.2	3.7	2.2	1.9	0.6	2.1	4.4	4.4	3.0	1.7	2.7	4.8	1.0	3.8	2.4	5.4	8.0	14.1	7.7	3.9	8.0	7.4
ESPANA	3.3	3.2	3.5	0.6	0.7	0.8	0.8	1.8	2.7	4.1	2.6	5.4	0.8	0.6	0.7	0.6	1.3	2.2	4.2	3.4	1.3	2.0	5.7	2.5	3.4	3.4	5.8	4.6	5.9	7.2
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	0.0	0.0	0.0	0.0	++.	0.1	++.	++.	++.	++.	0.1	0.1	0.2	0.1	++.	++.	++.
-OTHER SURF	0.0	0.5	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.1	0.1	3.7	7.1	0.9	1.5	4.0	2.5	3.1	2.2	1.3	0.2	1.6	1.0	1.3	1.4	1.5	1.2	1.3
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.2	0.1	1.0	0.8	0.0	1.4	0.7	0.6	0.6	0.6	0.6	0.6
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	6.7	0.5	1.1	3.0	1.8	2.5	0.7	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0
OTHERS	++0	5.0	0.1	0.0	++.	++.	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.4	0.4	0.1	0.2	0.5	0.5	0.5	0.5	0.2	0.2	0.3	0.7	0.8	0.9	0.6	0.7
WEST-SURF	4.0	5.5	1.6	1.8	2.8	2.6	1.9	2.4	2.1	3.0	3.0	3.7	3.8	3.7	3.4	7.1	6.2	12.6	23.0	32.2	32.4	34.7	39.9	34.1	25.7	22.8	25.2	24.5	28.0	26.6
-PURSE SEINE	3.0	4.4	0.1	0.0	0.0	0.1	0.1	0.0	0.0	1.2	0.4	0.1	0.4	0.7	0.6	3.4	1.5	3.1	4.7	9.7	11.1	17.9	11.2	6.8	6.1	1.7	1.8	2.0	4.8	5.0
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.3	1.0	0.8	0.0	0.0	0.0	0.2	2.6	0.5	0.0	0.0	0.0	0.0	0.0	1.6	1.1
USA	3.0	4.0	0.1	++.	++.	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.5	0.3	1.6	0.7	1.0	2.6	++.	0.6	0.8	1.8	1.0	0.6	0.0	++.	0.2	0.0	0.5
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	9.5	10.0	14.1	8.9	5.8	5.5	1.7	1.8	1.8	3.2	3.4
OTHERS	++0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.4	0.1	0.1	0.2	++.	0.8	0.0	0.2	0.2	0.2	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SKJ-Table 1. Continued..

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
-BAITBOAT	0.7	0.7	1.0	1.0	1.2	1.6	1.3	1.8	1.6	1.4	1.9	2.9	2.8	2.8	2.4	2.8	4.4	9.4	18.0	22.4	20.0	16.7	28.5	26.1	19.4	20.9	23.1	22.1	22.9	21.1
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	6.1	13.9	18.2	15.6	13.1	25.1	22.5	16.2	17.2	20.5	20.0	20.4	18.8
CUBA	0.7	0.7	1.0	1.0	1.2	1.6	1.3	1.8	1.6	1.4	1.5	1.8	2.3	2.8	2.4	1.8	2.0	2.3	1.1	1.1	1.7	1.2	1.6	1.3	1.1	1.6	1.4	1.4	1.4	1.6
JAPAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	0.0	0.0	0.0	0.0	0.0	3.0	3.1	2.7	2.4	1.8	2.3	2.1	2.1	1.2	0.7	1.1	0.7
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-OTHER SURF	0.3	0.4	0.5	0.8	1.6	0.9	0.5	0.6	0.5	0.4	0.7	0.7	0.6	0.2	0.4	0.9	0.3	0.1	0.3	0.1	1.3	0.1	0.2	1.2	0.2	0.2	0.3	0.4	0.3	0.5
BRASIL	0.3	0.4	0.5	0.7	1.5	0.8	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.2	0.0	0.0	0.0	0.0	++.	++.	0.6	0.1	0.1	0.2	0.1	0.1	0.3
OTHERS	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.3	0.2	0.1	++.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6	0.1	0.1	0.1	0.1	0.2	0.2
SURFACE - U	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL+TRAWL -	0.0	++0	++.	++.	++.	++.	++.	++.	0.1	0.1	0.1	0.2	0.2	++.	0.1	0.1	++.	++.	0.1	++.	0.6	++.	++.	++.	++.	++.	++.	0.1	++.	++.
OTHERS	0.0	++0	++.	++.	++.	++.	++.	++.	0.1	0.1	0.1	0.2	0.2	++.	0.1	0.1	++.	++.	0.1	++.	0.6	++.	++.	++.	++.	++.	++.	0.1	++.	++.
UNCL GEARS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.4	0.5	0.5	0.2	0.1	0.2	0.4	0.1	0.2	0.9	0.4	0.7	0.3	0.3	0.1	0.4	0.3	0.3	0.7	0.3
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.4	0.5	0.5	0.2	0.1	0.2	0.4	0.1	0.2	0.9	0.4	0.7	0.3	0.3	0.1	0.4	0.3	0.3	0.7	0.3

++.0 CATCHES: < 50 MT AND >= 1 MT

FOR EACH REGION-GEAR GROUP, COUNTRIES WITH < 950 MT ANNUAL CATCH DURING THE ENTIRE PERIOD COVERED ARE INCLUDED IN OTHERS.

ALB-Table 1. Atlantic albacore catches (In 1000 MT) by country, gear and region.

(NOV. 5. 1993, 12:00)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL	77.3	90.3	90.7	75.1	74.8	71.8	76.4	70.4	83.0	83.4	75.7	72.6	59.6	77.4	75.3	72.3	73.4	61.6	59.6	72.9	67.3	56.6	74.3	87.3	81.8	66.8	62.9	67.9	53.7	62.1
NORTH ATLANT	60.0	64.4	60.4	47.3	58.4	45.6	47.3	46.3	57.6	49.4	47.0	52.3	41.4	57.3	53.0	48.5	50.0	38.2	34.0	42.0	51.0	39.4	40.5	47.4	38.0	33.8	32.1	36.3	25.2	29.5
-SURFACE	45.3	48.5	45.7	39.6	48.9	37.9	32.5	30.2	39.7	34.7	28.9	37.7	28.7	34.3	32.1	34.3	37.8	28.8	24.2	28.8	34.4	19.9	23.4	26.2	30.7	30.8	29.9	33.8	22.6	26.5
BAITBOAT	20.7	20.5	20.1	16.8	18.3	13.9	14.6	14.4	15.7	8.2	10.2	16.7	19.2	20.4	15.6	11.8	15.7	16.2	13.4	15.9	21.2	8.3	12.6	15.1	18.7	16.8	15.4	18.6	9.0	12.4
FRANCE	6.4	6.8	4.2	3.5	3.9	2.2	1.7	1.7	1.5	0.5	1.1	0.6	0.7	1.1	0.6	0.4	0.2	0.4	0.4	0.2	0.2	++.	0.1	0.1	0.1	0.0	0.3	0.0	0.0	0.0
PORTUGAL	1.0	0.5	0.8	0.3	0.7	0.1	0.5	0.2	0.3	0.4	0.9	1.2	0.9	0.6	0.1	0.1	0.1	0.1	0.4	0.3	1.8	0.8	0.6	0.4	0.4	0.2	0.2	3.2	0.7	1.6
ESPANA	13.3	13.2	15.1	13.0	13.7	11.6	12.4	12.5	13.9	7.3	8.2	14.9	17.6	18.7	14.9	11.3	15.4	15.7	12.6	15.3	19.0	7.4	11.8	14.6	18.2	16.6	14.9	15.4	8.3	10.8
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	++.	0.0	0.0	0.0	++.	++.	++.
TROLLING	24.6	28.0	25.6	22.8	30.6	24.0	17.9	15.8	24.0	26.5	18.7	21.0	9.5	13.9	16.5	22.5	22.0	12.6	10.7	12.8	12.8	11.0	10.7	10.9	11.4	11.4	10.6	10.3	9.0	7.3
FRANCE	9.8	12.7	11.4	10.0	11.6	11.0	7.7	4.5	7.7	8.7	5.8	7.9	5.0	5.7	6.2	8.4	7.8	3.1	2.5	2.7	2.2	2.8	1.8	1.1	1.4	0.4	0.1	0.0	0.0	0.0
ESPANA	14.8	15.3	14.2	12.8	19.0	13.0	10.2	11.3	16.3	17.8	12.9	13.1	4.5	8.2	10.3	14.1	14.2	9.5	8.2	10.1	10.6	8.2	8.9	9.8	10.0	11.0	10.5	10.3	9.0	7.3
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	++.
OTHER SURFAC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.1	++.	0.1	0.1	0.4	0.6	0.1	0.2	0.6	2.6	3.9	4.9	4.6	6.8
CHITAIW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0
FRANCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.4	3.7	3.3	4.1	6.1
USA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	++.	0.1	++.	++.	++.	++.	0.1	0.2	0.1	0.2	0.2	0.3	0.2
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.1	++.	0.0	0.1	++.	++.	0.2	0.1
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	0.1	++.	0.0	0.1	++.	++.	++.	++.	++.	++.	++.	++.
-LONGLINE	14.7	15.9	14.7	7.7	9.5	7.7	14.8	16.1	17.9	14.7	18.1	14.6	12.7	23.0	20.9	14.2	12.2	9.4	9.8	13.2	16.6	19.5	17.1	21.2	7.3	3.0	2.2	2.5	2.6	3.0
CHITAIW	++	0.1	0.1	0.2	0.8	1.9	2.4	4.7	2.9	4.4	9.5	9.5	8.1	14.8	13.7	9.3	7.0	7.1	6.6	10.5	14.3	14.9	14.9	19.6	6.6	2.1	1.3	1.5	1.6	2.1
CUBA	0.0	0.0	0.1	0.2	0.1	0.3	0.1	0.0	0.0	++.	0.0	0.0	0.1	0.1	0.1	0.1	0.0	++.	++.	0.1	++.	0.1	++.	++.	++.	++.	++.	++.	0.0	0.0
JAPAN	14.6	15.7	14.3	5.9	4.8	3.3	4.7	5.9	6.5	1.3	1.5	2.1	1.3	1.3	0.8	0.5	1.2	1.0	1.7	0.8	1.2	0.6	0.8	0.5	0.5	0.7	0.8	0.7	0.7	0.5
KOREA	0.0	0.1	0.2	1.5	3.9	1.6	6.8	5.0	7.7	7.9	4.8	2.8	2.8	5.4	5.6	3.0	3.0	0.8	0.9	1.3	0.5	1.0	0.4	0.4	++.	++.	0.1	++.	++.	0.0
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.4	0.2	0.2	1.2	0.6	0.8	0.4	0.2	0.2	0.5	0.4	2.6	0.6	0.5	++.	0.0	0.0	0.0	0.0	0.0
VENEZUEL	0.1	0.0	0.0	0.0	0.0	0.6	0.8	0.5	0.8	0.8	0.0	0.0	0.1	0.1	0.1	0.4	0.6	0.3	0.3	++.	0.3	0.4	0.3	0.1	++.	++.	++.	0.1	0.1	++.
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	++.	++.	++.	++.	0.1	0.1	0.1	0.2	0.2	0.2
SOUTH ATLANTI	17.3	25.9	29.8	27.3	15.9	25.7	28.4	23.6	24.9	33.3	28.2	19.8	17.7	19.5	21.7	23.2	22.6	22.9	24.1	29.6	15.1	13.8	29.7	36.2	39.8	28.9	26.7	29.7	25.7	28.7
-SURFACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.5	0.3	0.8	2.3	3.6	4.4	3.0	3.8	7.0	6.0	8.3	6.7	6.9	6.2	3.4	6.8
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	0.1	0.1	++.	0.1	0.1	0.3	0.1	++.	0.1	++.	++.	++.	++.	++.
CHITAIW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
FIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	++.	0.2	0.5	0.9	0.9	0.4	++.	++.	++.	0.1	0.0	0.0	0.0	0.0	0.0
SAFRICA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.5	1.5	1.8	3.1	2.2	3.2	6.7	5.8	7.3	6.5	6.9	5.3	3.4	6.4
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1	0.3	0.3	0.2	0.2	0.8	0.2	0.0	0.0	0.0	0.0
NEI_1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.4
OTHERS	0.0	++.	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	++.	0.0	++.	0.0	0.1	0.1	++.	0.2	++.	0.2	++.	++.	0.0	0.0	++.	++.	++.	++.	++.	++.

ALB-Table 1. Continued...

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
-LONGLINE	17.3	25.9	29.8	27.3	15.9	25.7	28.4	23.6	24.9	33.2	28.1	19.6	17.5	19.3	21.2	22.9	21.8	20.6	20.5	25.2	12.0	9.8	22.5	29.8	31.0	21.9	19.4	23.3	22.1	21.6
ARGENTIN	1.5	1.5	1.1	0.8	0.7	1.2	0.4	0.5	0.3	0.1	++.	++.	0.1	++.	0.1	++.	0.0	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	0.1	0.2	0.2	0.3	0.5	0.5	0.4	0.4	0.3	0.7	0.7	0.5	0.3	0.5	0.3	0.4	0.4	0.5	0.3	0.1
BRASTAI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	3.1
CHITAIW	0.0	0.0	0.0	0.0	1.1	6.8	12.5	12.2	17.5	25.0	22.2	16.7	13.4	14.6	16.1	20.5	20.3	18.7	18.2	22.8	9.5	7.9	19.6	27.6	28.8	20.7	18.4	22.1	20.3	17.8
JAPAN	15.1	23.7	28.3	21.0	7.7	11.9	6.3	5.9	3.2	2.1	0.3	0.1	0.3	0.1	0.1	0.1	0.1	0.3	0.6	0.6	0.2	0.2	0.6	0.7	0.4	0.4	0.4	0.6	0.7	0.6
KOREA	0.0	0.1	0.3	5.3	6.4	5.7	9.2	5.0	3.8	5.7	3.7	2.4	3.2	3.4	3.8	1.4	0.9	0.7	0.7	0.6	0.6	0.3	0.5	0.3	0.4	0.2	0.1	++.	++.	++.
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.8	0.2	0.3	0.8	0.4	0.4	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.3	0.9	0.0	0.0	0.0	0.0	0.0
SAFRICA	0.7	0.6	++.	0.1	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	++.	0.3	0.5	0.1	0.6	0.3	++.	0.1	0.0	0.1	0.0	0.0	0.0	0.0
URUGUAY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.2	0.4	0.5	1.5	0.3	0.2	0.1	0.1	0.1	++.	++.
OTHERS	0.0	0.0	0.1	0.1	++.	0.1	++.	0.0	0.0	0.1	0.0	0.0	++.	0.1	0.2	++.	0.0	++.	0.1	++.	++.	0.1	++.	++.	++.	++.	++.	++.	++.	0.0
-UNCL + TRAW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.4	0.5	0.3	0.4	0.2	0.2	0.3
ARGENTIN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	0.2	0.2	0.4	0.5	0.3	0.4	0.2	0.2	0.3
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.
MEDITERRANE	0.0	0.0	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.7	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.5	1.5	1.3	1.2	3.4	4.1	3.7	4.0	4.1	4.1	1.9	2.4	2.2
-SURFACE	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.6	0.5	1.6	1.2	0.1	0.2	0.1	0.1	0.8	1.3	1.2
FRANCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	++.	0.1	++.	++.	0.1	0.1	++.
ITALY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.1	0.1	0.1	0.1	0.6	0.7	1.0
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.6	0.5	1.3	0.5	0.0	0.0	0.0	0.0	0.1	0.5	0.2
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-LONGLINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.2	0.2	0.2	0.6	0.5	0.4
ITALY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.2	0.2	0.2	0.6	0.5	0.4
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	++.
-UNCL + TRAW	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.4	0.8	0.5	0.6	0.7	0.7	1.5	2.6	3.5	3.7	3.8	3.8	0.5	0.9	2.2
GREECE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
ITALY	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.8	0.5	0.6	0.7	0.7	1.5	2.6	3.0	3.2	3.3	3.3	0.0	0.0	0.0
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNCL REGIO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.4	1.7
-SURFACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.7
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.7

++0 CATCHES: < 50 MT AND >= 1 MT
FOR EACH REGION-GEAR GROUP, COUNTRIES WITH <250 MT ANNUAL CATCH DURING THE ENTIRE PERIOD COVERED ARE INCLUDED IN OTHERS

ALB-Table 2. Nominal fishing effort for major North and South Atlantic albacore fisheries.

YEAR	NORTH									SOUTH		
	BB SPAIN	BB FRANCE	TROL SPAIN	TROL FRANCE	GILL FRANCE	GILL TAIWAN	MWTD. FRANCE	LL TAIWAN		LL TAIWAN		BB S. AFRICA
61	13.9	8.7	26.9	21.1								
62	12.7	7.4	42.1	28.9								
63	13.3	6.4	37.3	24.7								
64	12.3	6.3	35.0	29.0								
65	20.2	5.6	30.5	24.5								
66	15.0	4.0	37.1	28.9								
67	13.2	3.8	46.7	28.5								
68	16.1	3.0	37.6	31.8						19.8		
69	20.9	2.9	20.0	19.9						26.4		
70	14.9	2.0	27.5	11.0						21.2		
71	21.6	2.3	33.4	15.8						35.7		
72	11.6	0.8	30.4	14.8						39		
73	13.6	1.8	24.4	18.9						36		
74	11.6	0.5	23.7	12.1						32.4		
75	17.2	0.7	15.4	9.0				15.2		30.5		
76	21.6	1.2	20.0	9.9				30.0		42.2		
77	10.0	0.4	20.1	9.7				30.9		53.4		
78	10.0	0.4	22.5	12.0				20.0		48.8		
79	10.2	0.1	17.0	10.0				9.0		33.1		
80	10.4	0.3	16.7	11.2				14.3		40		
81	11.5	0.4	17.2	5.3				12.8		39.8		
82	10.9	0.1	17.2	6.0				19.8		47.8		
83	16.1	0.2	16.1	3.3				26.0		22.4		
84	7.3	0.0	12.4	4.2				32.7		16.9		
85	9.9	0.1	23.4	4.7				37.8		48.2		
86	12.8	0.1	20.7	2.3				60.1		68.7		
87	10.3	0.1	24.7	3.5				23.8		86.5		2.8
88	12.0	0.0	19.7	0.7	1.2		0.8	5.2		72.8		3.3
89	9.5	0.2	21.9	0.2	1.5		2.9	3.4		68.9		5.6
90	9.0	0.1	18.9	0.1	1.3	?	0.8	17.4	(10.0)	82.4	(7.5)	5.4
91	7.9	0.0	14.0	0.0	1.9		0.3	23.3	(17.8)	85.4	(36.3)	
92	9.4	0	12.5	0	2.6		3	25.9	(16.7)	86.3		

Units: Surface 1000 fishing days
LL million hooks
Values in ( ) refers to effort of deep longlines

ALB-Table 3. Summary of Aspic Non-Equilibrium Production Model Analysis for North Atlantic Albacore

Run Id	Estimated MSY (MT) Unweighted	Weighted	Run characteristics (Time Period, Fisheries, Units)	Comments
1. SCRS/93/105	42210	36650	Spain & France BB, TR (1968-1991), nominal effort	Surface gears only
2. SCRS/93/105	68930	68440	Catch and effort from all fisheries	Total stock (North)
3. SCRS 1993	37340	48640	Spain & France BB and TR (1968-1991), nominal effort France GN and MWT (1988-1991), nominal effort Taiwanese and Japanese LL as in Run 2	Total stock (North)
4. SCRS 1993	41210	43270	Spain BB, TR as in Run 1 French BB (1968-1976), nominal effort French Tr (1968-1987), nominal effort French GN and MWT as in Run 4	Surface gears only
5. SCRS 1993	51240	64970	Catch and effort statistics from Runs 5 and 6 combined	Total stock (North)

BB = Baitboat; TR = Troll; LL = Longline; GN = Gillnet; MWT = Mid-water trawl.

ALB-Table 4. North Atlantic albacore indices of standardized abundance used for VPA tuning.

YEAR	SURFACE - SPANISH SURFACE GEAR - Age 1	Age 2	Age 3	Age 4	LONGLINE Age group 4+ TAIWAN	Age group 4+ JAPAN
1975					27.51	1.95
1976					31.12	1.91
1977					22.33	1.49
1978					37.4	1.18
1979					32.72	1.01
1980					28.9	0.94
1981					21.95	1.14
1982					36.91	0.78
1983	1.37	3.46	3.84	2.73	33.09	0.87
1984	2.7	3.26	3.31	2.64	28.1	0.77
1985	3.01	3.03	3.22	2.15	23.05	0.85
1986	2.63	3.46	3.27	2.75	21.32	0.55
1987	0.17	3.71	3.81	2.07	17.79	0.44
1988	3.2	3.75	3.35	2.63	26.55	0.69
1989	2.5	3.27	3.19	2.07	24.21	0.7
1990	2.85	3.63	3.13	2.27	14.56	0.62
1991	3.62	4.07	2.91	2.1	13.54	0.67
1992	3.17	3.92	3.28	2.32	20.81	
Index #	1	2	3	4	5	6

ALB-Table 6 Selectivity at age estimated from SVPA for 1975-1986 and 1988-1992 using SVPA. For both analyses natural mortality rate was assumed to be 0.3.

AGE	SELECTIVITY 1975-1986	1988-1992
1	0.165	0.355
2	0.651	1
3	0.763	0.822
4	1	0.767
5	0.389	0.118
6	0.544	0.122
7	0.583	0.128
8	0.792	0.16
9	0.452	0.219
10	0.5	0.2

ALB-Table 5. Catch at age for north Atlantic albacore estimated with MULTIFAN using the same growth parameters used in 1992 (SCRS/92/48).

	YEARS																	
AGE	1975	1976	1977	1978	1979	1980	1981	1892	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
1	245200	720400	301700	2383000	633400	1636100	931600	78300	805300	336200	1013300	684000	225600	1626200	939900	1062100	1047000	1198100
2	680900	2237500	2253500	2660000	3418300	1137700	1165300	1278500	1006100	1028500	986300	1409400	1718500	1935100	1511700	2159900	2149600	1631600
3	1212400	467600	1156200	760000	1468700	1786200	1154200	1600300	1406300	658000	913300	813700	1554200	936900	1184100	989000	541300	771500
4	505500	982700	922700	1236800	829400	657900	573500	877600	1040700	620100	539500	991200	614400	663900	809700	412200	289600	466900
5	189800	496200	167100	249700	88300	201500	140700	95700	349600	133300	142100	218100	72800	50100	29900	105400	29300	66200
6	282000	454800	488800	212500	121900	61100	75100	75800	198700	148200	153600	258900	45300	60700	31900	49900	38100	23500
7+	408500	432300	368000	329400	279700	170600	166500	266200	323100	470300	380000	446300	156300	103900	75400	203900	93500	143800
2-4	2398800	3687800	4332400	4656800	5716400	3581800	2893000	3756400	3453100	2306600	2439100	3214300	3887100	3535900	3505500	3561100	2980500	2870000
2-5	2588600	4184000	4499500	4906500	5804700	3783300	3033700	3852100	3802700	2439900	2581200	3432400	3959900	3586000	3535400	3666500	3009800	2936200
1-7+	3524300	5791500	5658000	7831400	6839700	5651100	4206900	4272400	5129800	3394600	4128100	4821600	4387100	5376800	4582600	4982400	4188400	4301600

ALB-Table 7. Summary of various assumptions under which various runs of ADAPT-VPA were made.

RUN	INDICES INCLUDED IN THE ANALYSIS						N(1993)	MSE.	N-2 1993 (CV)	N-3 1993	N-4 1993
	1	2	3	4	5	6	AGES	(E-02)	(E+03)	(E+03)	(E+03)
1	X	X	X	X	X	X	2-3-4-5	1.768	8714 (40)	1107 (26)	2227 (34)
2	X	X	X	X		X	2-3-4-5	2.343	8164 (36)	612 (48)	1961 (32)
3	X	X	X	X			2-3-4-5	3.847	8153 (39)	600 (76)	1954 (36)
4		X	X	X	X	X	2-3-4-5	Did not converge			
5		X	X	X	X	X	3-4-5-9	1.685	2000 (31)	461 (48)	2012 (36)
6		X	X	X	X	X	3-4-5-6-7	Did not converge			
7		X	X	X	X	X	3-4-5-6 **	1.512	3597 (19)	1054 (26)	2161 (38)
8		X	X	X	X	X	3-5-6	1.582	3810 (19)	1137 (24)	712 (23)
9	X	X	X	X	X	X	2-3-5	1.504	8533 (40)	1246 (21)	776 (20)
10	X	X	X	X	X*	X	2-3-5	1.498	8378 (40)	1113 (30)	698 (28)
11		X	X	X	X*		3-4-5	1.260	7322 (25)	2530 (29)	2784 (29)
12		X	X	X	X*	X	3-4-5-6 **	1.448	2887 (29)	784 (40)	2056 (38)

* Taiwan index included only 1975-1986 but not 87-92.
** Runs selected.

Indices numbers refer to ALB-Table 4.
N(1993) Ages refers to the ages for which abundances were estimated within the VPA as parameters.
MSE. = Mean square error.
N-2 1993 refers to the estimates of abundance (in thousands of fish) of age 2 in 1993 and their CV's are shown in parentheses ().
N-3 1993 refers to the estimates of abundance (in thousands of fish) of age 3 in 1993 and their CV's are shown in parentheses ().
N-4 1993 refers to the estimates of abundance (in thousands of fish) of age 4 in 1993 and their CV's are shown in parentheses ().

ALB-Table. 8. Stock size (in number of fish) at age estimated by VPA (run 12)

	ESTIMATED STOCK AT AGE AT BEGINNING OF YEAR																		
AGE	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	13485447	13559097	13120657	19827054	12205827	13909473	12246647	7067106	10504879	8283867	10326479	10545932	8034838	10492833	10208568	11224777	5120562	5274103	0
2	7247157	9780120	9428067	9461491	12652431	8500003	8906543	8275533	5168321	7093265	5848898	6783751	7227235	5759064	6385647	6758995	7407403	2901582	2887492
3	6283349	4786631	5341153	5067485	4750250	6468872	5325458	5602961	5039704	2971493	4376900	3491762	3825160	3892110	2626911	3444522	3175885	3662684	784419
4	4532589	3621674	3146256	2972425	3105466	2273254	3275022	2962510	2791979	2539107	1641214	2464669	1894406	1521349	2086400	948518	1712068	1891112	2056378
5	2012543	2925849	1848113	1547599	1158167	1595817	1125540	1937175	1449851	1188113	1353619	758603	988707	882591	567306	861296	355118	1021338	1003912
6	995496	1328644	1744332	1226223	933468	782449	1010102	713639	1353153	776704	766267	881328	376815	670165	610952	394672	548026	238016	699970
7+	968853	871084	881137	1219300	1350611	1349761	1381596	1565320	1396480	1592446	1229646	1025419	816498	712129	883437	1015272	828188	907026	705488
1-1	13485447	13559097	13120657	19827054	12205827	13909473	12246647	7067106	10504879	8283867	10326479	10545932	8034838	10492833	10208568	11224777	5120562	5274103	0
2-4	18063094	18188424	17915476	17501400	20508146	17242128	17507022	16841004	13000004	12603864	11867012	12740182	12946801	11172523	11098958	11152035	12295355	8455378	5728289
5-7+	3976892	5125577	4473582	3993122	3442246	3728027	3517239	4216134	4199484	3557263	3349532	2665350	2182020	2264886	2061695	2271240	1731333	2166380	2409370

ALB-Table. 9. Mean fishing mortality rate at age estimated by VPA (run 12)

	F AT AG DURING YEAR																	
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
1	0.0213	0.0634	0.0270	0.1492	0.0618	0.1458	0.0919	0.0129	0.0927	0.0481	0.1202	0.0779	0.0330	0.1966	0.1124	0.1156	0.2680	0.3024
2	0.1148	0.3049	0.3208	0.3890	0.3708	0.1676	0.1635	0.1960	0.2535	0.1828	0.2158	0.2729	0.3189	0.4850	0.3173	0.4553	0.4043	1.0081
3	0.2510	0.1196	0.2861	0.1897	0.4370	0.3807	0.2865	0.3965	0.3855	0.2936	0.2743	0.3115	0.6220	0.3235	0.7187	0.3991	0.2184	0.2773
4	0.1377	0.3728	0.4095	0.6425	0.3658	0.4029	0.2251	0.4146	0.5544	0.3290	0.4717	0.6134	0.4638	0.6865	0.5848	0.6825	0.2166	0.3333
5	0.1152	0.2172	0.1102	0.2056	0.0922	0.1573	0.1556	0.0588	0.3242	0.1386	0.1291	0.3997	0.0889	0.0678	0.0628	0.1521	0.1001	0.0778
6	0.3926	0.4965	0.3875	0.2225	0.1632	0.0945	0.0898	0.1307	0.1853	0.2478	0.2620	0.4103	0.1492	0.1104	0.0622	0.1576	0.0837	0.1210
7+	0.6544	0.8276	0.6458	0.3708	0.2719	0.1575	0.1496	0.2179	0.3089	0.4130	0.4367	0.6839	0.2487	0.1840	0.1037	0.2626	0.1395	0.2016

ALB-Table 10. Summary of Non-Equilibrium Production Model Analysis for South Atlantic Albacore

	Run Id	Estimated MSY (MT)	Run characteristics (Time Period, Fisheries, Units)	Analysis Method
1.	SCRS/93/83	21400	Base Case: Taiwanese GLM standardized LL CPUE (1968 - 1991)	Age structured production model SCRS/93/83
2.	SCRS/93/83	24900	Honma Taiwanese LL CPUE (1968 - 1991)	Same as in Run 1
3.	SCRS/93/83	24200	With Japanese LL CPUE for 1959 - 1971	Same as in Run 1
4.	SCRS/93/83	21300	Less 1987 - 1991 Taiwanese CPUE	Same as in Run 1
5.	SCRS 1993	25010	Taiwanese GLM Standardized CPUE corrected for Bigeye targeting (1968 - 1991) and Japanese GLM standardized LL CPUE (1975-1991)	ASPIC as described in SCRS/93/105
6.	SCRS 1993	24330	Taiwanese GLM CPUE and total south catch and Taiwanese Catch only (1968 - 1991), Biomass (1968) constrained to Biomass (MSY)	ASPIC as described in SCRS/93/105

LL = Longline

BFT-Table 1. Annual catches (in metric tons) of bluefin tuna by area, gear and countries (reported discards are included).

(21:30 - OCT. 7, 93)

YEAR	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
WEST ATLANTIC	13838	18679	14171	8090	5940	3176	3012	5466	6591	3948	3871	5393	5032	5883	6694	5763	6255	5801	5771	1445	2542	2292	2684	2322	2591	3011	2867	2782	2994	2188
-PS	5770	5158	3331	1006	2082	687	1118	4288	3769	2011	1656	960	2320	1582	1502	1230	1381	758	910	232	384	401	377	360	367	383	385	384	237	300
CANADA	323	579	461	0	0	0	0	1161	935	260	635	103	291	332	298	241	0	0	105	0	0	0	0	0	0	0	0	0	0	0
NORWAY	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USA	5447	4571	2870	1006	2082	687	1118	3127	2834	1751	1021	857	2029	1250	1204	989	1381	758	805	232	384	401	377	360	367	383	385	384	237	300
-R R	1162	601	1062	3726	343	619	1008	587	1049	1084	519	2913	328	590	630	475	499	535	523	308	476	401	466	328	539	439	557	754	728	426
CANADA	90	99	94	111	56	180	170	151	88	188	239	409	206	342	302	208	214	259	279	0	71	1	1	2	1	7	0	2	32	30
USA	1072	502	968	3615	287	439	838	436	961	896	280	2504	122	248	328	267	285	276	244	308	405	400	465	326	538	432	557	752	696	396
-LL	6558	12410	9469	3085	3126	1665	593	268	1390	339	1127	946	1522	3066	3752	3217	3691	3972	3879	363	829	835	1244	764	1134	1373	678	758	895	674
ARGENTIN	271	204	100	100	60	21	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRASIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	10	2	3	1	1	++	1	0	2	++	2	1	++	0
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	33	104	53	23	6	9
CHITAIW	0	0	0	0	0	12	7	2	13	7	2	20	1	0	1	1	49	15	7	11	2	3	3	3	0	0	0	0	0	0
CUBA	0	0	139	465	2352	1351	468	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JAPAN	6191	12044	9147	2471	694	272	116	66	1375	321	1097	905	1513	2902	3658	3144	3621	3936	3771	292	711	696	1092	584	960	1109	468	550	688	512
KOREA	0	0	0	0	0	0	0	0	0	11	23	20	8	7	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
NORWAY	0	63	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PANAMA	0	0	0	0	0	0	0	0	0	0	2	0	0	157	92	58	10	9	14	12	0	0	0	0	0	0	0	0	0	0
URUGUAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	9	16	6	0	2	0	0	1	0
USA	96	99	79	39	20	9	2	0	+	0	1	1	0	0	0	0	0	10	83	30	114	127	132	139	139	158	125	160	177	136
NEI_1 *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	1	0	0	0	0	0	30	24	23	17
COSTA RICA																				0	0	0	0	0	0	0	0	0	0	1
MEXICO																				0	0	0	0	0	0	0	30	24	9	0
N ANTIL																				14	1	0	0	0	0	0	0	0	0	0
PUERTO RICO																				0	0	0	0	0	0	0	0	++	0	0
TRINIDAD																				0	0	0	0	0	0	0	0	0	13	16
-OTH	348	510	309	273	389	205	293	323	383	514	569	574	862	645	810	841	684	536	459	542	853	655	597	356	359	601	999	753	935	744
ARGENTIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	2	++	1	2	2	2
CANADA	229	318	81	87	174	101	193	130	59	29	144	256	144	172	372	221	31	65	41	291	362	263	141	39	49	282	580	397	447	404
MEXICO	0	0	0	0	0	0	0	0	0	23	29	39	24	37	14	28	22	10	20	14	0	0	0	0	0	0	0	0	0	0
POLAND	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STLUCIA	0	0	0	0	0	0	0	**	**	**	**	**	**	**	**	**	**	0	0	0	0	0	0	0	0	++	3	2	14	14	14
USA	119	192	228	186	215	104	100	193	324	462	396	276	694	433	424	592	631	461	398	237	491	392	450	317	308	316	416	340	472	324
-DISCARDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	514	192	215	248	133	199	44

* Nowhere else included - Based on import statisics but flags of fishing vessels and regions of catches are uncertain (see the note at the end of the Table).

BFT-Table 1. Continued...

(21:30 - OCT. 7, 93)

YEAR	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
EAST ATLANTIC	9020	10239	10834	9290	10523	4629	5683	5764	4675	4732	4685	6067	9976	5212	6977	5800	4767	4064	3331	6669	8010	7392	4759	4325	4199	6750	5320	5935	6734	7556
-BB	1178	1079	1820	3347	1805	1474	1826	3017	3055	3032	3142	2348	2991	1803	2881	3904	2128	1874	1553	957	3032	2948	2366	2253	2128	2682	2683	1993	1648	1568
CAP VERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1	0	0	0	0	0	0	0	0
FRANCE	543	400	621	1624	860	390	534	732	680	740	540	522	692	267	592	723	275	260	153	150	400	566	380	272	533	479	306	367	448	522
JAPAN	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	191	303	24	14	56	10	17	16	30	53	15	3	28	58	29	1	12	0	++
ESPANA	635	676	1199	1723	945	1084	1292	2285	2375	2292	2602	1635	1996	1512	2275	3125	1843	1597	1384	777	2569	2366	1983	1953	1537	2174	2376	1614	1200	1046
-PS	1575	3458	3378	2737	4022	1149	1435	669	598	961	932	1455	3612	860	1426	257	266	437	266	655	262	414	86	288	0	0	0	8	4	66
MAROC	1419	2059	906	1778	2048	453	678	406	30	531	512	590	2624	331	662	36	206	155	105	600	187	127	86	122	0	0	0	8	4	66
NORWAY	156	1390	2472	959	1974	696	757	263	568	430	420	865	988	529	764	221	60	282	161	50	1	243	0	31	0	0	0	0	0	++
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74	3	0	123	0	0	0	++	0	0
SAFRICA	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	12	0	0	0	0	0	0
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
-TRAP	4472	5059	5172	3123	4540	1790	2220	1786	663	372	505	20	448	490	561	450	600	706	859	2309	1956	2271	1630	891	1062	2424	1478	2139	1799	1355
MAROC	2318	2256	1882	1601	1331	635	59	286	63	122	1	7	0	0	222	0	0	6	72	393	94	0	0	0	123	35	304	228	759	84
PORTUGAL	354	303	90	122	209	55	261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ESPANA	1800	2500	3200	1400	3000	1100	1900	1500	600	250	504	13	448	490	339	450	600	700	787	1916	1862	2271	1630	891	939	2389	1174	1911	1040	1271
-LL	1618	582	434	81	141	208	201	274	254	261	91	2243	2923	2048	1806	733	748	1002	575	2705	2626	1538	535	770	904	1169	853	1504	3113	3770
CHITAIW	0	0	0	0	0	138	114	46	12	2	1	12	5	3	2	0	3	5	6	16	2	0	0	0	0	0	0	0	0	0
FRANCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
JAPAN	1618	582	404	50	100	13	2	21	157	240	44	2195	2900	1973	1594	577	630	880	515	2573	2609	1514	420	739	900	1169	838	1464	2981	3350
KOREA	0	0	0	0	0	0	0	0	0	19	43	36	15	3	2	0	1	0	0	0	3	0	77	0	0	0	0	0	0	0
LIBYA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	363
MAROC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	2	16
NORWAY	0	0	30	31	41	57	85	207	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PANAMA	0	0	0	0	0	0	0	0	0	0	3	0	0	69	208	156	14	117	48	12	0	17	22	11	4	**	**	**	**	**
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	34
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	100	0	6	104	12	7	16	20	0	0	15	32	32	0
-OTH	177	61	30	2	15	8	1	18	105	106	15	1	2	11	303	456	1025	45	78	43	134	221	142	123	105	475	306	291	170	797
DENMARK	4	61	30	2	15	8	1	++	1	++	2	1	++	3	1	3	1	0	4	++	++	0	2	1	++	0	0	++	++	++
FRANCE	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	36	110	76	0	245	154	143	117	515
GERFR	++	++	++	++	0	++	++	14	1	6	2	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0
GREECE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	++	5	0	0	0	0	0	0	0	0	0	0
MAROC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	44	0	0	0	202	144	59	30	246
NETHERLA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	++	++	++	++	++	++	++	++	++	++	++
NORWAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	++	0	0	0	0	0	0	0	0	0	0	0

BFT-Table 1. Continued...

(21:30 - OCT. 7, 93)

YEAR	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
POLAND	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	7	1	11	47	16	26	42	105	19	2	15	18	34
ESPANA	173	0	0	0	0	0	0	0	0	0	0	0	0	0	300	450	998	38	70	27	2	119	1	0	0	4	0	0	0	2
SWEDEN	++	0	++	++	++	++	0	4	3	0	0	0	2	8	2	2	++	++	1	++	1	++	0	0	0	++	++	0	1	++
NEI_1*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	3	4	0	5	6	74	4	0
AZORES**																				0	0	0	0	0	0	0	0	2	2	0
DENMARK																				0	0	0	0	0	0	0	2	0	0	0
GERMANY F.R.																				0	0	0	3	1	0	0	0	0	0	0
IRELAND																				0	0	0	0	3	0	2	2	0	0	0
NORWAY**																				0	0	0	0	0	0	0	1	0	0	0
PORTUGAL**																				0	0	0	0	0	0	0	0	66	0	0
U K																				0	0	6	0	0	0	3	1	5	2	0

* Nowhere else included - Based on import statisics but flags of fishing vessels and regions of catches are uncertain (see the note at the end of the Table).

** Import (converted to live weight) less reported national catch

BFT-Table 1. Continued...

(21:30 - OCT. 7, 93)

YEAR	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
MEDITERRANEAN	6460	6295	5997	5326	8744	7933	8690	4694	6195	5954	6051	13056	11241	17073	11827	8846	7456	10029	10505	15696	13640	17022	19382	15967	13629	17478	16674	16314	17631	19524
-PS	1533	1261	435	1876	2919	3341	3629	2393	3904	4084	4324	8119	8065	13970	9563	7299	6103	8541	8529	12131	10484	9888	13408	10788	8755	11365	10512	11084	11903	13991
CROATIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	538	347
FRANCE	0	0	0	1000	1500	2500	1500	1100	2200	1100	1400	1800	1600	3800	3182	1566	1527	1701	2300	4818	3600	3570	5400	3460	4300	5750	4404	4663	4570	5970
ITALY	1256	990	301	630	1088	691	1828	1203	1336	2783	2700	6000	6270	9607	5431	4663	3705	6120	5704	6442	5552	5382	4522	4789	2579	2229	2345	2576	2430	2430
LIBYA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	320
MAROC	0	0	0	0	0	0	0	0	42	1	0	2	40	1	7	0	2	++	2	++	0	0	0	0	0	0	0	0	0	0
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	277	0	79	45	110	170	160	300	635	807	1366
TUNISIE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	21	113	147	97	108	110	102	127	109	148	153	94	114	1073	1073
TURKEY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2230	1524	910	1550	2809	2137	2436	2436
YUGOSLAV	277	271	134	246	331	150	301	90	326	200	224	317	155	562	932	1049	756	573	376	486	1222	755	1084	796	648	1523	560	940	0	0
NEI_2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	49	49
-TRAP	2059	3081	3872	2250	3337	3082	3768	1394	1548	1465	1041	2362	1579	1518	1186	1008	750	545	587	1364	1318	2236	760	645	913	1034	1311	1545	639	769
ALGERIE	++	++	++	150	150	150	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITALY	1227	1652	1264	945	1949	1739	1324	961	1044	835	367	739	713	650	698	210	195	152	209	155	284	327	295	293	310	301	301	246	350	350
LIBYA	100	400	600	700	800	1000	2000	0	208	449	475	1469	780	799	366	677	424	339	255	130	270	274	0	0	0	0	0	0	0	78
MAROC	0	0	172	11	27	5	0	0	37	36	1	7	0	0	0	0	0	0	0	0	0	0	0	0	110	96	286	580	22	82
ESPANA	472	653	1235	151	104	4	217	280	53	88	146	11	3	3	2	1	0	0	3	66	37	621	302	168	219	228	231	470	24	16
TUNISIE	260	376	601	293	307	184	77	153	206	57	52	136	83	66	120	120	131	54	120	188	170	145	163	184	274	409	493	249	243	243
TURKEY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	825	557	869	0	0	0	0	0	0	0	0
-LL	800	300	400	500	300	600	400	69	129	236	520	2387	1363	1218	592	153	199	219	300	1500	939	1165	1197	627	716	1325	1045	707	2404	2148
ITALY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	41	62	1	65	63	63	60	70	70
JAPAN	0	0	0	0	0	0	0	0	0	112	246	2195	1260	968	520	61	99	119	100	961	677	1036	1006	341	280	258	127	172	85	123
MALTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63	94
MAROC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
PANAMA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	278	320
ESPANA	800	300	400	500	300	600	400	69	129	124	274	192	103	250	68	92	100	100	200	538	233	69	129	117	116	135	98	59	51	28
NEI_1*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	19	0	168	255	869	757	415	1856	1513
CANARIAS																				0	0	0	0	0	0	0	0	0	78	247
GHANA																				0	0	0	0	0	0	66	0	0	0	0
HONDURAS																				0	0	0	0	12	123	403	353	168	428	274
KOREA***																				1	0	19	0	156	1	12	45	20	229	101
MALTA																				0	0	0	0	0	0	0	0	0	0	111
MOROCCO***																				0	0	0	0	0	0	169	0	0	106	164
PANAMA																				0	0	0	0	0	72	67	0	74	333	616
ST VINCENT																				0	0	0	0	0	0	0	0	0	105	0
VENEZUELA																				0	0	0	0	0	59	151	359	154	578	0
-OTH	2068	1653	1290	700	2188	910	893	838	614	169	166	188	234	367	486	386	404	724	1089	701	899	3733	4017	3907	3245	3754	3806	2978	2685	2616
ALGERIE	0	0	0	0	0	0	0	100	100	1	++	33	66	49	40	20	150	190	220	250	252	254	260	566	420	677	820	782	800	800

BFT-Table 1. Continued...

(21:30 - OCT. 7, 93)

YEAR	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
FRANCE	668	953	390	0	0	0	0	0	0	0	0	0	0	0	0	31	51	0	50	60	60	30	30	30	30	30	30	50	50	50
GREECE	1200	600	700	500	600	500	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	131	99	102	131	155	123	92
ITALY	0	0	0	0	0	0	0	100	100	100	100	100	100	112	134	110	120	0	104	61	0	1390	2320	2493	1653	1608	1608	1118	1045	1045
LIBYA	0	0	0	0	0	0	0	500	392	0	0	0	0	0	0	0	0	59	16	180	0	0	300	300	300	300	84	100	100	0
MALTA	100	100	100	100	100	100	++	++	++	++	++	21	37	25	47	26	23	24	32	40	31	21	21	41	36	26	34	66	0	0
MAROC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	12	18	0	44	9	6	7	2
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	14	0	88	72	15	33	101	108	542	1974	984	306	673	905	1016	658	510	597
TUNISIE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	27	1	2	13	60	79	22	34	62	74	43	50	30
TURKEY	100	0	100	100	1488	310	393	138	22	68	66	34	17	181	177	127	27	391	565	0	0	0	0	0	0	0	0	0	0	0

* Nowhere else included - Based on import statisics but flags of fishing vessels and regions of catches are uncertain.
** CATCH: UNKNOWN
*** Import (converted to live weight) less reported national catch

++ CATCH: < 05 MT

NOTE ON NEI CATCH ESTIMATES:

- Estimation was based on import statistics to Japan. All the products of "bluefin", "tunas and marlins", "tuna meat" and "tuna fillet", the unit price of which exceded 2000 yen per kg (in case of GG, exceded 1000 yen) were considered to be bluefin tuna.
- Original data for GG (gilled and gutted) were not separated for head-off or head-on. Hence separation was made by the SCRS based on the national information on products.
- Others" were, in principle considered as as "GG head off". However 1/3 of the "Others" from Spain was considered as belly while 2/3 was considered as GG head off.
- Tunas and marlins" from Portugal was excluded, although the price was higer than the cut-off line. This is because the major part of these products were considered as bigeye tuna.
- Import from St Vincent and Ghana were considered those caught in the Mediterranean Sea by these flag vessels.
- Year of import was assumed to be the same as year of catch

CONVERSION FACTORS USED

1.250 X GG (Gilled and Gutted) HEAD OFF
1.160 X GG (Gilled and Gutted) HEAD ON
1.670 X F (Fillet)
12.500 X Belly part

BFT-Table 2. Catch at age (number of fish) of west Atlantic bluefin tuna.

CATCH AT AGE DURING YEAR

	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
1	64886	62999	45404	5105	55957	43556	5411	1275	5132	2745	3161	6086	3528	4173	868	568	563	1512	4850	787	2368	3327	420
2	105064	153363	98578	74310	20054	148027	19780	22420	10864	10553	16184	9615	3729	2439	7504	5523	5939	13340	9149	12878	4238	14533	5985
3	127518	38360	33762	30480	21093	8328	72393	9717	20015	16288	11068	16539	1655	3268	1848	12310	7136	9137	11745	1678	17955	10761	1997
4	21455	46075	3729	7162	6506	11963	2909	32140	6315	14917	8882	5244	498	894	2073	2814	3442	5492	3934	3816	1946	2925	711
5	3677	672	3858	2132	3170	821	2898	4947	10530	3448	2866	6023	342	866	2078	4329	1128	4384	4144	1714	2745	1650	1426
6	914	1674	119	1451	684	546	344	3634	4061	3494	2981	3721	751	911	1671	4019	1726	2318	4221	2082	1821	2166	736
7	176	2109	567	953	916	317	205	958	655	2612	5532	2884	478	1402	593	1024	931	1566	2258	2677	1629	2347	1917
8	172	1350	576	1544	913	670	1167	513	472	599	3454	3211	518	1354	760	614	520	1252	1631	1866	2386	1946	1871
9	535	1134	262	556	1081	1651	556	1111	341	558	1061	2765	897	1040	1090	695	346	1015	1600	1475	1521	1918	1323
10+	3725	5956	5519	4444	12505	9472	14036	13533	11980	12286	12216	10619	3078	5631	4573	5605	5335	3858	4555	5454	4325	4490	4388
Tot	328122	313692	192374	128137	122879	225351	119699	90248	70365	67500	67405	66707	15474	21978	23058	37501	27066	43874	48087	34427	40934	46063	20774
2-5	257714	238470	139927	114084	50823	169139	97980	69224	47724	45206	39000	37421	6224	7467	13503	24976	17645	32353	28972	20086	26884	29869	10119
6-7	1090	3783	686	2404	1600	863	549	4592	4716	6106	8513	6605	1229	2313	2264	5043	2657	3884	6479	4759	3450	4513	2653
8-9	707	2484	838	2100	1994	2321	1723	1624	813	1157	4515	5976	1415	2394	1850	1309	866	2267	3231	3341	3907	3864	3194
8-10+	4432	8440	6357	6544	14499	11793	15759	15157	12793	13443	16731	16595	4493	8025	6423	6914	6201	6125	7786	8795	8232	8354	7582

Table 3. Abundance indices considered for west Atlantic bluefin tuna stock estimation.

GEAR	Larval	Tended	LL	LL	LL	LL	LL	LL	LL			LL			RR		RR	
	BFT	line		Honma				Honma										
COUNTR	U.S.A.	CANAD	JAPAN	JAPAN	JAPAN	JAPAN	JAPAN	JAPAN	U.S.A.	.....	.....	...U.S.A...	.....	.....	Captlog	.....	U.S.A.....	
AREA	Gulf of	NW	Gulf of	W	W	W	W	W	Gulf of			U.S.			U.S.		U.S.	
	Mexico	Atl.	Mexico	Atl.	Atl.	Atl.	Atl.	Atl.	Mexico			EEZ			Coast		Coast	
AGE	8+	10+	10+	8+	8+	6-7	3-5	1-7	8+	3	4	5	6	7	8+	8+	6-7	1-5
1960				9.500														
1961				4.000														
1962				24.578														
1963				7.500				3.667										
1964				2.000				12.000										
1965				1.563				5.667										
1966				1.563				2.333										
1967				0.750				--										
1968				0.750				1.333										
1969				0.500				--										
1970				0.000				0.000										
1771				0.250				1.667										
1972				0.250				1.333										
1973				1.250				1.333										
1974			2.437	1.250				3.333										
1975			1.831	1.000				0.000										
1976			1.942	0.750	-0.202	0.078	2.351	2.667										
1977	2.435		0.815	0.750	-0.048	0.835	5.343	3.333										
1978	5.824		1.257	1.000	0.108	1.044	3.465	2.667										
1979	--		1.153	1.000	0.121	0.975	1.073	1.000										
1980	--		1.251	1.750	0.576	0.792	1.998	1.667										78.529
1981	1.317	0.206	0.504	0.750	0.476	0.772	2.260	2.667										9.132
1982	1.514	0.185			0.247	0.620	1.391	0.333										99.850
1983	1.235	0.137			0.173	0.315	0.625									15.160		25.605
1984	0.653	0.094			0.472	0.440	1.503			1.000	1.000	1.000	1.000	1.000		5.800		--
1985	--	0.045			0.102	0.833	2.006			4.446	1.129	0.781	1.958	1.878		2.500		13.791
1986	0.261	0.054			0.134	0.566	1.222			1.449	0.723	0.429	0.576	1.165		0.940		39.791
1987	0.445	0.035			0.448	0.871	1.732		0.870	2.050	1.687	1.350	1.618	1.589		1.870	-0.027	55.690
1988	1.946	0.055			0.174	0.915	1.156		0.400	1.498	0.903	0.943	1.662	1.576	0.392	2.450	0.065	34.774
1989	0.798	0.044			0.211	0.609	1.118		0.650	1.046	0.595	0.870	1.782	1.768	0.516	2.120	3.394	56.712
1990	0.474	0.026			0.247	0.533	1.029		0.680						0.368	1.830	3.812	34.761
1991	0.365				0.397	0.698	0.938		0.920						0.322	2.710	0.585	70.356
1992	0.614				0.441	1.005	0.913		0.060						0.529	0.830	-0.368	18.741
Stock Measure	Biomass	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
Time of year	Middle	Middle	Start	Start	Start	Start	Start	Start	Start	Start	Start	Start	Start	Start	Middle	Middle	Middle	Middle
Ref.SCRS	93/69	90/94	93/48*	84/35	93/48*	93/48*	93/48*	84/35	93/64	90/80	90/80	90/80	90/80	90/80	93/76	93/63	93/73*	93/67

* Developed or modified at the working group

BFT-Table 4. West Atlantic bluefin tuna estimates of stock size, biomass and fishing mortality from the base case assessment.

A) STOCK AT AGE AT BEGINNING OF YEAR

	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	333967	259685	224502	126385	485363	142112	133928	85131	54665	75932	61465	56427	49664	85709	59230	54678	109377	41421	95046	40248	42314	69204	20283	—
2	202151	230051	167271	152992	105120	369903	83154	111393	72821	42748	63456	50492	43393	39892	70627	50683	47005	94563	34602	78114	34257	34582	57065	17242
3	217483	78760	59080	54604	64353	72753	184555	53925	76012	53207	27367	40144	34962	34254	32410	54419	38924	35341	69805	21590	55938	25840	16617	44042
4	88300	71584	33033	20242	19365	36392	55502	93422	37850	47506	31151	13547	19594	28854	26738	26456	35878	27208	22243	49769	17208	31984	12507	12589
5	39272	56846	19861	25248	10962	10805	20549	45543	51433	27036	27468	18842	6922	16570	24252	21316	20382	27988	18551	15681	39715	13150	25084	10211
6	74951	30720	48794	13682	19966	6589	8629	15169	34991	34932	20297	21214	10796	5699	13599	19149	14509	16669	20256	12279	12038	31972	9897	20479
7	27098	64308	25149	42308	10544	16720	5220	7181	9814	26642	27117	14874	14984	8687	4108	10269	12915	11008	12336	13689	8740	8773	25779	7919
8	77175	23394	53943	21335	35893	8314	14241	4347	5352	7922	20731	18436	10251	12581	6248	3020	7974	10361	8114	8626	9413	6084	5448	20627
9	46911	66933	19081	46359	17111	30354	6605	11294	3302	4214	6329	14812	13043	8429	9678	4725	2055	6448	7843	5539	5766	5969	3485	3003
10+	175577	189454	216289	199237	208854	183797	175818	145010	122259	97694	76648	59795	52423	53213	47383	44338	36794	28491	25844	23566	18870	15989	13145	9166
2-5	547206	437241	279245	253086	199799	489853	343759	304283	238116	170497	149442	123025	104871	119570	154027	152873	142189	185099	145201	165154	147119	105556	111273	84084
6-7	102049	95028	73942	55990	30510	23309	13849	22351	44805	61574	47414	36087	25780	14386	17707	29418	27424	27677	32592	25968	20778	40744	35676	28399
8-9	124087	90326	73023	67694	53004	38668	20845	15641	8654	12136	27061	33248	23294	21011	15926	7745	10029	16809	15957	14165	15179	12053	8934	23629
8-10+	299664	279781	289313	266931	261858	222465	196663	160652	130913	109829	103709	93043	75716	74223	63309	52083	46823	45301	41801	37731	34049	28042	22079	32795

B) F AT AGE DURING YEAR

	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
1	0.2327	0.2999	0.2435	0.0442	0.1317	0.3959	0.0442	0.0162	0.1059	0.0395	0.0566	0.1226	0.0791	0.0536	0.0158	0.0112	0.0055	0.0399	0.0562	0.0212	0.0618	0.0529	0.0224
2	0.8026	1.2194	0.9795	0.7260	0.2280	0.5553	0.2931	0.2422	0.1738	0.3060	0.3179	0.2276	0.0965	0.0677	0.1207	0.1240	0.1452	0.1636	0.3316	0.1939	0.1420	0.5929	0.1191
3	0.9713	0.7289	0.9311	0.8966	0.4300	0.1307	0.5408	0.2140	0.3300	0.3953	0.5631	0.5773	0.0520	0.1077	0.0630	0.2766	0.2181	0.3230	0.1983	0.0869	0.4190	0.5857	0.1376
4	0.3004	1.1421	0.1287	0.4734	0.4435	0.4316	0.0578	0.4569	0.1965	0.4078	0.3628	0.5315	0.0276	0.0338	0.0866	0.1208	0.1083	0.2430	0.2096	0.0857	0.1290	0.1030	0.0628
5	0.1056	0.0127	0.2327	0.0947	0.3690	0.0848	0.1635	0.1236	0.2469	0.1467	0.1184	0.4169	0.0544	0.0576	0.0962	0.2446	0.0611	0.1833	0.2726	0.1244	0.0769	0.1441	0.0628
6	0.0132	0.0601	0.0026	0.1205	0.0374	0.0929	0.0436	0.2955	0.1326	0.1132	0.1709	0.2077	0.0774	0.1874	0.1409	0.2539	0.1361	0.1610	0.2519	0.2000	0.1765	0.0753	0.0830
7	0.0070	0.0358	0.0245	0.0244	0.0976	0.0205	0.0430	0.1540	0.0741	0.1109	0.2459	0.2322	0.0348	0.1894	0.1677	0.1129	0.0803	0.1651	0.2177	0.2345	0.2222	0.3363	0.0830
8	0.0024	0.0638	0.0115	0.0806	0.0276	0.0902	0.0918	0.1350	0.0991	0.0844	0.1962	0.2060	0.0556	0.1224	0.1394	0.2450	0.0724	0.1384	0.2418	0.2628	0.3156	0.4172	0.4558
9	0.0123	0.0183	0.0148	0.0129	0.0700	0.0600	0.0944	0.1112	0.1171	0.1527	0.1975	0.2225	0.0765	0.1416	0.1284	0.1712	0.1985	0.1843	0.2459	0.3344	0.3307	0.4196	0.5181
10+	0.0230	0.0343	0.0277	0.0242	0.0663	0.0568	0.0893	0.1052	0.1108	0.1445	0.1868	0.2105	0.0649	0.1202	0.1090	0.1453	0.1685	0.1565	0.2088	0.2839	0.2808	0.3562	0.4399
2-5	0.6929	0.8605	0.7579	0.6519	0.3168	0.4585	0.3621	0.2782	0.2410	0.3326	0.3263	0.3919	0.0657	0.0692	0.0985	0.1919	0.1424	0.2068	0.2398	0.1394	0.2170	0.3587	0.1024
6-7	0.0115	0.0436	0.0100	0.0471	0.0578	0.0405	0.0434	0.2478	0.1195	0.1122	0.2131	0.2177	0.0524	0.1886	0.1471	0.2024	0.1095	0.1626	0.2388	0.2180	0.1954	0.1260	0.0830
8-9	0.0061	0.0299	0.0124	0.0338	0.0411	0.0664	0.0926	0.1178	0.1060	0.1076	0.1965	0.2134	0.0673	0.1300	0.1327	0.1993	0.0970	0.1558	0.2438	0.2902	0.3213	0.4184	0.4797
8-10+	0.0160	0.0328	0.0238	0.0266	0.0611	0.0584	0.0897	0.1064	0.1105	0.1404	0.1893	0.2115	0.0657	0.1230	0.1149	0.1532	0.1527	0.1562	0.2220	0.2863	0.2987	0.3825	0.4558
F10+/	1.8700	1.8700	1.8700	1.8700	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.8490	0.8490	0.8490	0.8490	0.8490	0.8490	0.8490	0.8490	0.8490	0.8490	0.8490

BFT-Table 4. Continued....

C) MID-YEAR BIOMASS AT AGE (KG)

	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
1	892123	735355	820456	427076	1530079	429047	477026	346790	242312	368390	278995	277899	178400	303907	257773	187756	427519	159218	336582	144972	172432	320992	106714
2	1099592	1056456	976205	910951	879463	2319203	695127	953555	675023	386262	621148	464777	417350	363820	696315	454360	404873	791117	314486	730509	340303	321107	633437
3	2231970	1115678	699792	707059	843686	1516990	2529908	944627	1316030	902276	420593	616001	677554	606822	692241	769962	660879	642152	1249602	432690	814168	369319	275687
4	2671198	1290934	1178932	603699	539889	948022	1717220	2483399	1140985	1433823	874034	342371	618772	1003816	945024	775447	1308916	908667	722709	1759841	588437	1192561	449406
5	1960455	3178853	954994	1404240	490520	567027	919831	2097851	2320242	1194084	1290203	755592	374931	887124	1296010	867054	1052386	1398974	881596	759260	1988687	707402	1332711
6	5538644	2283015	3856181	933485	1516672	461415	639325	919874	2254150	2428657	1475851	1390484	795648	410684	1018436	1122197	1075137	1091035	1360795	878542	802851	2485220	736339
7	2845108	6398624	2664483	4662047	961989	1771829	569570	609152	945245	2492988	2573758	1331345	1585100	860695	411582	892794	1348018	1035125	1123104	1300511	818251	807478	2590297
8	10681998	2859245	6882566	2732031	4576914	1049401	1934571	518793	691698	1001238	2475442	2198895	1397515	1648867	808442	329095	1066883	1248902	963830	1007490	1108410	708559	578383
9	7484331	10474051	3038668	7424023	2611296	4533811	1011487	1650892	532843	654643	1002961	2164321	2129727	1356945	1553291	691141	315350	932933	1167311	778851	825011	828757	459107
10+	43736336	46464428	56421348	52883452	55763616	46374448	43630260	37616200	34388264	26135924	20960764	16553396	14988145	14668226	12561882	10770821	9467994	7372178	6404976	5451463	4407013	3521951	2745943
Tot	79141752	75856640	77493624	72688064	69714128	59971192	54124324	48141132	44506792	36998284	31973748	26095080	23163144	22110906	20240996	16860626	17127954	15580300	14524992	13244130	11865562	11263346	9908022
2-5	7963215	6641921	3809923	3625948	2753558	5351243	5862086	6479432	5452280	3916445	3205977	2178742	2088607	2861582	3629589	2866822	3427054	3740910	3168393	3682300	3731595	2590389	2691241
6-7	8383751	8681639	6520664	5595532	2478662	2233243	1208894	1529026	3199395	4921645	4049609	2721829	2380749	1271379	1430018	2014992	2423155	2126160	2483899	2179052	1621102	3292698	3326636
8-9	18166330	13333296	9921233	10156053	7188210	5583212	2946058	2169685	1224540	1655881	3478403	4363215	3527243	3005812	2361733	1020236	1382233	2181835	2131142	1786342	1933421	1537316	1037489
8-10+	61902668	59797724	66342584	63039504	62951824	51957660	46576320	39785884	35612804	27791806	24439166	20916612	18515388	17674038	14923614	11791057	10850226	9554013	8536118	7237805	6340433	5059267	3783432

BFT-Table 5. Estimated bluefin tuna catches by size categories (at 6.4 kg = 69 cm; at 120 cm and 115 cm) - west Atlantic

YEAR	< 6.4 kg NO.	%	=or>6.4kg NO.	TOTAL NO.	< 120 cm KG	%	=or>120cm KG	TOTAL KG	< 115 cm KG	%	=or>115cm KG	TOTAL KG
74	56729	46.16	66155	122885	829752	15.59	4492459	5322211	807581	15.17	4514630	5322211
75	44281	19.65	181086	225367	1851648	35.37	3383959	5235608	1724671	32.94	3510936	5235608
76	5429	4.53	114301	119730	1594505	26.44	4437033	6031538	1532890	25.41	4498648	6031538
77	1487	1.65	88774	90262	771877	12.12	5594266	6366143	613862	9.64	5752281	6366144
78	5383	7.65	65028	70411	645001	11.43	4996035	5641036	601668	10.67	5039368	5641036
79	2709	4.01	64791	67501	524420	9.18	5188422	5712842	461227	8.07	5251616	5712844
80	3122	4.62	64508	67631	572669	8.9	5859810	6432479	495880	7.71	5936600	6432481
81	4777	7.16	61951	66728	577139	9.58	5445840	6022979	508212	8.44	5514766	6022979
82	3586	23.22	11897	15483	98220	6.71	1366327	1464547	91641	6.26	1372906	1464547
83	3990	18.16	17983	21973	113454	4.36	2489551	2603005	104718	4.02	2498286	2603005
84	977	4.24	22106	23083	143649	6.4	2101063	2244712	125545	5.59	2119167	2244713
85	616	1.65	36878	37494	326321	11.93	2409322	2735643	293509	10.73	2442134	2735643
86	797	2.94	26307	27104	216471	8.99	2192609	2409080	192491	7.99	2216590	2409081
87	2314	5.26	41647	43961	365200	13.66	2308888	2674088	314441	11.76	2359647	2674088
88	4833	10.05	43254	48087	380631	11.82	2839914	3220545	328760	10.21	2891785	3220545
89	879	2.55	33611	34490	193007	6.47	2789836	2982843	179532	6.02	2803312	2982844
90	1897	4.63	39056	40953	411192	14.57	2411535	2822727	396615	14.05	2426113	2822728
91	3320	7.21	42741	46061	438917	14.52	2584295	3023212	410746	13.59	2612466	3023212
92	276	1.33	20506	20782	126782	5.69	2100295	2227077	117178	5.26	2109899	2227078

BFT-Suppl. Table 1. Catch in the central north Atlantic (30N-55N, 30W-45W) by the Japanese longline fishery.

Year	Catch (MT)	Year	Catch (MT)
1956	0.0	1976	0.6
1957	0.0	1977	0.1
1958	0.0	1978	2.4
1959	0.0	1979	1.5
1960	0.0	1980	31.6
1961	0.0	1981	11.1
1962	0.2	1982	20.1
1963	0.0	1983	0.8
1964	2.4	1984	15.9
1965	58.6	1985	34.8
1966	5.8	1986	72.9
1967	1.9	1987	16.5
1968	1.7	1988	24.5
1969	0.0	1989	124.3
1970	1.6	1990	660.5
1971	11.3	1991	1389.6
1972	1.5	1992	1068.7
1973	6.4		
1974	0.7		
1975	5.0		

BIL-Table 1. Atlantic blue marlin catches (in MT) by country, gear and region.

(NOV-06, 1993, 22:00)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
TOTAL	9037	8010	6155	3859	2240	2434	3091	2864	3194	2366	3177	3016	3185	2310	2047	1506	1384	1618	1920	2750	1801	2227	2695	1955	1871	2499	3808	3263	2801	2263	
NORTH ATLANT	5141	4809	3682	2040	1173	1344	1601	1845	2115	1315	1616	1916	2076	1366	1255	976	880	1064	1248	1615	1149	1204	1306	1059	662	892	1493	1121	954	743	
-LONGLINE	5010	4645	3517	1884	970	1170	1388	1635	1932	1122	1406	1497	1683	978	876	553	480	639	780	1154	766	813	1065	743	385	622	1272	989	814	496	
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	+	0	0	
CHITAIW	27	8	2	34	131	337	348	369	158	300	155	183	105	169	64	81	51	160	98	100	106	74	86	117	52	20	8	319	327	112	
CUBA	123	128	144	91	223	167	122	108	149	67	223	516	594	250	220	97	156	162	178	318	273	214	246	103	68	94	74	112	0	0	
JAPAN	4759	4434	3330	1677	485	474	658	758	1223	335	229	267	551	260	118	54	68	193	332	637	192	351	409	174	78	206	593	250	145	141	
KOREA	0	1	4	46	66	93	214	368	221	215	457	385	304	174	307	185	67	45	70	18	25	57	83	49	15	8	99	78	108	28	E
PANAMA	0	0	0	0	0	0	0	**	**	10	208	62	44	47	87	42	6	0	0	0	0	0	0	0	0	0	0	0	0	0	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	1	0	0	23	2	4	4	
TRINIDADA																					3	7	3	17	1	++	27	3	4	3	
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	61	92	280	428	205	187	127	
USSR	0	0	1	1	3	3	3	2	3	7	10	1	3	0	1	1	**	0	0	0	0	0	0	7	23	0	0	0	0	0	
VENEZUEL	101	74	36	35	62	96	43	30	178	188	124	83	82	78	79	93	132	79	102	81	167	107	214	214	55	14	20	20	39	81	
-ROD & REEL	131	164	165	156	203	174	213	210	183	193	210	236	242	266	296	296	297	297	299	297	192	197	159	202	173	178	126	30	35	61	
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	11	7	2	0	0	0	0	
USA	128	161	163	149	197	168	207	204	179	191	209	234	241	265	295	295	295	295	295	295	187	187	147	187	161	173	121	25	30	49	
VENEZUEL	3	3	2	7	6	6	6	6	4	2	1	2	1	1	1	1	2	2	4	2	5	10	5	4	5	3	5	5	5	12	
-OTHER & UNCL	0	0	0	0	0	0	0	0	0	0	0	183	151	122	83	127	103	128	169	164	191	194	82	114	104	92	95	102	105	186	
BARBADOS	0	0	0	0	0	0	0	**	**	**	**	183	150	120	81	72	51	73	117	99	126	126	10	14	13	11	4	3	4	5	
BERMUDA	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	5	2	4	1	2	7	8	9	11	6	8	15	17	18	18	
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	
GRENADA	0	0	0	0	0	0	0	**	**	**	**	**	**	**	**	**	**	1	1	12	6	8	11	36	33	21	23	30	37	30	
NLDANT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50	50	50	50	50	50	50	50	50	50	50	50	40	40	
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1	1	+	1	1	4	2	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	
ST VINCENT																											1	++	++	1	
TRINIDAD																					++	1	1	1	1	++	1	1	2	1	
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	1	+	+	0	0	0	0	

++ CATCH: < 0.5 MT

** CATCH: UNKNOWN

'E' Provisional estimates

BIL-Table 1. Continued..

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
SOUTH ATLANTI	3896	3201	2473	1819	1067	1090	1490	1019	1079	1051	1561	1100	1109	944	792	530	504	554	459	854	507	923	1289	796	1109	1507	2214	2041	1742	1415	
-LONGLINE	3896	3201	2473	1819	1067	1090	1489	1018	1079	1051	1561	1100	1109	933	739	526	490	545	431	824	504	812	1171	684	993	1346	1633	1559	1459	1124	
BRASIL	12	12	12	12	6	15	17	38	14	17	4	15	15	30	47	45	20	21	26	28	27	30	32	41	39	63	66	50	40	19	
BRAS-HON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0	
BRASTAI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	50	
CHITAIW	21	5	2	35	160	385	1016	560	604	628	537	369	422	240	107	177	139	129	104	150	39	50	95	98	265	204	335	320	452	430	
CUBA	22	26	32	27	221	113	43	41	17	22	75	170	195	159	100	113	180	187	108	118	123	159	205	111	137	191	77	90	0	0	
JAPAN	3841	3156	2421	1693	588	472	302	247	172	85	117	17	57	4	17	15	66	115	136	495	248	482	691	335	362	617	962	967	755	601	
KOREA	0	1	3	47	79	93	98	120	258	251	532	449	354	392	356	140	78	92	56	33	67	91	141	83	168	239	188	132	184	24	E
PANAMA	0	0	0	0	0	0	0	**	**	12	244	72	51	107	103	32	7	0	0	0	0	0	0	0	0	0	0	0	0	0	
SAFRICA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
USSR	0	1	3	5	13	12	13	12	14	36	52	8	15	1	9	4	**	0	1	0	0	0	7	16	22	32	5	0	0	0	
-OTHER & UNCL	0	0	0	0	0	0	1	1	0	0	0	0	0	11	53	4	14	9	28	30	3	111	118	112	116	161	581	482	283	291	
BENIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8	0	9	10	7	4	12	0	6	6	6	
BRASIL	0	0	0	0	0	0	1	1	0	0	0	0	0	11	53	4	14	9	22	22	3	2	8	5	12	11	1	2	1	++	
CIVOIRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	100	100	138	150	150	150	90	
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	
GHANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	430	324	126	126	
UNCL REGION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	213	281	145	100	100	100	100	100	101	101	105	105	
-PURSE SEINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	213	281	145	100	100	100	100	100	100	100	100	100	
FIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	180	100	100	100	100	100	100	100	100	100	100	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63	101	45	0	0	0	0	0	0	0	0	0	
-OTHER & UNCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	
SENEGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	5	

++ CATCH: < 0.5 MT
** CATCH: UNKNOWN
'E' Provisional estimates

BIL-Table 2. Atlantic white marlin catches (In MT) by country, gear and retion. (NOV-06. 1993 24:12)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
TOTAL	2614	3735	4906	3512	1426	2047	2254	2097	2260	2280	1792	1750	1577	1819	1125	949	1015	955	1121	1091	1715	1121	1535	1700	1619	1401	1706	1113	1634	810	
NORTH ATLANT	914	1694	2127	1798	588	692	1212	1048	1547	1208	995	1218	1088	1052	501	428	481	508	780	653	1403	734	846	998	736	537	328	293	301	251	
-LONGLINE	848	1620	2048	1711	497	594	1114	932	1440	1099	886	1103	977	938	390	317	370	396	669	543	1257	581	697	963	637	276	264	236	248	152	
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CHITAIW	4	3	2	32	47	58	132	97	178	244	120	248	84	142	44	79	62	105	174	130	203	52	100	319	153	+	4	15	13	24	
CUBA	35	45	69	118	127	103	58	61	45	34	112	256	294	68	67	43	68	70	189	205	728	241	296	225	30	13	21	14	0	0	
JAPAN	754	1493	1913	1417	174	273	451	419	915	339	328	381	404	540	80	27	42	99	118	84	27	52	45	56	60	68	73	34	45	32	
KOREA	0	1	1	51	44	52	204	340	219	213	106	90	71	64	71	33	16	12	48	12	28	8	79	42	3	1	24	75	104	1	E
PANAMA	0	0	0	0	0	0	0	**	**	10	48	14	10	17	20	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	14	0	0	0	13	4	2	2	
TRINIDAD																					21	32	4	70	153	74	19	16	7	7	
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	39	11	103	89	82	72	40	39	22	
USSR	0	0	0	0	1	1	1	0	1	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
VENEZUEL	55	78	63	93	104	107	268	15	82	258	170	114	113	107	108	127	181	110	140	112	230	148	148	148	148	38	38	38	38	64	
-ROD & REEL	66	74	79	87	91	98	98	116	107	109	109	115	111	114	111	111	111	112	111	110	145	150	148	34	97	75	21	22	10	17	
USA	64	70	76	76	81	87	76	104	95	99	104	108	107	109	109	109	109	109	109	109	141	143	141	31	91	72	16	17	5	8	
VENEZUEL	2	4	3	11	10	11	22	12	12	10	5	7	4	5	2	2	2	3	2	1	4	7	7	3	6	3	5	5	5	9	
-OTHER & UNCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1	1	2	186	43	35	43	82	
BERMUDA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	+	1	1	+	1	1	1	1	1	1	1	
BARBADOS																										161	42	34	42	73	
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0	0	0	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	8	
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	**	1	+	0	0	0	0	
SOUTH ATLANTI	1700	2041	2779	1714	838	1355	1042	1049	713	1072	797	532	489	767	624	521	534	447	341	438	312	387	689	702	883	864	1378	820	1333	559	
-LONGLINE	1700	2041	2779	1714	838	1355	1042	1049	713	1072	797	532	489	742	621	519	530	444	341	438	312	387	684	676	874	775	1301	776	1152	378	
ARGENTIN	0	0	0	0	3	14	0	**	20	100	57	+	2	2	2	**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BRASIL	17	17	17	17	9	21	24	54	17	33	18	32	32	43	272	173	129	55	25	76	70	61	88	143	90	148	206	193	294	101	
BRAS-HON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
BRASTAI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	3	
CHITAIW	10	3	2	29	134	327	436	469	260	469	412	279	255	377	119	197	155	145	136	220	87	66	134	196	613	514	979	372	556	210	
CUBA	9	17	33	23	67	15	7	8	4	6	21	48	55	38	57	127	205	212	116	45	112	153	216	192	62	24	22	6	0	0	
JAPAN	1664	2002	2718	1585	494	815	392	284	65	101	27	9	14	3	26	14	15	7	25	27	17	24	81	73	74	76	73	92	77	64	
KOREA	0	2	7	58	125	157	177	230	341	332	165	139	109	220	111	5	24	25	37	60	13	18	121	56	29	12	20	112	156	0	E
PANAMA	0	0	0	0	0	0	0	**	**	16	75	22	16	59	31	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
URUGUAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10	13	65	44	16	6	1	1	1	1	0	
USSR	0	0	2	2	6	6	6	4	6	15	22	3	6	0	3	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
-OTHER & UNCL	0	0	0	0	0	0	0	0	0	0	0	0	0	25	3	2	4	3	0	0	0	0	5	26	9	89	77	44	181	181	
ARGENTIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	8	9	9	9	
BRASIL	0	0	0	0	0	0	+	+	0	0	0	0	0	25	3	2	4	3	+	+	+	+	1	+	3	1	1	4	+	++	
GHANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	6	88	68	31	172	172	

++ CATCH: < 05 MT

** CATCH: UNKNOWN

'E' Provisional estimates.

BIL-Table 3. Atlantic sailfish catches (in MT) by country, gear and region.

(NOV-06, 1993, 19:00)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
TOTAL	998	1483	2919	2420	1900	2596	2112	2778	2805	2420	1638	1347	1182	1553	1950	2661	3339	2510	1976	1878	3731	3080	2912	2666	3046	2652	1858	2286	1733	2136	
EAST ATLANTIC	495	515	1334	1242	571	1145	739	580	860	1035	717	311	227	363	894	1775	2391	1549	982	776	2869	2064	1938	1657	2080	1617	1210	1610	1031	1185	
-LONGLINE *	495	515	1334	1242	495	1069	658	493	748	913	571	196	83	149	96	58	38	33	87	209	247	191	135	138	93	90	169	147	46	1	
CAP VERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	
CHITAIW	0	0	0	0	77	508	414	387	609	785	491	168	38	144	59	42	19	0	0	0	0	9	9	0	0	0	0	9	11	0	
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	158	200	115	19	55	50	22	53	61	0	0	
JAPAN	495	515	1331	1237	404	548	230	95	125	89	66	19	38	4	24	11	19	33	50	38	47	63	84	71	37	57	57	63	16	1	
KOREA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	1	1	7	8	14	19	0	E
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	4	7	9	0	0	47	+	+	++	
USSR	0	0	3	5	14	13	14	11	14	39	14	9	7	1	13	5	**	0	37	0	0	0	0	2	5	4	4	0	0	0	
-ROD & REEL	0	0	0	0	2	5	7	13	38	48	70	33	61	76	93	79	77	62	0	0	0	0	0	0	0	0	0	0	0	0	
SENEGAL	0	0	0	0	2	5	7	13	38	48	70	33	61	76	93	79	77	62	0	0	0	0	0	0	0	0	0	0	0	0	
-TROLLING	0	0	0	0	74	71	74	74	74	74	74	74	61	113	67	64	30	263	0	0	0	0	0	1	9	45	95	51	28	28	
SENEGAL	0	0	0	0	74	71	74	74	74	74	74	74	61	113	67	64	30	263	0	0	0	0	0	1	9	45	95	51	28	28	
-OTHER & UNCL	0	0	0	0	0	0	0	0	0	0	2	8	22	25	638	1574	2246	1191	895	567	2622	1873	1803	1518	1978	1482	946	1412	957	1156	
BENIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	48	0	53	50	25	32	40	8	20	20	20	
CIVOIRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	40	40	76	60	5	5	3	
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	
GHANA	0	0	0	0	0	0	0	0	0	0	2	8	22	11	638	1574	2246	1191	449	16	2161	1658	1497	925	1392	870	465	406	463	463	
KOREA	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
SENEGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	410	503	461	122	216	528	514	496	413	981	469	469	
WEST ATLANTIC	476	914	1470	920	727	862	759	1319	1127	575	581	646	568	813	758	727	731	691	630	914	747	1016	974	1009	966	1035	643	676	702	951	
-LONGLINE *	317	737	1279	715	516	644	523	1059	860	304	308	353	272	437	221	211	206	154	152	430	289	494	473	481	540	628	387	393	374	533	
BRASIL	46	46	46	46	23	57	27	21	43	64	37	78	76	124	139	128	77	77	38	58	60	80	139	232	133	100	117	94	57	94	
BRASTAI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	352	
CHITAIW	0	0	0	0	106	86	179	111	170	17	107	80	28	126	5	10	18	0	0	0	0	42	39	49	19	300	126	66	126	0	
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	181	28	169	130	50	171	78	55	126	0	0	
JAPAN	240	655	1140	608	274	422	228	499	321	132	78	118	112	133	23	9	20	22	44	135	22	34	38	28	6	22	22	25	73	37	
KOREA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	39	21	24	5	7	38	53	2	E
TRINIDAD																					64	58	14	24	35	24	9	4	1	2	
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	78	80	32	21	37	10	
VENEZUEL	31	36	93	61	113	79	89	428	326	91	86	77	56	54	54	64	91	55	70	56	115	74	74	74	74	19	19	19	19	36	

++ CATCH: < 0.5 MT

* INCLUDES SPEARFISH (T. PFLUEGERI & T. BELONE)

** CATCH: UNKNOWN

'E' Provisional estimates.

BIL-Table 3. Continued...

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
-ROD & REEL	159	177	191	205	211	218	236	232	239	243	245	255	258	266	339	338	350	368	336	331	312	352	228	233	237	38	30	25	32	49
BRASIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	28	40	57	26	22	0	37	26	35	36	27	23	19	25	33
USA	157	173	188	194	201	207	214	220	227	233	240	248	254	261	308	308	308	308	308	308	308	308	195	195	195	8	2	1	2	6
VENEZUEL	2	4	3	11	10	11	22	12	12	10	5	7	4	5	2	2	2	3	2	1	4	7	7	3	6	3	5	5	5	10
-OTHER & UNCL	0	0	0	0	0	0	0	28	28	28	28	38	38	110	198	178	175	169	142	153	146	170	273	295	189	369	226	258	296	369
ARUBA	0	0	0	0	0	0	0	+	+	+	+	10	10	20	20	30	30	30	30	30	30	30	30	30	30	30	30	30	30	5
BARBADOS																										161	42	34	42	73
BRASIL	0	0	0	0	0	0	0	0	0	0	0	0	0	62	119	90	84	87	55	53	8	4	23	25	5	10	0	15	0	0
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70
DOMINR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	50	49	46	18	40	44	44	40	31	31
GRENADA	0	0	0	0	0	**	**	**	**	**	**	**	**	**	31	37	40	31	36	27	37	66	164	211	104	114	98	124	181	177
NLDANT	0	0	0	0	0	0	0	28	28	28	28	28	28	28	28	21	21	21	21	21	21	21	10	10	10	10	10	10	10	10
ST VINECT																												2	1	1
TRINIDAD																						++	++	1	++	++	2	3	1	2
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0	0	0	0	0
UNCL REGION	27	54	115	258	602	589	614	879	818	810	340	390	387	377	298	159	217	270	364	188	115	0	0	0	0	0	5	0	0	0
-LONGLINE *	27	54	115	258	602	589	614	879	818	810	340	390	387	377	298	159	217	270	364	188	115	0	0	0	0	0	5	0	0	0
CHITAIW	4	2	2	34	0	0	0	0	0	0	0	0	0	0	0	0	0	49	86	140	108	0	0	0	0	0	0	0	0	0
CUBA	23	49	102	75	371	314	71	100	51	30	100	229	262	185	156	120	191	198	213	0	0	0	0	0	0	0	0	0	0	0
KOREA	0	3	11	149	231	275	543	779	767	745	165	139	109	151	111	32	24	23	65	48	7	0	0	0	0	0	5	0	0	0
PANAMA	0	0	0	0	0	0	0	**	**	35	75	22	16	41	31	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0

++ CATCH: < 0.5 MT
* INCLUDES SPEARFISH (T. PFLUEGERI & T. BELONE)
** CATCH: UNKNOWN
'E' Provisional estimates.

SWO-Table 1. Atlantic and Mediterranean swordfish landings (in MT), by gear, area and country, 1963 - 1992. (OCT-26, 1993, 15:00)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
TOTAL	11924	13681	12990	13020	11940	14912	17151	17896	12159	13079	13631	13903	15923	13864	14331	20377	20402	25267	21792	25502	26661	35303	39011	40849	43465	51415	51368	42590	37900	37105	
N. ATL.	10189	11258	8652	9338	9084	9137	9138	9425	5198	4727	6001	6301	8776	6587	6352	11797	11859	13527	11126	12832	14423	12516	14255	18278	19959	19331	16996	15595	13301	13164	
- LL	9192	10833	7759	8492	8656	8950	8938	9127	5140	4430	5446	5078	7015	5125	5401	11085	11099	12800	10507	12600	13897	12350	14120	18080	19753	18980	15297	14059	12700	12191	
CANADA	6682	6888	4155	3731	4534	4342	4149	4800	0	0	0	2	21	15	113	2314	2970	1794	542	542	960	465	550	973	876	874	1097	819	953	1487	
CHITAIW	2	1	1	37	76	115	218	234	226	129	243	204	209	362	189	126	260	103	140	200	209	126	117	121	40	18	13	207	239	239	*
CUBA	125	134	171	175	336	224	97	134	160	75	248	572	280	283	398	281	128	278	227	254	410	206	162	636	910	832	87	47	0	0	
JAPAN	311	700	1025	658	280	262	130	298	914	784	518	1178	2462	1149	793	946	542	1167	1315	1755	537	665	921	807	413	621	1572	1051	992	1044	
KOREA	0	1	2	27	46	24	22	40	159	155	374	152	172	335	541	634	303	284	136	198	53	32	160	68	60	30	320	51	3	3	*
MAROC	6	18	14	12	11	13	16	14	21	15	10	12	15	12	6	11	208	136	124	91	125	79	137	178	207	195	219	18	9	17	
NORWAY	0	0	++	300	300	200	600	400	200	**	**	**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PANAMA	0	0	0	0	0	0	0	**	**	7	171	24	25	91	22	76	26	0	0	0	0	0	0	0	0	0	0	0	0	0	
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	15	448	959	600	289	466	730	492	
ESPANA	1000	1800	1433	2999	2690	3551	3502	3160	3384	3210	3833	2893	3747	2816	3309	3611	2582	3810	4013	4554	7100	6315	7431	9712	11134	9600	5696	5736	5522	5076	
USA	1053	1279	945	534	340	180	93	0	0	0	0	0	0	0	0	3020	3888	5015	3986	4912	4468	4416	4563	5035	5068	6026	5835	4977	4166	3722	
USSR	0	0	5	8	22	21	11	24	24	28	26	17	32	19	15	20	10	21	0	69	0	16	13	18	0	0	0	0	0	0	
VENEZUEL	13	12	8	11	21	18	100	23	52	27	23	24	52	43	15	46	182	192	24	25	35	23	51	84	86	108	57	158	86	111	
NEI_1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76	112	529	0	0	
- OTH	997	425	893	846	428	187	200	298	58	297	555	1223	1761	1462	951	712	760	727	619	232	526	166	135	198	206	351	1699	1536	601	973	
CANADA	800	211	519	702	260	51	108	0	0	0	0	0	0	0	0	0	0	91	19	12	128	34	35	86	78	24	150	92	73	60	
CHITAIW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	
FRANCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	0	1	4	4	0	0	0	75	75	75	*
GRENADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	*
IRELAND	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	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	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LIBERIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	38	34	53	++	24	16	30	19	35	3	0	0	
MARTINIQ	**	**	**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MEXICO	++	++	++	++	++	++	++	0	0	2	4	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MAROC	0	100	86	49	23	30	4	3	12	28	8	3	0	0	1	0	0	0	0	0	4	2	0	0	0	1	4	185	183	335	
POLAND	0	0	0	0	0	0	0	0	++	0	100	0	0	0	0	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
PORTUGAL	0	9	6	15	11	12	11	8	11	21	37	92	58	32	38	17	29	15	13	11	9	7	7	20	10	5	8	12	16	45	
ROUMANIE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	1	0	0	0	10	7	1	199	952	650	127	319	
STLUCIA	0	0	0	0	0	0	0	++	++	++	++	++	++	++	++	++	++	0	0	0	0	0	0	0	0	0	0	0	0	0	
USA	197	105	282	80	134	94	77	287	35	246	406	1125	1700	1429	912	664	731	610	544	175	332	122	55	65	83	103	550	517	126	111	
USSR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	4	0	0	0	0	0	

++ CATCH: < 05 MT

* Catches reported in previous year was carried over as an estimate.

** CATCH: UNKNOWN

SWO-Table 1. Continued....

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
S. ATL.	1417	2029	2578	1930	1539	2335	4290	5130	1986	2394	2823	2568	2846	2640	2699	2622	2996	5161	3853	6327	5342	9121	9528	5853	5218	11745	16610	16357	12266	10427	
- LL	1417	2029	2578	1930	1539	2235	4090	5130	1984	2394	2823	2568	2846	2640	2684	2605	2967	5017	3816	6224	5247	8879	8805	4910	4634	11195	16078	15847	11895	9805	
ARGENTIN	400	508	400	200	79	259	500	400	63	100	48	10	10	111	132	4	0	++	0	0	0	0	0	0	0	0	0	0	0	0	
BRASIL	125	125	125	125	62	100	181	162	154	121	161	465	514	365	384	367	520	1579	654	1018	781	467	569	761	956	1159	989	1499	815	106	
BRAS-HON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	
BRASTAI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	301	
CHITAIW	4	2	1	73	128	375	637	985	599	621	849	617	719	573	519	481	994	540	406	400	201	153	215	166	260	614	469	689	799	799	*
CUBA	63	101	164	122	559	410	170	148	74	66	221	509	248	317	302	319	272	316	147	432	818	1161	1301	95	173	159	830	448	0	0	
JAPAN	825	1288	1845	1300	474	859	2143	2877	662	1023	480	191	805	105	514	503	782	2029	2170	3287	1908	4395	4613	2913	1877	3426	4019	6254	3696	2613	
KOREA	0	1	4	54	79	77	370	382	256	249	602	563	279	812	699	699	303	399	311	486	409	625	917	369	666	1012	776	50	147	147	*
PANAMA	0	0	0	0	0	0	0	**	**	12	274	90	40	219	28	83	26	0	0	0	0	0	0	0	0	0	0	0	0	0	
SAFRICA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	3	3	5	0	0	0	0	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	0	4393	7725	6166	5738	5638	
URUGUAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	575	1084	1927	1125	537	699	427	414	302	156	201	
USSR	0	4	39	56	158	155	89	176	176	202	188	123	231	138	106	149	70	154	36	26	46	146	60	0	0	0	0	0	0	0	
NEI_1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	856	439	0	0	
- OTH	0	0	0	0	0	100	200	0	2	0	0	0	0	0	15	17	29	144	37	103	95	242	723	943	584	550	532	510	371	622	
ANGOLA	++	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	228	815	84	84	84	++	++	0	
ARGENTIN	0	0	0	0	0	0	0	0	0	0	0	0	0	++	0	0	0	0	0	20	0	0	361	31	351	198	175	230	88	88	*
BENIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	24	0	86	90	39	13	19	26	28	28	28	*
BRASIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	5	1	3	1	1	0	1	++	1	0	0	0	0	0	0	
BULGARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CHITAIW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	
CIVOIRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	10	10	10	10	10	10	7	
CUBA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	
GHANA	**	**	**	**	**	100	200	0	0	0	0	0	0	0	0	0	0	110	5	55	5	15	25	13	123	235	235	235	235	235	*
JAPAN	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NIGERIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**	**	83	69	0	0	0	0	0	0	0	3	
SAFRICA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	31	9	3	7	23	3	2	2	4	++	0	5	10	
TOGO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	32	1	++	2	3	5	5	*
USSR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	4	0	0	12	0	0	0	0	0	0	0	0	

++ CATCH: < 05 MT

* Catches reported in previous year was carried over as an estimate.

** CATCH: UNKNOWN

SWO-Table 1. Continued....

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
MEDITER	318	394	1760	1752	1317	3440	3723	3341	4975	5958	4807	5034	4301	4637	5280	5958	5547	6579	6813	6343	6896	13666	15228	16718	18288	20339	17761	10638	12327	13508	
- LL	94	282	1423	1192	869	1196	1350	1114	1426	1529	1388	1089	712	4138	4606	5046	4877	5115	5411	5751	6239	6640	6260	7297	7781	9163	6784	5810	7607	7332	
ALGERIE	0	0	0	0	0	0	0	**	++	++	100	196	500	368	370	320	521	650	760	870	877	884	890	847	1820	2621	590	173	173	173	*
CYPRUS	0	0	0	0	0	0	0	0	0	++	++	++	5	59	95	82	98	72	78	103	28	63	71	154	84	121	139	173	162	162	*
GREECE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	773	772	1081	1036	1714	1303	1008	1120	1344	1904	1904	*
ITALY	0	0	0	0	0	0	0	0	0	0	0	0	0	3435	3330	3750	3455	3642	3362	2583	2660	2759	2493	2622	2831	2989	2989	2439	3359	3463	
JAPAN	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	1	0	5	6	19	14	7	3	4	1	2	1	2	
MALTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119	71	
MAROC	94	282	223	192	169	196	250	214	326	229	183	193	118	186	144	172	0	++	++	0	43	39	38	92	40	62	97	43	24	34	
ESPANA	0	0	1200	1000	700	1000	1100	900	1100	1300	1105	700	89	89	667	720	800	750	1120	900	1321	1243	1219	1337	1134	1760	1250	1438	1132	790	
NEI_2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	517	532	552	499	524	566	598	598	198	733	733	*
- OTH	224	112	337	560	448	2244	2373	2227	3549	4429	3419	3945	3589	499	674	912	670	1464	1402	592	657	7026	8968	9421	10507	11176	10977	4828	4720	6176	
ALGERIE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	539	389	389	*
FRANCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	++	++	*
ITALY	**	**	**	**	**	1568	2240	2016	3248	4144	3136	3730	3362	312	417	756	475	501	461	356	366	6601	8370	8791	9494	10021	10020	2975	2855	4123	
LIBYA	0	0	224	224	336	560	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MALTA	**	**	++	++	++	++	++	112	224	224	224	192	214	175	223	136	151	222	192	177	59	94	108	97	131	207	121	122	0	0	
MAROC	0	0	1	0	1	1	0	0	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	454	649	
ESPANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	8	0	0	2	87	85	39	32	
TUNISIE	0	0	0	0	0	0	0	++	++	++	++	5	3	5	0	0	0	0	7	19	15	15	61	64	63	80	159	176	181	181	*
TURKEY	224	112	112	336	111	115	133	99	76	60	59	15	10	7	34	20	44	13	70	40	216	95	190	226	557	589	209	243	243	243	*
NEI_2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	728	672	0	0	219	231	243	262	277	381	442	559	559	*
UNCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	++	6	6	
- OTH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	++	6	6	
SENEGAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	++	6	6	*

++ CATCH: < 05 MT

* Catches reported in previous year was carried over as an estimate.

** CATCH: UNKNOWN

SWO-Table 2. Age-specific abundance indices for the Atlantic swordfish. Abundance is scaled to 1983 for the North Atlantic, and to 1988 for the South Atlantic.

AGES	U.S. 1	U.S. 2	U.S. 3	U.S. 4	U.S. 5+	SPAIN 1	SPAIN 2	SPAIN 3	SPAIN 4	SPAIN 5+	JAPAN 5+
NORTH ATLANTIC STOCK											
1962											
1963											
1964											
1965											
1966											
1967											
1968											
1969											
1970											
1971											
1972											
1973											
1974											
1975											2.642
1976											2.761
1977											1.093
1978											3.985
1979											1.374
1980											1.782
1981	0.727	1.098	1.974	2.061	2.066						1.356
1982	0.924	0.839	1.575	1.708	1.723						1.670
1983	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1984	0.926	1.180	1.206	1.054	0.761	1.010	0.879	1.042	1.042	1.041	1.306
1985	1.158	1.026	1.355	1.169	0.777	1.008	1.157	1.051	1.001	0.923	1.045
1986	1.682	1.515	1.130	0.966	0.485	1.609	1.191	0.936	0.773	0.751	1.134
1987	1.733	1.479	1.208	0.802	0.396	2.112	1.581	1.038	0.751	0.653	0.671
1988	1.556	1.705	1.198	0.772	0.357	2.334	1.402	0.916	0.654	0.567	1.171
1989	2.063	1.556	1.129	0.780	0.394	2.067	1.677	0.831	0.595	0.499	0.743
1990	1.094	1.440	1.122	0.746	0.375	1.298	2.004	1.175	0.643	0.504	0.720
1991	3.360	1.593	1.099	0.657	0.337	1.134	1.442	1.205	0.758	0.574	0.767
1992	0.031	0.312	1.178	1.010	0.431	1.253	1.404	1.091	0.750	0.622	0.464 *

AGES	SPAIN 1	SPAIN 2	SPAIN 3	SPAIN 4	SPAIN 5+	JAPAN 5+
SOUTH ATLANTIC STOCK						
1975						1.989
1976						1.452
1977						3.051
1978						2.270
1979						1.584
1980						1.409
1981						2.158
1982						0.976
1983						1.538
1984						1.649
1985						1.083
1986						1.421
1987						1.290
1988	1.000	1.000	1.000	1.000	1.000	1.000
1989	0.135	1.119	1.282	1.487	0.890	0.686
1990	0.302	0.627	0.769	1.129	0.823	0.760
1991	0.241	0.813	0.787	0.993	0.817	0.407
1992	0.215	0.667	0.603	0.888	0.845	0.345 *

* Preliminary

SWO-TABLE 3. Estimated landing weight (converted to live weight) of swordfish equal to or above 125cm in lower-jaw fork length, by nation for north Atlantic.

YEAR	CANADA KG	INDEX	JAPAN KG	INDEX	ESPANA KG	INDEX	USA KG	INDEX	OTHERS KG	INDEX	TOTAL KG	INDEX
1978	2297816	2.727	1016642	1.172	3519762	0.436	3592272	0.657	1299714	0.684	11726206	0.684
1979	2933643	3.481	539846	0.622	2503065	0.310	4413846	0.808	1123679	0.592	11514079	0.671
1980	1846103	2.191	1226899	1.414	3659798	0.453	5278653	0.966	1056700	0.556	13068153	0.762
1981	555350	0.659	1357448	1.565	3829897	0.474	4313523	0.789	725286	0.382	10781504	0.628
1982	551598	0.655	1876680	2.163	4440076	0.549	4763803	0.872	946060	0.498	12578217	0.733
1983	1063683	1.262	567059	0.654	6752734	0.836	4401040	0.805	943746	0.497	13728262	0.800
1984	492006	0.584	694772	0.801	6018967	0.745	4169004	0.763	497227	0.262	11871976	0.692
1985	578888	0.687	964200	1.111	6838578	0.846	4271040	0.782	654503	0.345	13307209	0.776
1986	1031293	1.224	839518	0.968	9035886	1.118	4631261	0.847	1648666	0.868	17186624	1.002
1987	909495	1.079	596148	0.687	10923899	1.352	4562818	0.835	2472217	1.301	19464577	1.135
1988	842721	1.000	867557	1.000	8081112	1.000	5464795	1.000	1899628	1.000	17155813	1.000
1989	1189037	1.411	1620093	1.867	5766037	0.714	5605686	1.026	1049134	0.552	15229987	0.888
1990	885261	1.050	1145921	1.321	5646340	0.699	4968142	0.909	1824450	0.960	14470114	0.843
1991	994412	1.180	1038370	1.197	5308071	0.657	4091854	0.749	1171101	0.616	12603808	0.735
1992	1468533	1.743	1103146	1.272	5002668	0.619	3828496	0.701	1288180	0.678	12691023	0.740

Index is to 1988 catch.

Conversion factors (length-weight) used are as follows:

NW ATL.	DWT = 4.592 E-06 * LJ-F ** 3.1370 (Turner, 1987)	RWT = 1.3333 * DWT
CENT. N. ATL.	RWT = 4.203 E-06 * LJ-F ** 3.2134 (Mejuto et al, 1988)	
NE ALT.	RWT = 3.4333 E-06 * LF-J ** 3.2623 (Mejuto et al., 1988)	
MED.	DWT = 5.701 E-06 * LJ-F ** 3.16 (De Metrio, 1987)	
SW ATL.	GWT = 1.24 E-05 * E-F ** 3.04 (Amorin et al., 1979)	GWT = 0.8009 * RWT ** 1.015
SE ATL.	GWT = 4.3491 E-06 * LJ-F ** 3.188 (Mejuto, et al., 1988)	RWT = 1.140 * GWT

RWT = Round weight
DWT = Dressed weight (gilled, gutted, part of head off, fins off)
GWT = Gilled and gutted weight
FL = Fork length
LJ-F = Lower jaw - fork length
E-F = Eye - fork length

SWO-Table 4. Estimated landings of swordfish in number less than 125 cm and equal or greater than 125 cm in lower-jaw fork length, for the north, south and entire Atlantic Ocean.

YEAR	CANADA				JAPAN				SPAIN				USA				OTHERS				TOTAL			
	<125 No.	≥125 No.	TOTAL No.	<125 %	<125 No.	≥125 No.	TOTAL No.	<125 %	<125 No.	≥125 No.	TOTAL No.	<125 %	<125 No.	≥125 No.	TOTAL No.	<125 %	<125 No.	≥125 No.	TOTAL No.	<125 %	<125 No.	≥125 No.	TOTAL No.	<125 %
NORTH ATLANTIC																								
78	1585	32204	33788	4.69	317	11173	11490	2.76	5834	44612	50446	11.56	3644	49582	53226	6.85	647	14562	15209	4.25	12027	152132	164159	7.33
79	779	35777	36556	2.13	1132	6958	8090	13.99	5080	32926	38006	13.37	11057	59104	70161	15.76	2798	14904	17702	15.81	20847	149669	170515	12.23
80	3614	27666	31280	11.55	1410	14245	15654	9.00	9563	51105	60668	15.76	25839	83130	108969	23.71	1929	13254	15183	12.70	42355	189399	231754	18.28
81	113	7054	7167	1.58	1094	18165	19259	5.68	11299	55651	66951	16.88	14494	63786	78280	18.52	999	9967	10966	9.11	27999	154623	182622	15.33
82	741	8803	9544	7.76	703	20484	21187	3.32	7112	58873	65985	10.78	24197	72156	96354	25.11	651	10836	11487	5.67	33404	171153	204557	16.33
83	1617	14997	16614	9.73	168	7993	8161	2.06	20152	105469	125621	16.04	28591	66053	94644	30.21	936	13584	14520	6.44	51463	208097	259560	19.83
84	788	7714	8501	9.26	1040	9854	10894	9.55	15633	93596	109229	14.31	30184	71303	101487	29.74	847	7174	8022	10.56	48492	189641	238133	20.36
85	881	9181	10062	8.76	743	14046	14790	5.03	22198	110622	132820	16.71	30449	72758	103207	29.50	901	9736	10636	8.47	55172	216342	271514	20.32
86	3089	17357	20446	15.11	338	10452	10790	3.13	41856	152099	193955	21.58	41074	84271	125345	32.77	4181	21738	25918	16.13	90538	285917	376455	24.05
87	5352	16962	22313	23.98	644	7295	7940	8.12	64538	191092	255630	25.25	50678	86554	137232	36.93	9246	36918	46163	20.03	130458	338820	469278	27.80
88	2923	14876	17798	16.42	928	11305	12232	7.58	83861	150453	234314	35.79	60391	108301	168692	35.80	9744	28356	38099	25.57	157846	313290	471136	33.50
89	3445	17536	20980	16.42	1865	24187	26052	7.16	47994	105836	153830	31.20	65712	108529	174241	37.71	6668	18333	25001	26.67	125683	274421	400104	31.41
90	1445	12080	13525	10.68	810	16055	16866	4.80	42745	111821	154565	27.65	46381	96465	142847	32.47	17559	36148	53707	32.69	108940	272570	381510	28.56
91	1824	14164	15988	11.41	717	14328	15045	4.77	23893	101122	125015	19.11	21391	76915	98306	21.76	11868	20038	31907	37.20	59693	226568	286261	20.85
92	4092	22373	26465	15.46	878	14151	15028	5.84	26514	91756	118269	22.42	5417	72070	77487	6.99	14798	22103	36900	40.10	51698	222452	274150	18.86
SOUTH ATLANTIC																								
78					15	3850	3865	0.39									622	16499	17121	3.63	637	20349	20986	3.04
79					43	8306	8349	0.51									927	24759	25686	3.61	970	33065	34035	2.85
80					113	21775	21888	0.51									1800	37885	39685	4.53	1912	59660	61573	3.11
81					176	19767	19943	0.88									1915	18624	20539	9.32	2091	38391	40482	5.16
82					1911	42778	44688	4.28									4647	41412	46059	10.09	6557	84189	90747	7.23
83					412	23392	23804	1.73									4651	46455	51106	9.10	5063	69848	74910	6.76
84					797	51258	52055	1.53									11754	68496	80250	14.65	12552	119754	132305	9.49
85					1005	57231	58237	1.73									10043	73763	83806	11.98	11048	130994	142043	7.78
86					170	33286	33456	0.51	252	1207	1459	17.27					8606	51485	60092	14.32	9028	85979	95007	9.50
87					368	30003	30371	1.21									5513	39939	45451	12.13	5881	69942	75822	7.76
88					2068	54875	56943	3.63	13389	63082	76471	17.51					4639	62099	66738	6.95	20096	180057	200153	10.04
89					3094	59396	62490	4.95	27504	112873	140377	19.59					10001	78821	88823	11.26	40599	251091	291690	13.92
90					759	83258	84017	0.90	14814	103983	118797	12.47					805	47799	48604	1.66	16378	235040	251418	6.51
91					600	53104	53704	1.12	12115	98993	111108	10.90					835	41123	41957	1.99	13550	193219	206769	6.55
92					808	39544	40351	2.00	13305	95971	109276	12.18					1879	32214	34093	5.51	15992	167729	183721	8.70

SWO-Table 4. Continued...

YEAR	CANADA <125 No.	CANADA ≥125 No.	CANADA TOTAL No.	CANADA <125 %	JAPAN <125 No.	JAPAN ≥125 No.	JAPAN TOTAL No.	JAPAN <125 %	SPAIN <125 No.	SPAIN ≥125 No.	SPAIN TOTAL No.	SPAIN <125 %	USA <125 No.	USA ≥125 No.	USA TOTAL No.	USA <125 %	OTHERS <125 No.	OTHERS ≥125 No.	OTHERS TOTAL No.	OTHERS <125 %	TOTAL <125 No.	TOTAL ≥125 No.	TOTAL TOTAL No.	TOTAL <125 %
ENTIRE ATLANTIC																								
78	1585	32204	33788	4.7	332	15022	15354	2.2	5834	44612	50446	11.6	3644	49582	53226	6.8	1269	31061	32331	3.9	12664	172481	185144	6.84
79	779	35777	36556	2.1	1175	15264	16439	7.1	5080	32926	38006	13.4	11057	59104	70161	15.8	3725	39663	43388	8.6	21816	182734	204550	10.67
80	3614	27666	31280	11.6	1522	36020	37542	4.1	9563	51105	60668	15.8	25839	83130	108969	23.7	3728	51139	54867	6.8	44267	249059	293326	15.09
81	113	7054	7167	1.6	1269	37932	39201	3.2	11299	55651	66951	16.9	14494	63786	78280	18.5	2914	28591	31505	9.2	30090	193014	223104	13.49
82	741	8803	9544	7.8	2613	63262	65875	4.0	7112	58873	65985	10.8	24197	72156	96354	25.1	5298	52248	57546	9.2	39961	255342	295303	13.53
83	1617	14997	16614	9.7	580	31385	31965	1.8	20152	105469	125621	16.0	28591	66053	94644	30.2	5587	60039	65626	8.5	56526	277944	334470	16.90
84	788	7714	8501	9.3	1838	61111	62949	2.9	15633	93596	109229	14.3	30184	71303	101487	29.7	12602	75671	88272	14.3	61044	309394	370438	16.48
85	881	9181	10062	8.8	1749	71277	73026	2.4	22198	110622	132820	16.7	30449	72758	103207	29.5	10944	83499	94442	11.6	66220	347337	413557	16.01
86	3089	17357	20446	15.1	507	43739	44246	1.1	42108	153306	195414	21.5	41074	84271	125345	32.8	12787	73223	86010	14.9	99566	371896	471461	21.12
87	5352	16962	22313	24.0	1012	37298	38310	2.6	64538	191092	255630	25.2	50678	86554	137232	36.9	14758	76857	91615	16.1	136338	408762	545100	25.01
88	2923	14876	17798	16.4	2996	66180	69176	4.3	97250	213535	310785	31.3	60391	108301	168692	35.8	14383	90455	104838	13.7	177942	493347	671289	26.51
89	3445	17536	20980	16.4	4959	83583	88542	5.6	75498	218708	294206	25.7	65712	108529	174241	37.7	16669	97155	113824	14.6	166282	525512	691794	24.04
90	1445	12080	13525	10.7	1570	99313	100883	1.6	57559	215804	273362	21.1	46381	96465	142847	32.5	18364	83947	102311	17.9	125318	507609	632928	19.80
91	1824	14164	15988	11.4	1317	67432	68749	1.9	36008	200115	236123	15.2	21391	76915	98306	21.8	12703	61161	73864	17.2	73243	419787	493030	14.86
92	4092	22373	26465	15.5	1685	53694	55380	3.0	39819	187727	227545	17.5	5417	72070	77487	7.0	16677	54317	70994	23.5	67690	390181	457871	14.78

SWO-Table 5. Summary of estimated percentage of swordfish less than 125 cm in the landings in number, for north, south and entire Atlantic and Mediterranean.

Year	NORTH ATLANTIC Canada	Japan	Spain	USA	Others	Total	SOUTH ATLANTIC Canada	Japan	Spain	USA	Others	Total	ENTIRE ATLANTIC Canada	Japan	Spain	USA	Others	Total	MEDITER All
78	4.69	2.76	11.56	6.85	4.25	7.33		0.39			3.63	3.04	4.69	2.16	11.56	6.85	3.93	6.84	
79	2.13	13.99	13.37	15.76	15.81	12.23		0.51			3.61	2.85	2.13	7.15	13.37	15.76	8.58	10.67	
80	11.55	9.00	15.76	23.71	12.70	18.28		0.51			4.53	3.11	11.55	4.05	15.76	23.71	6.80	15.09	
81	1.58	5.68	16.88	18.52	9.11	15.33		0.88			9.32	5.16	1.58	3.24	16.88	18.52	9.25	13.49	
82	7.76	3.32	10.78	25.11	5.67	16.33		4.28			10.09	7.23	7.76	3.97	10.78	25.11	9.21	13.53	
83	9.73	2.06	16.04	30.21	6.44	19.83		1.73			9.10	6.76	9.73	1.81	16.04	30.21	8.51	16.90	
84	9.26	9.55	14.31	29.74	10.56	20.36		1.53			14.65	9.49	9.26	2.92	14.31	29.74	14.28	16.48	
85	8.76	5.03	16.71	29.50	8.47	20.32		1.73			11.98	7.78	8.76	2.39	16.71	29.50	11.59	16.01	50.50
86	15.11	3.13	21.58	32.77	16.13	24.05		0.51	17.27		14.32	9.50	15.11	1.15	21.55	32.77	14.87	21.12	47.30
87	23.98	8.12	25.25	36.93	20.03	27.80		1.21			12.13	7.76	23.98	2.64	25.25	36.93	16.11	25.01	56.02
88	16.42	7.58	35.79	35.80	25.57	33.50		3.63	17.51		6.95	10.04	16.42	4.33	31.29	35.80	13.72	26.51	63.88
89	16.42	7.16	31.20	37.71	26.67	31.41		4.95	19.59		11.26	13.92	16.42	5.60	25.66	37.71	14.64	24.04	63.77
90	10.68	4.80	27.65	32.47	32.69	28.56		0.90	12.47		1.66	6.51	10.68	1.56	21.06	32.47	17.95	19.80	70.37
91	11.41	4.77	19.11	21.76	37.20	20.85		1.12	10.90		1.99	6.55	11.41	1.92	15.25	21.76	17.20	14.86	64.11
92	15.46	5.84	22.42	6.99	40.10	18.86		2.00	12.18		5.51	8.70	15.46	3.04	17.50	6.99	23.49	14.78	

SWO-Table 6. Estimated incidental swordfish landings (in MT) in north Atlantic longline fisheries which do not have directed effort for swordfish.

	CHINA-TAIWAN			JAPAN			KOREA		
YEAR	SWO	TOTAL	SWO(%)	SWO	TOTAL	SWO(%)	SWO	TOTAL	SWO(%)
1978	126	10331	1.22	946	12902	7.33	634	16583	3.82
1979	260	8384	3.10	542	13084	4.14	303	11493	2.64
1980	103	8229	1.25	1167	20990	5.56	284	8742	3.25
1981	140	7967	1.76	1315	22977	5.72	136	10926	1.24
1982	200	11791	1.70	1755	25451	6.90	198	8302	2.38
1983	209	15635	1.34	537	12316	4.36	53	4483	1.18
1984	126	15920	0.79	665	13086	5.08	32	6800	0.47
1985	117	16125	0.73	921	17491	5.27	160	5757	2.78
1986	121	21454	0.56	807	12534	6.44	68	3250	2.09
1987	40	7304	0.55	413	9981	4.14	60	797	7.52
1988	18	2184	0.82	621	14892	4.17	30	602	4.98
1989	13	1376	0.94	1572	26274	5.98	320	5155	6.21
1990	207	6151	3.37	1051	17240	6.10	51	2564	1.99
1991	239	2370	10.09	992	17132	5.79	3	429	0.70
1992	239	6052	3.95	1044	16659	6.27	3	252	1.19

The unclassified catches (mostly sharks) are excluded from the total.
Sailfish and yellowfin catches are separated into north and south using number of fish in the Task II catch data.
For recent years when Task II data are not available, the proportion for the latest year available was used.
Data for 1992 is preliminary estimates.

SBF-Table 1. Atlantic and world southern bluefin tuna catches (MT) by gear, area and country.

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992*
ATLANTIC TOTAL	4680	6203	2823	2569	1138	514	1636	1476	413	1166	564	634	1215	1331	458
- CATCH BY GEAR															
Longline	4680	6203	2810	2563	1138	514	1636	1476	413	1162	562	628	1215	1331	458
Baitboat	0	0	13	6	0	0	0	0	0	0	0	1	0	0	0
Sport	0	0	0	0	++	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	4	2	5	0	0	0
- CATCH BY COUNTRY															
China-Taiwan	29	11	22	57	3	9	0	8	24	42	14	3	13	0	0
Japan	4651	6192	2788	2506	1135	505	1636	1468	389	1120	548	625	1202	1331	458
South Africa	0	0	13	6	++	0	0	0	0	0	0	1	0	0	0
Other	0	0	0	0	0	0	0	0	0	4	2	5	0	0	0
WORLD CATCHES (all oceans)	35848	38673	44754	45155	42464	42838	37089	33199	27875	25033	22402	17368	13478	12823	N.A.
Longline	23653	27828	33653	27981	20489	24881	23328	20396	15182	13964	11422	9222	7056	6774	6973
Surface	12195	10845	11101	17174	21975	17957	13761	12803	12693	11069	10980	8146	6422	6049	N.A.

* Preliminary.
++ Catch < 0.5 MT.
Source for "world" section: Report of the Eleventh Meeting of Australian, Japanese and New Zealand Scientists on Southern Bluefin Tuna (Hobart, Australia - October, 1993).

SMT-Table 1. Atlantic landings of small tuna and tuna-like species (in 1000 MT) by country, gear and region. (NOV.2, 1993 - 09:00)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL																														
ATLANTIC + MEDITE	65.3	49.9	71.5	66.3	91.0	74.6	115.5	89.0	97.9	88.0	66.6	91.2	79.6	73.7	91.2	84.2	88.2	124.7	126.7	145.0	137.4	119.5	100.3	101.0	116.2	141.6	125.0	127.4	123.9	117.6
MEDITERRANEAN	29.2	18.5	31.0	26.0	46.3	30.5	60.7	25.6	33.8	21.2	11.2	13.8	10.7	12.1	15.0	15.9	20.2	27.8	35.7	41.9	44.9	25.1	27.7	25.5	31.1	36.3	22.9	36.5	36.0	34.8
ATLANTIC	36.1	31.4	40.5	40.3	44.7	44.1	54.8	63.4	64.1	66.8	55.4	77.4	68.9	61.6	76.2	68.3	68.0	96.9	91.0	103.1	92.5	94.4	72.6	75.5	85.1	105.3	102.1	90.9	87.9	82.8
ATLANTIC BONITO (S SARDA)																														
TOTAL	28.2	16.8	31.3	29.1	49.0	31.9	61.6	28.8	44.0	25.1	12.2	21.4	15.4	15.7	20.7	17.1	19.9	31.7	40.0	44.9	43.0	22.4	25.4	21.7	29.8	40.4	25.8	27.7	33.5	31.7
MEDITERRANEAN	22.8	13.5	27.0	22.1	41.2	26.2	55.6	20.7	28.3	16.3	6.2	7.7	6.0	6.4	8.7	9.3	13.5	19.2	29.3	31.6	36.1	15.5	18.5	16.0	22.7	24.5	12.2	21.9	26.1	25.6
-PURSE SEINE	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.5	2.4	2.3	14.7	12.8	19.2	19.4	7.6	17.3	22.5	22.5
GREECE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.7	1.3	1.0	1.8	1.3	2.5	2.5	2.7	2.7
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.6	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0
TURKEY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.8	11.4	17.3	18.1	5.0	14.7	19.7	19.7
OTHERS	++	++.	++.	0.1	0.1	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.1	++.	0.1	++.	++.	++.	++.	++.	0.1	++.	0.1	0.1	0.1
-OTHER SURFACE	0.5	0.4	0.6	0.9	1.0	0.5	0.4	0.7	1.0	0.6	0.9	0.6	0.5	1.1	1.3	1.0	1.4	1.2	1.7	2.0	1.3	1.3	1.4	0.8	0.4	1.7	2.1	2.0	1.3	0.8
ALGERIE	0.0	0.1	0.2	0.3	0.2	0.1	0.1	0.0	++.	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.5	0.6	0.7	0.9	0.9	0.9	0.9	0.5	0.2	0.6	1.5	1.3	0.6	0.6
MAROC	0.0	0.0	++.	++.	0.1	++.	++.	++.	0.1	0.1	0.3	0.1	0.1	0.6	0.5	0.1	0.2	0.1	0.3	0.1	0.1	0.1	0.1	++.	0.1	0.1	++.	++.	++.	++.
ESPANA	0.5	0.3	0.4	0.6	0.7	0.4	0.3	0.7	0.9	0.3	0.3	0.3	0.3	0.4	0.6	0.7	0.7	0.5	0.7	1.0	0.3	0.3	0.4	0.3	0.1	1.0	0.6	0.7	0.7	0.2
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.
-UNCL+ LL + TRAWL	22.3	13.1	26.4	21.1	40.1	25.7	55.2	20.0	27.3	15.7	5.3	7.1	5.5	5.3	7.4	8.3	12.1	17.9	27.6	28.1	32.4	11.9	2.4	2.4	3.1	3.4	2.5	2.6	2.3	2.3
BULGARIA	0.0	0.0	1.7	1.5	2.3	1.8	2.1	0.0	0.1	0.0	0.0	0.0	0.0	++.	++.	++.	++.	++.	0.2	++.	++.	++.	++.	0.0	++.	0.0	0.0	++.	++.	++.
EGYPT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	++.	++.	++.	++.	++.	++.	++.	++.	0.1	0.1	++.	++.	0.4	0.6	0.6	0.6
GREECE	2.2	0.9	3.2	2.3	1.8	1.7	2.0	0.9	0.6	0.6	0.5	0.5	0.7	0.5	0.6	0.6	0.7	0.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ITALY	1.0	1.0	0.9	1.0	1.4	0.8	1.0	0.9	1.1	1.0	0.7	0.8	1.0	1.0	1.5	1.4	1.4	1.2	1.1	1.1	1.8	2.8	1.4	1.4	2.1	2.2	1.4	1.2	1.1	1.1
TUNISIE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.5	0.4	0.6	0.8	0.8	0.9	0.7	0.4	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.4	0.5	0.3	0.3
TURKEY	19.1	11.2	20.6	16.1	34.5	21.3	50.1	18.1	25.2	13.9	3.9	5.3	3.4	3.2	4.5	5.5	9.1	14.9	24.3	26.0	29.5	7.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NEI_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.5	0.7	0.4	0.4	0.5	0.6	0.3	0.3	0.3	0.3
OTHERS	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	++.	++.	++.	++.	++.	++.	++.	0.0	0.0	++.	++.	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0
ATLANTIC	5.4	3.3	4.3	7.0	7.8	5.7	6.0	8.1	15.7	8.8	6.0	13.7	9.4	9.3	12.0	7.8	6.4	12.5	10.7	13.3	6.9	6.9	6.9	5.7	7.1	15.9	13.6	5.8	7.4	6.1
-PURSE SEINE	0.6	0.0	0.1	0.5	0.3	0.5	2.4	4.2	3.2	2.9	1.2	2.3	0.2	0.3	2.0	2.5	1.3	2.7	0.9	0.0	0.3	0.1	0.5	0.5	0.2	0.2	0.0	0.3	0.2	0.2
ARGENTIN	0.6	0.0	0.1	0.5	0.3	0.5	2.4	4.2	3.2	2.9	1.2	2.3	0.2	0.3	2.0	1.7	1.3	2.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHERS	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	++.	0.0	0.0	++.	++.	0.1	0.1	++.	0.3	0.1	0.5	0.5	0.2	0.2	++.	0.3	0.2	0.2
-TROLLING	++	++.	0.0	++.	++.	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.1	++.	0.0	0.2	0.1	0.0	0.2	0.2	0.1	0.4	0.4	0.2	0.1
OTHERS	++	++.	0.0	++.	++.	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.1	++.	0.0	0.2	0.1	0.0	0.2	0.2	0.1	0.4	0.4	0.2	0.1
-TRAP	1.0	1.0	0.6	1.6	1.2	0.5	1.0	0.8	0.9	0.5	0.3	0.2	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.3	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.1
ANGOLA	0.5	0.7	0.3	1.2	0.8	0.4	0.6	0.7	0.8	0.4	0.3	0.2	++.	++.	0.1	0.1	0.1	0.2	0.1	0.2	++.	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0
OTHERS	0.5	0.3	0.3	0.4	0.4	0.1	0.4	0.1	0.1	0.1	++.	++.	++.	++.	++.	++.	0.1	0.1	0.4	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	++.	++.	0.1

SMT-Table 1. Continued....

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
-OTHER SURFACE	3.6	2.0	3.3	4.5	5.6	4.3	1.9	2.4	11.0	4.6	3.8	8.8	6.5	7.2	4.8	3.9	2.0	8.6	8.1	10.2	4.7	3.5	4.4	3.8	4.6	3.0	3.9	2.8	3.2	3.1
ANGOLA	++	++.	0.1	0.2	0.1	++.	0.1	0.2	0.1	0.2	0.2	0.2	++.	0.8	0.8	0.5	0.1	0.2	0.1	0.1	0.1	0.1	0.1	++.	0.1	++.	0.1	++.	++.	++.
BRASIL	1.6	0.8	1.4	1.5	3.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.2	0.2	0.5	0.3	0.2	0.3	0.1	0.1	0.1
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	++.	++.	0.0	0.1	++.	0.1	++.	++.	++.	0.0	0.9	0.0	0.0	0.0	0.0	0.0
MARTINIQ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.4	0.3	0.4	0.4	0.4	0.5	0.5
MAROC	0.7	0.4	0.3	0.7	0.3	0.5	0.4	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.1	0.2	0.2	0.3	0.5	0.5	0.4	0.2	0.0	0.0	0.4	0.6	0.6	0.3	0.5	0.6
SENEGAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.2	0.6	0.5	0.2	0.1	1.3	1.4	0.5	0.2	0.5	0.3	0.3	0.4	0.5	0.3	0.4	0.4
ESPANA	1.3	0.8	1.5	2.1	1.8	0.8	1.0	1.6	10.0	3.5	2.0	7.0	4.8	4.3	2.0	1.9	0.6	0.1	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	4.6	6.3	2.4	1.3	2.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.3	0.5	0.5	0.7	0.5	0.6	0.8	0.8	0.4	0.4	0.9	0.8	0.9	0.6	0.7	0.8	1.4	1.0	1.2	1.8	1.5	1.5	1.4
OTHERS	++	++.	++.	++.	++.	++.	++.	0.0	0.0	0.0	0.4	0.4	0.4	0.3	++.	++.	++.	++.	0.1	++.	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1
-UNCL+ LL + TRAWL	0.2	0.3	0.3	0.4	0.7	0.4	0.7	0.7	0.6	0.8	0.7	2.4	2.7	1.8	5.1	1.3	2.9	0.8	1.2	2.8	1.5	2.9	1.7	1.0	2.0	12.4	9.1	2.2	3.7	2.6
ARGENTIN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.3	2.1	1.4	0.7	1.6	2.8	1.3	1.2	1.8	1.6
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.4	0.4	0.2	0.1	0.1	0.2	0.3	0.4	0.4	0.6	0.7	0.2	0.2	0.4	0.4	0.3	0.2	0.2	0.2
RUSSIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1
USA	++	0.0	0.0	++.	0.0	0.0	++.	0.1	0.1	++.	0.3	0.1	0.1	++.	0.3	0.2	0.5	++.	0.2	0.2	0.0	++.	++.	++.	++.	++.	++.	++.	0.5	0.5
USSR	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.2	++.	1.4	1.5	1.3	4.2	0.8	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	7.4	0.7	0.0	0.0
OTHERS	0.2	0.3	0.3	0.4	0.7	0.3	0.3	0.2	0.2	0.3	0.2	0.5	0.7	0.3	0.5	0.2	0.1	0.5	0.6	0.4	0.6	0.1	0.1	0.1	++.	0.3	0.1	0.1	0.3	0.2
ATL BLACK SKIPJACK (E ALLETTRATUS)*																														
TOTAL	3.9	1.7	4.1	3.3	4.0	3.3	3.7	8.7	5.8	3.2	2.5	5.6	9.3	10.3	8.2	17.6	14.8	19.5	15.2	14.6	20.8	19.9	11.6	13.3	14.4	22.9	24.2	25.2	20.1	19.7
MEDITERRANEAN	0.0	++.	++.	++.	++.	0.2	1.0	1.0	0.9	0.9	1.1	1.3	1.4	2.0	2.5	2.5	2.9	2.8	1.4	2.5	1.6	1.7	2.0	2.2	2.4	2.4	2.0	2.6	1.8	1.8
-SURFACE	0.0	0.0	0.0	0.0	0.0	0.1	0.9	0.7	0.5	0.6	0.7	0.8	0.9	1.2	1.3	1.6	2.2	2.2	1.1	1.7	1.0	1.0	1.2	1.1	1.5	1.6	1.0	1.2	1.1	1.1
ESPANA	++	++.	++.	++.	++.	0.1	0.9	0.6	0.4	0.6	0.7	0.7	0.7	1.1	1.1	1.2	1.0	0.8	++.	0.7	0.0	++.	++.	++.	0.0	++.	0.0	0.0	0.0	0.0
TUNISIE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	++.	++.	0.1	0.1	0.1	0.2	0.4	1.2	1.4	1.0	1.0	1.0	1.0	1.2	1.1	1.5	1.6	1.0	1.2	1.1	1.1
OTHERS	++	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.1	++.	++.	0.0	++.	0.0	0.1	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.0
-UNCL+ LL + TRAWL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.5	0.5	0.8	1.2	0.9	0.7	0.6	0.3	0.7	0.5	0.7	0.9	1.1	0.9	0.8	1.1	1.4	0.7	0.7
TUNISIE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.8	0.6	0.4	0.4	0.2	0.3	0.2	0.3	0.3	0.5	0.3	0.3	0.6	0.9	0.2	0.2
OTHERS	0.0	0.0	++.	++.	++.	++.	++.	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.3	0.3	0.2	0.1	0.4	0.3	0.4	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5
ATLANTIC	3.9	1.7	4.1	3.3	4.0	3.1	2.7	7.7	4.9	2.3	1.4	4.3	7.9	8.3	5.7	15.1	11.9	16.7	13.8	12.1	19.2	18.2	9.6	11.1	12.0	20.5	22.2	22.6	18.3	17.9
-BAITBOAT	0.0	0.0	0.0	0.1	0.7	0.3	0.6	1.9	1.1	0.6	0.2	0.5	0.5	0.2	0.7	0.4	0.6	1.3	1.0	1.4	1.2	1.7	2.1	1.7	1.7	0.9	1.7	3.7	0.9	0.9
ANGOLA	++	++.	++.	0.1	0.7	0.3	0.6	1.2	0.7	0.3	0.2	0.4	0.4	++.	0.6	0.3	0.5	0.8	0.7	1.1	1.2	1.3	1.3	1.1	1.3	0.5	0.4	0.1	++.	++.
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	0.1	0.1	0.1	0.1	0.1	++.	++.	++.	0.0	0.3	0.7	0.5	0.3	0.3	1.2	3.5	0.2	0.3
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.4	0.3	++.	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	++.	++.	0.5	0.3	0.3	++.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

SMT-Table 1. Continued....

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
-PURSE SEINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.1	0.1	0.0	0.0	5.6	0.0	0.8	1.6	2.1	1.6	0.7	1.6	0.5	0.1	0.8	0.7	0.8	1.9	1.4
FRANCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	0.0	0.0	0.0	0.4	0.6	0.0	0.3	0.2	0.1	++.	0.0	0.0	0.0	0.0	0.0
RUSSIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3
SENEGAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	5.5	0.0	0.0	0.0	0.4	1.6	0.4	0.9	0.3	0.1	0.8	0.5	0.7	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.0
OTHERS	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.4	0.0	++.	0.1	0.1	0.0	++.	0.1	++.	0.3	0.1	++.	++.	++.	0.5	0.1	++.	++.	++.	0.1	++.	0.1
-TROLLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.7	0.7	0.6	0.4	0.4
SENEGAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.7	0.7	0.6	0.4	0.4
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	++.	++.	++.	0.1	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.
-TRAP	3.7	1.4	2.9	2.7	3.1	2.4	1.5	1.7	1.1	0.5	0.6	0.7	0.1	0.0	0.2	0.0	0.2	0.4	0.4	0.6	0.5	0.3	0.2	0.0	0.1	0.6	0.7	0.3	0.4	0.0
ANGOLA	3.7	1.4	2.7	2.7	3.1	2.4	1.4	1.7	1.1	0.5	0.6	0.7	0.1	++.	0.2	++.	0.2	0.4	0.4	0.6	0.4	0.3	0.1	++.	0.1	0.6	0.7	0.2	0.3	0.0
OTHERS	++	++.	0.2	++.	++.	++.	0.1	++.	++.	++.	++.	++.	0.0	0.0	0.0	++.	0.0	++.	++.	0.0	0.1	++.	0.1	++.	++.	++.	++.	0.1	0.1	++.
-OTHER SURFACE	0.2	0.3	1.2	0.5	0.2	0.4	0.6	3.9	2.3	0.9	0.5	1.1	6.2	7.7	4.3	9.1	11.0	13.7	10.6	6.6	14.9	14.8	5.5	8.3	9.7	16.4	18.4	17.1	14.5	14.6
ANGOLA	0.2	0.3	0.8	0.4	0.2	0.1	0.1	3.2	0.6	0.5	0.1	0.2	++.	0.0	0.5	0.5	++.	0.1	++.	++.	++.	++.	++.	++.	++.	++.	0.1	0.0	0.0	0.0
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.4	0.1	0.1	0.1	0.1	0.3	0.2
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	6.0	1.1	6.0	5.4	4.1	2.9	1.5	5.0	5.4	0.0	++.	5.2	11.3	11.3	11.3	11.3	11.3
MAROC	0.0	0.0	++.	0.1	0.0	0.2	0.4	0.3	0.6	0.1	++.	++.	0.1	++.	++.	++.	0.3	++.	++.	++.	0.0	++.	0.0	0.0	0.1	++.	++.	0.2	++.	0.2
SENEGAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1	0.7	1.5	1.4	1.7	1.9	3.1	4.0	4.3	7.6	3.4	6.5	2.6	3.4	5.1	3.9	2.5	2.5
ESPANA	++	++.	0.4	0.0	0.0	0.0	++.	0.1	0.7	++.	++.	0.0	++.	++.	++.	++.	++.	0.5	++.	++.	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.7	2.2	6.3	3.6	0.6	4.9	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.3	0.4	0.4	0.5	0.4	0.4	1.3	0.7	0.8	0.3	0.6	0.6	1.0	1.1	1.5	1.2	1.4	1.3	0.0	0.0
OTHERS	++	0.0	0.0	0.0	++.	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.3	0.2	0.4	0.4	0.3	0.4	0.4
-UNCL+LL + TRAWL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.1	1.9	1.0	0.4	0.5	0.0	0.1	0.4	0.2	1.4	1.0	0.7	0.2	0.1	0.0	1.1	0.0	0.1	0.2	0.6
CIVOIRE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.9	0.4	0.4	++.	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GERMANY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.1	++.	++.	++.	0.0	++.	++.	0.0	0.0
ISRAEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.2	++.	0.2	++.	0.0	++.	++.	++.	++.	++.	++.	++.	0.1	++.	++.	0.0	++.	++.	0.1	++.	0.1	0.2	0.6
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.1	++.	0.1	++.	++.	++.	++.	0.3	0.2	0.3	0.1	0.1	++.	0.1	0.0	++.	++.	++.

SMT-Table 1. Continued....

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
FRIGATE TUNA (A THAZARD)																														
TOTAL	8.0	6.9	9.6	7.3	11.4	8.6	16.2	11.4	10.3	13.7	10.0	14.0	10.5	9.8	19.9	8.2	12.5	20.8	14.7	24.0	20.1	25.6	22.2	18.0	19.8	20.8	18.3	19.7	12.8	9.6
MEDITERRANEAN	4.3	2.9	2.7	2.7	4.6	3.0	2.9	3.3	4.1	3.5	3.5	4.4	2.6	3.2	3.3	3.5	3.6	3.9	3.6	6.0	5.8	6.5	5.1	5.1	3.7	6.0	6.3	7.5	5.8	5.1
-PURSE SEINE	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	1.6	1.7	1.5	1.4	0.3	0.3	0.1	0.1	0.1	0.3
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.4	1.3	0.0	0.0	0.0	0.0	0.0	0.0
OTHERS	0.1	0.1	0.1	++.	0.1	0.1	0.1	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.1	++.	++.	0.2	++.	0.1	0.1	0.1	0.3	0.3	0.1	0.1	0.1	0.3
-TRAP	0.5	0.4	0.7	0.7	0.7	0.9	0.6	0.2	0.4	0.4	0.3	0.8	0.1	0.4	0.5	0.3	0.1	0.0	0.1	0.2	0.5	0.7	0.6	0.3	0.6	1.3	2.2	2.3	1.5	0.9
MAROC	0.0	0.0	0.5	0.4	0.4	0.6	0.1	0.1	0.2	0.1	0.1	0.3	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	0.1	0.2	0.1	0.3
ESPANA	0.5	0.4	0.2	0.3	0.3	0.3	0.5	0.1	0.2	0.3	0.2	0.5	0.1	0.2	0.4	0.3	0.1	++.	0.1	0.2	0.5	0.7	0.6	0.3	0.6	1.3	2.1	2.1	1.4	0.6
-OTHER SURFACE	2.8	1.9	1.2	1.1	2.6	0.8	1.1	1.8	1.9	1.2	1.8	2.0	1.3	1.5	0.9	1.4	1.7	2.1	1.6	1.8	0.1	0.1	0.0	0.2	0.2	2.1	1.5	2.1	1.5	1.2
MAROC	0.7	0.7	++.	++.	++.	++.	++.	++.	++.	0.1	0.3	0.1	0.0	0.1	0.1	0.1	0.1	++.	++.	0.1	0.1	0.1	++.	0.2	0.2	0.8	1.1	1.2	0.6	0.6
ESPANA	2.1	1.2	1.2	1.1	2.6	0.8	1.1	1.8	1.9	1.1	1.5	1.9	1.3	1.4	0.8	1.3	1.6	2.1	1.6	1.7	0.0	++.	++.	++.	0.0	1.3	0.4	0.9	0.9	0.6
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.
-UNCL+ LL + TRAWL	0.9	0.5	0.7	0.9	1.2	1.2	1.1	1.3	1.8	1.9	1.4	1.6	1.2	1.3	1.9	1.8	1.7	1.8	1.9	3.8	3.6	4.0	3.0	3.2	2.6	2.3	2.5	3.0	2.7	2.7
GREECE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.2	1.9	2.1	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
ITALY	0.8	0.5	0.7	0.9	1.2	1.2	1.1	1.1	1.6	1.7	1.2	1.3	0.9	0.9	1.1	1.2	1.3	1.4	1.2	1.3	1.5	1.6	1.3	1.3	0.9	0.6	0.5	0.5	0.4	0.4
TUNISIE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.8	0.6	0.4	0.4	0.2	0.3	0.2	0.3	0.3	0.5	0.3	0.3	0.6	0.9	0.9	0.9
OTHERS	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.2	++.	++.
ATLANTIC	3.7	4.0	6.9	4.6	6.8	5.6	13.3	8.1	6.2	10.2	6.5	9.6	7.9	6.6	16.6	4.7	8.9	16.9	11.1	18.0	14.3	19.1	17.1	12.9	16.1	14.8	12.0	12.2	7.0	4.5
-BAITBOAT	0.1	0.0	0.9	0.4	0.6	1.6	3.2	3.1	0.3	0.2	1.6	0.7	0.1	0.0	0.1	0.1	0.3	0.2	0.3	0.5	0.4	0.4	0.3	0.2	0.5	0.2	0.2	0.2	0.4	0.5
JAPAN	0.0	0.0	0.9	0.4	0.6	1.6	3.2	3.1	0.0	++.	1.2	0.5	++.	++.	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHERS	0.1	0.0	++.	++.	0.0	++.	++.	++.	0.3	0.2	0.4	0.2	0.1	++.	++.	0.1	0.3	0.2	0.3	0.5	0.4	0.4	0.3	0.2	0.5	0.2	0.2	0.2	0.4	0.5
-PURSE SEINE	0.0	0.0	0.0	0.0	0.4	1.3	0.2	0.7	0.7	1.4	0.2	0.0	0.0	0.0	0.0	1.2	0.8	6.0	5.4	4.7	4.7	8.8	5.2	3.6	5.2	4.9	2.6	2.7	2.6	2.5
FRANCE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JAPAN	0.0	0.0	0.0	0.0	0.4	1.3	0.2	0.7	0.6	1.2	0.2	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAROC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.1	0.5	++.	++.	0.4	0.2	0.0	0.0	0.1	0.1	++.
ESPANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	5.8	4.7	2.5	2.5	5.5	3.6	3.1	4.4	3.8	1.6	1.7	0.5	0.2
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.6	0.0	0.0	0.0	0.4	0.3	3.1	1.6	0.1	0.2	0.4	0.3	0.7	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.4	0.3	0.5	0.0	0.7	1.8
NEI_1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	++.	0.0	0.0	++.	0.4	0.2	0.2	0.9	0.2
OTHERS	0.0	0.0	0.0	0.0	++.	++.	0.0	0.0	0.0	0.2	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	++.	++.	++.	++.	++.	0.4	0.3
-TRAP	0.9	1.3	2.8	2.2	1.5	0.8	1.0	0.8	0.5	1.0	1.0	0.9	0.4	0.3	0.3	0.3	0.4	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.4	0.8	0.5	0.2
ANGOLA	0.9	0.8	1.6	1.4	1.1	0.5	0.7	0.3	0.4	0.4	0.5	0.7	0.2	++.	0.1	0.1	0.1	++.	0.1	0.1	0.1	0.1	++.	0.0	0.0	++.	++.	++.	0.0	0.0
MAROC	0.0	0.0	0.8	0.3	0.2	0.1	++.	0.4	++.	0.3	0.1	0.1	0.0	0.0	++.	0.0	0.0	0.1	++.	0.0	++.	0.0	0.0	0.0	0.0	++.	0.1	0.2	0.3	0.1
ESPANA	++	0.5	0.4	0.5	0.2	0.2	0.3	0.1	0.1	0.3	0.4	0.1	0.2	0.3	0.2	0.2	0.3	++.	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.6	0.2	0.1
OTHERS	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SMT-Table 1. Continued....

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
-OTHER & UNCL GEAR	2.7	2.7	3.2	2.0	4.3	1.9	8.9	3.5	4.7	7.6	3.7	8.0	7.4	6.3	16.2	3.1	7.4	10.6	5.2	12.5	8.9	9.7	11.5	9.0	10.2	9.6	8.8	8.5	3.5	1.3
ANGOLA	0.3	0.1	0.1	0.1	0.1	0.2	++.	0.2	0.5	1.7	0.2	0.6	0.3	0.0	0.1	0.1	++.	++.	++.	++.	++.	++.	0.0	++.	++.	0.0	++.	0.0	0.0	0.0
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.7	0.9	1.7	0.6	0.4	0.2	0.1
GHANA	0.0	0.0	0.0	0.0	2.2	0.9	8.2	2.0	1.8	5.1	1.6	6.3	6.0	4.3	13.9	1.0	4.3	7.6	2.0	6.1	5.6	4.5	4.5	3.3	4.7	0.0	0.0	0.0	0.0	0.0
MAROC	1.0	0.8	0.5	0.1	0.5	0.1	0.1	0.5	0.1	++.	1.0	0.1	++.	0.3	0.7	0.8	0.7	0.7	1.3	0.1	0.7	0.2	0.4	0.0	0.5	0.2	0.5	0.4	0.5	0.1
RUSSIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	1.1
ESPANA	0.4	0.4	0.8	0.4	0.4	0.3	0.2	0.1	1.8	0.2	0.2	0.1	0.1	0.2	0.4	0.4	0.1	0.4	0.5	0.4	0.0	0.2	++.	++.	0.0	++.	0.0	0.0	0.0	++.
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.5	0.7	0.4	5.2	1.3	2.8	4.4	3.3	2.7	5.5	5.5	5.6	0.0	0.0
VENEZUEL	1.0	1.4	1.8	1.4	1.1	0.4	0.4	0.7	0.5	0.6	0.7	0.9	1.0	1.3	0.9	0.6	1.8	1.2	0.9	0.5	1.2	1.5	1.7	1.6	1.4	2.2	2.1	2.0	0.0	0.0
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.1	0.2	0.1	0.1	0.1	0.1	++.	++.	0.1	0.1	++.	++.
SPOTTED SPANISH MACK (S. MACULATUS)* **																														
ATLANTIC	11.1	10.1	11.9	13.5	12.8	12.8	12.4	15.9	13.9	16.8	20.0	21.0	18.2	14.6	15.5	14.9	14.6	19.5	16.9	19.6	17.3	20.8	16.1	21.7	21.9	22.2	24.8	19.5	19.7	18.9
-LONGLINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.4	0.1	0.0	0.1	0.2	0.1	0.3	0.1	0.1	0.1	0.5	0.2	0.2	0.1	0.0	0.0
CUBA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.4	0.1	0.0	0.1	0.2	0.1	0.3	0.1	0.1	0.1	0.5	0.2	0.2	0.1	0.0	0.0
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-TROLLING	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.5	1.2	0.4	0.1	0.2	0.0	0.1	0.4	0.1	0.1	0.5	0.5	0.6
CUBA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.5	0.4	0.4	0.1	0.1	++.	0.1	0.4	0.1	0.1	0.5	0.5	0.6
USA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.8	0.0	++.	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-OTHER SURFACE	7.4	7.8	8.3	9.1	7.8	7.0	7.1	4.5	3.9	5.5	7.9	9.7	5.4	2.6	3.4	3.8	4.1	11.5	8.3	6.4	9.9	13.6	8.9	14.0	13.0	13.6	14.0	7.8	5.2	4.8
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.2	2.8	4.4	6.3	2.7	0.3	1.0	1.5	1.2	2.8	3.5	4.3	4.5	6.3	1.5	5.0	4.7	5.1	5.9	0.0	++.	++.
CUBA	0.7	1.2	1.6	1.3	1.1	0.8	0.8	0.9	0.5	0.5	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.3	0.5	0.7	0.5	0.5	0.0	0.0	0.0
DOMINR	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.5	0.5	0.4	0.2	1.1	1.3	1.3	1.3	1.4	1.4	1.3	0.7	0.7
USA	3.4	2.7	3.5	4.2	3.5	5.2	4.8	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.0	0.0	0.0	5.4	1.9	0.0	2.8	3.9	3.8	5.7	4.8	4.9	4.2	4.0	2.0	1.9
VENEZUEL	3.3	3.9	3.2	3.5	3.0	0.8	1.3	1.5	2.0	2.0	2.5	2.5	2.4	2.0	2.2	2.0	2.5	2.8	2.4	1.7	2.1	1.9	2.0	1.5	1.5	1.7	2.0	2.5	2.5	2.2
-UNCL + TRAWL	3.6	2.2	3.5	4.3	4.9	5.7	5.2	11.4	10.0	11.3	12.1	11.3	12.2	11.5	11.7	10.5	10.1	7.4	7.2	12.7	7.0	6.9	7.1	7.5	8.0	8.3	10.5	11.1	14.0	13.5
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.1	0.2	0.3	0.4	0.2	0.3	0.2	0.2	0.2	0.4	++.	++.	0.1	0.1	0.1	0.1	0.2	0.1	0.1	++.	0.1
MEXICO	3.6	2.2	3.5	4.3	4.9	5.7	5.2	4.8	3.5	5.3	6.7	5.2	4.8	3.4	4.4	5.1	5.8	5.9	5.9	7.8	5.9	5.8	5.8	6.2	6.5	5.2	7.2	8.2	8.4	8.4
TRINIDAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2	1.0	0.8	0.8	1.7	1.5	1.5	1.9	1.2	1.3	0.9	1.2	1.1	0.9	1.0	1.0	1.1	2.7	2.9	2.5	2.7	2.7
USA	++	++.	++.	++.	++.	++.	++.	5.5	4.7	4.9	4.4	5.0	5.3	6.4	5.5	3.3	2.9	++.	++.	3.7	++.	0.1	0.2	0.2	0.3	0.2	0.3	0.3	2.9	2.3
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	++.	++.	++.	++.	++.	++.	++.	0.0	0.0	++.	++.	0.0	0.0

SMT-Table 1. Continued....

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
KING MACKEREL (S CAVALLA)																														
ATLANTIC	3.3	2.8	3.2	3.0	3.9	5.3	5.4	6.5	6.5	7.4	9.9	13.7	9.3	8.4	8.9	6.9	11.5	15.7	18.7	18.3	14.8	13.4	10.1	12.3	12.0	12.9	10.8	10.1	9.9	10.0
ARGENTIN	++	++.	0.0	0.0	++.	++.	0.0	0.0	++.	0.0	0.0	0.0	0.0	0.5	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.9	2.5	3.3	5.2	2.2	0.5	0.8	0.8	0.8	1.6	1.6	1.9	2.7	2.6	0.8	2.9	2.2	2.0	2.1	++.	++.	++.
MEXICO	1.0	0.9	1.0	0.9	1.0	0.7	1.1	0.9	1.3	1.5	2.2	1.5	1.4	1.5	1.3	1.5	2.2	1.9	2.7	4.4	2.9	2.2	2.3	2.6	3.1	3.1	2.3	2.7	2.1	2.1
TRINIDAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.7	0.5	0.4	0.7	0.7
USA	2.3	1.6	2.1	2.1	2.8	2.8	2.8	3.0	2.6	2.2	2.7	4.7	3.1	4.1	3.8	2.5	6.3	10.7	12.6	9.9	7.1	7.4	6.0	5.7	5.6	5.8	4.4	5.9	5.9	5.9
VENEZUEL	0.0	0.3	0.1	0.0	0.1	1.8	1.5	1.0	1.6	1.1	1.5	2.2	2.4	1.7	1.6	1.3	2.0	1.4	1.6	1.9	1.9	0.9	0.8	0.9	0.9	1.3	1.5	1.1	1.2	1.3
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.2	0.2	0.1	++.	++.	++.	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST AFRICAN SPAN MACKEREL (S. TRITOR)																														
ATLANTIC	0.0	0.0	0.0	0.0	0.0	1.8	2.7	0.2	1.3	2.1	1.6	4.7	1.1	2.0	2.5	6.8	4.1	4.9	3.1	5.4	4.7	4.4	4.0	3.3	1.8	3.8	2.7	4.2	3.6	3.6
GERMANY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.5	++.	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GHANA	0.0	0.0	0.0	0.0	0.0	1.8	2.5	0.0	0.7	1.5	1.0	3.5	0.6	0.6	0.7	0.8	1.6	4.4	2.0	3.0	2.2	3.0	3.0	1.5	0.0	1.5	1.5	1.5	2.8	2.8
SENEGAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.3	1.2	1.1	1.1	0.4	1.0	0.7	0.8	1.2	0.7	1.5	1.8	2.2	0.7	1.3	0.6	0.6
USSR	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.6	0.6	0.8	0.2	0.1	0.6	4.8	1.4	0.0	0.0	0.6	1.2	0.2	0.2	0.2	++.	0.1	0.2	1.2	0.0	0.0
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	++.	0.1	++.	0.1	0.1	0.2	++.	++.	0.1	0.1	++.	++.	0.3	0.2	0.2	0.2
BLACKFIN TUNA (T ATLANTICUS)																														
ATLANTIC	0.8	0.8	0.7	0.7	0.9	0.7	0.8	2.0	1.9	1.9	0.9	1.0	0.8	1.1	1.3	1.3	1.2	1.1	2.0	1.9	1.7	1.9	1.5	1.9	2.1	3.0	2.9	3.6	3.2	4.2
CUBA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.6	0.6	0.5	0.2	0.5	0.6	0.3	0.3	0.5	0.5	0.2
DOMINR	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	++.	0.6	0.5	0.5	0.5
GUADELOU	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5
MARTINIQ	0.7	0.7	0.6	0.6	0.8	0.5	0.6	0.6	0.5	0.3	0.1	0.4	0.3	0.6	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.4	0.4	0.4	0.4	0.4
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	0.7	1.3	0.9	1.9
OTHERS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.3	0.2	0.2	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.5	0.4	0.5	0.5	0.8	0.4	0.4	0.4	0.7
WAHOO (A SOLANDRI)																														
ATLANTIC	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.5	0.8	0.6	2.9	2.3	2.4	2.2	0.9	1.1	1.3	1.5	1.5	1.3	1.3	1.8
CAP VERT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	2.3	1.5	1.6	1.4	0.1	0.2	0.3	0.3	0.6	0.5	0.4	0.5
OTHERS	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.5	0.8	0.6	0.6	0.8	0.8	0.8	0.8	0.9	1.0	1.2	0.9	0.8	0.9	1.3

SMT-Table 1. Continued....

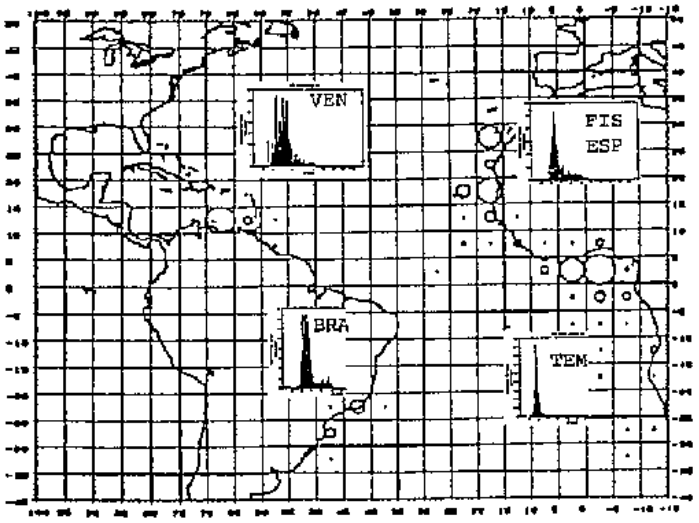
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
CERO (S REGALIS)																														
ATLANTIC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.8	0.8	0.8	0.6	0.7	0.5	0.6	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.5	0.3	0.3	0.3	0.3	0.2	0.2
MARTINIQ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.4	0.2	0.3	0.2	0.5	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2
OTHERS	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	++.	0.1	0.1	0.1	++.	++.
SCOMBEROMORUS UNCLASSIFIED (S. SPP)																														
ATLANTIC	1.5	1.8	1.8	1.9	2.1	2.1	3.4	0.5	0.4	0.3	0.5	0.5	0.8	0.4	0.4	0.5	0.2	0.2	0.4	0.3	0.2	0.8	0.2	0.2	0.3	0.6	0.4	0.4	0.6	0.7
BRASIL	1.0	1.1	1.1	1.3	1.5	1.6	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.2	0.3	0.4	0.1	0.1	0.1	0.1	0.1	0.2	0.1	++.	0.5	++.	++.	0.1	0.2	++.	++.	++.	++.
TRINIDAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.4	0.4	0.4	0.6	0.6
OTHERS	0.5	0.7	0.7	0.6	0.6	0.5	0.4	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
PLAIN BONITO (O UNICOLOR)																														
TOTAL	3.1	2.3	0.2	0.3	0.7	0.2	1.3	0.8	0.7	0.3	0.1	0.1	0.1	0.2	0.4	1.0	0.5	0.7	1.5	0.6	0.0	0.0	0.1	0.1	0.6	1.5	1.2	0.4	0.4	0.4
MEDITERRANEAN	0.0	0.0	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.0	0.0	0.1	0.2	++.	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	++.	++.	++.	++.	++.
OTHERS	0.0	0.0	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.0	0.0	0.1	0.2	++.	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	0.0	++.	++.	++.	++.	++.
ATLANTIC	3.1	2.3	0.2	0.3	0.7	0.2	1.3	0.8	0.7	0.3	0.1	0.1	0.1	0.2	0.3	0.8	0.5	0.7	1.5	0.6	0.0	0.0	0.1	0.1	0.6	1.5	1.2	0.4	0.4	0.4
MAURITAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	++.	++.	++.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAROC	3.1	2.3	0.2	0.3	0.7	0.2	1.3	0.8	0.6	0.2	++.	++.	++.	0.1	0.2	0.7	0.4	0.6	1.0	0.5	0.0	0.0	0.1	++.	0.5	1.4	1.1	0.3	0.3	0.3
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.

SMT-Table 1. Continued....

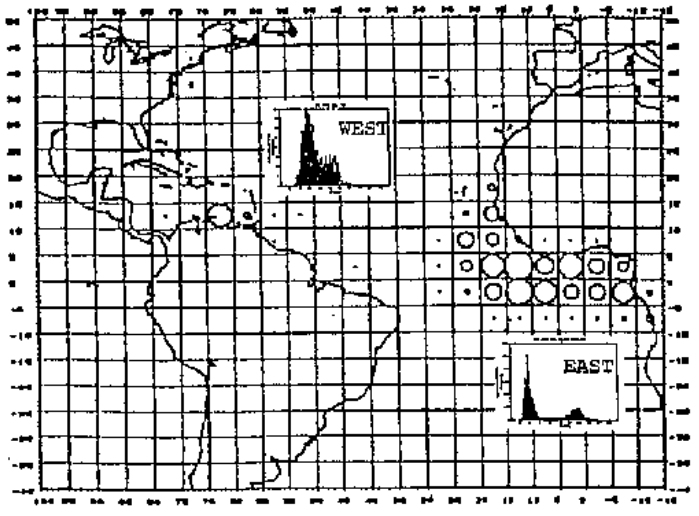
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	197-				1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
MIXED OR UNKNOWN TUNA-LIKE SPECIES																														
TOTAL	5.4	6.7	8.7	7.2	6.2	7.7	7.9	13.3	11.9	16.0	7.8	8.2	13.1	10.3	12.4	8.7	7.5	9.4	10.7	12.4	11			6.9	11.9	11.7	12.1	15.0	18.6	16.8
MEDITERRANEAN	2.1	2.1	1.3	1.2	0.5	1.1	1.2	0.6	0.5	0.5	0.4	0.4	0.7	0.5	0.4	0.4	0.2	1.9	1.4	1.8	1.4	1.4	2.1	2.2	2.3	3.4	2.4	4.5	2.3	2.3
GREECE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	++.	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5
ISRAEL	0.9	1.1	0.2	0.3	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LEBANON	0.5	0.5	0.5	0.3	0.2	0.3	0.8	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2
ESPANA	0.7	0.5	0.6	0.6	0.3	0.5	0.2	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TUNISIE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.1	0.2	0.4	0.3	0.3	0.1	1.8	1.3	1.5	1.2	1.3	1.8	1.9	1.9	3.0	1.7	3.9	1.6	1.6
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	++.	0.1	0.1	0.1	0.1	++.	++.	++.	0.0
ATLANTIC	3.3	4.6	7.4	6.0	5.7	6.6	6.7	12.7	11.4	15.5	7.4	7.8	12.4	9.8	12.0	8.3	7.3	7.5	9.3	10.6	10.3	6.0	5.5	4.7	9.6	8.3	9.7	10.5	16.3	14.5
BRASIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.3	0.7	0.4	0.6	++.	0.7	0.4	++.	++.	++.	0.3	0.1	++.	++.	0.1	++.
CHITAIW	0.0	0.0	++.	++.	0.2	0.4	1.1	0.8	0.7	0.9	1.0	0.9	0.4	1.0	++.	0.5	1.3	0.8	0.8	1.1	0.8	++.	++.	0.1	0.3	0.1	1.1	0.2	2.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.1	++.	++.	++.	++.	++.	++.	0.3	++.	0.3	1.0	0.7	0.9	0.8	1.2	0.3	0.1	3.9
CIVOIRE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	3.1	4.4	1.0	0.6	++.	5.3	5.3	4.7	6.1	10.4	6.0
CUBA	0.0	0.0	0.0	0.0	++.	++.	0.0	0.0	0.4	0.6	1.1	0.3	1.0	0.4	0.1	0.1	0.1	++.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EGUINEA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3
GHANA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.9	0.0	0.0	0.9	0.5	0.7	1.0	0.4	0.1	0.2	0.2	0.6	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GUADELOU	1.0	1.0	1.0	0.8	1.0	1.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IRELAND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.5
ISRAEL	0.0	0.0	0.5	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JAPAN	1.5	2.7	5.2	4.8	3.3	1.5	1.1	1.6	1.5	1.0	0.5	0.6	0.4	1.0	0.8	1.0	1.6	1.3	0.8	0.7	0.1	0.3	0.5	0.4	0.3	0.4	0.4	2.2	2.2	2.2
KOREA	0.0	0.0	0.0	0.0	0.0	2.4	1.0	7.0	5.7	3.1	2.4	3.5	5.8	2.9	4.2	2.5	1.7	2.1	2.0	1.9	1.2	1.0	1.0	0.7	0.4	0.0	0.5	0.2	++.	++.
LIBERIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.2	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2
PANAMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.8	1.4	2.6	0.8	0.2	0.7	1.1	0.6	0.7	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0
PORTUGAL	0.7	0.8	0.4	0.1	0.1	0.3	0.5	0.3	0.5	0.2	++.	++.	0.2	0.3	0.3	0.5	0.2	0.2	0.2	0.1	0.0	0.0	++.	0.4	0.0	++.	0.0	0.0	0.0	0.0
SILEONE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	++.	0.0	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1
ESPANA	0.1	0.0	0.0	0.0	1.0	0.8	0.7	0.1	0.0	6.6	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	++.	++.	++.
TOGO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.5	0.6	0.6	0.8	0.7	0.5	0.5	++.	0.4	0.3	0.4	0.3	0.1	0.3	0.1	0.2	0.4	0.3	0.2	0.2	0.2
USA	++	0.1	0.1	++.	++.	++.	++.	0.0	0.1	0.0	0.0	++.	++.	++.	0.1	++.	++.	0.5	0.1	0.2	0.4	0.9	0.2	0.3	0.3	0.1	0.1	0.2	0.1	0.2
USSR	0.0	0.0	0.2	0.2	0.0	++.	0.2	0.3	0.3	0.2	0.2	0.3	0.4	++.	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VENEZUEL	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.8	0.0	0.0	++.	0.7	0.0	0.1	++.	0.0	0.0	0.0	0.9	0.9	0.4	0.4	++.	0.0	0.0	0.0	0.2	0.1
OTHERS	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.4	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.8

++.0 CATCHES: < 50 MT AND >= 1 MT

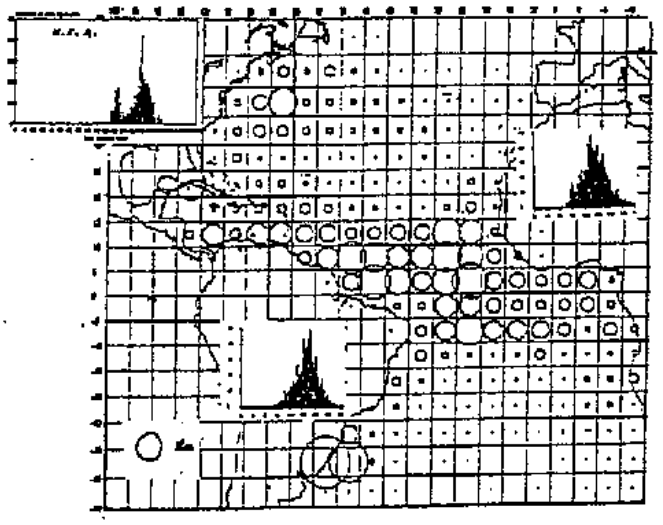
* INCLUDES FRIGATE TUNA FOR COTE D'IVOIRE
** INCLUDES BULLET TUNA (A. ROCHEI)
& INCLUDES ATL. BLACK SKIPJACK FOR ATLANTIC PS ESPANA BEGINNING IN 1978
*** INCLUDES SERRA SPANISH MACKEREL (S. BRASILIENSIS)



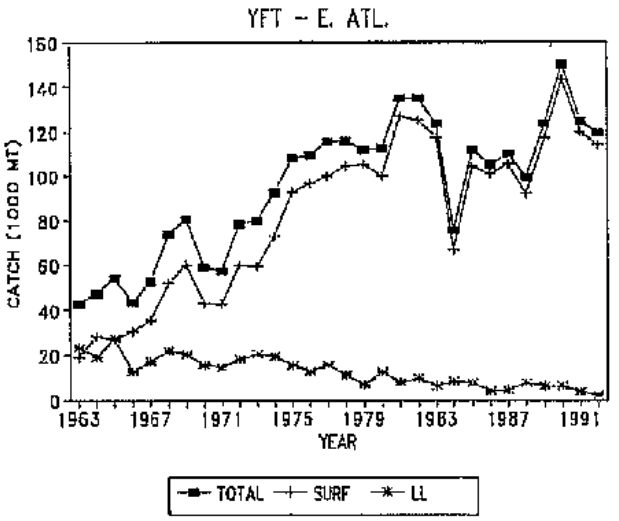
YFT-Figure 1.
Geographical distribution of annual yellowfin catches by baitboat fisheries and average size frequencies of the catches in the Atlantic Ocean, average for 1987 through 1991.



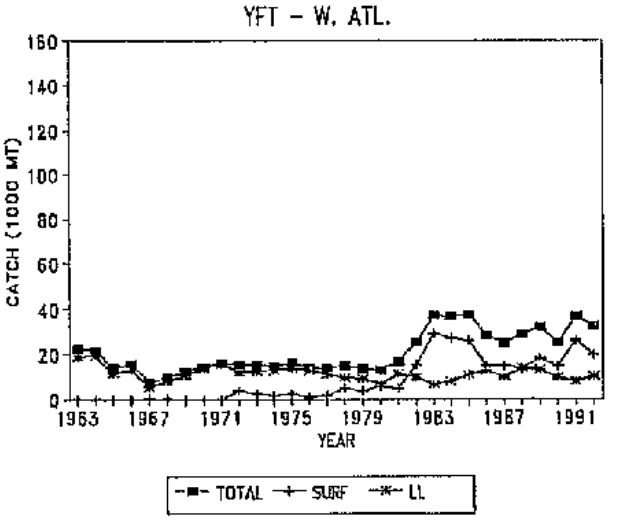
YFT-Figure 2.
Geographical distribution of annual yellowfin catches by purse seine fisheries and average size frequencies of the catches in the Atlantic Ocean, average for 1987 through 1991.



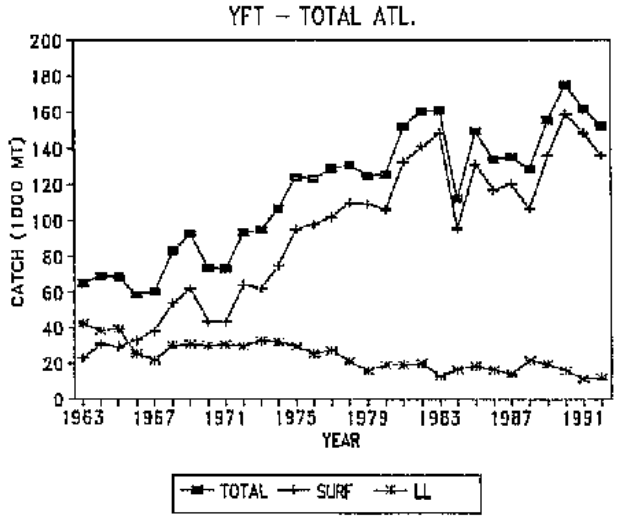
YFT-Figure 3.
Geographical distribution of annual yellowfin catches by longline fishery and average size composition of the catches, for the east and west Atlantic Ocean, average for 1983 through 1986. The size distribution of the U.S. longline fishery is for 1987.



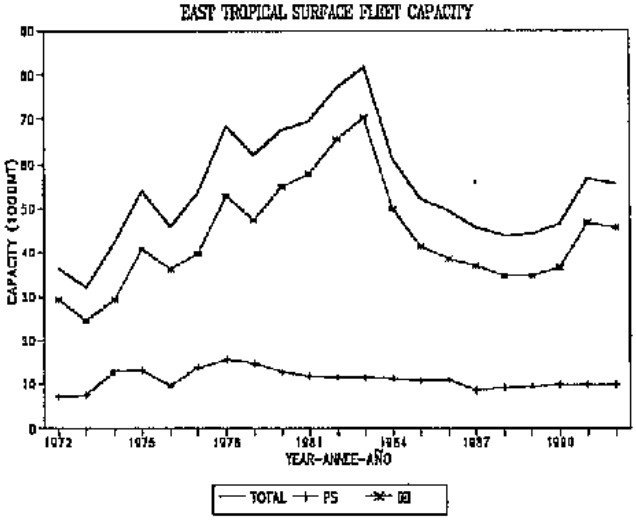
YFT-Fig. 4. Total (TOTAL), surface (SURF) and longline (LL) yellowfin tuna catches in the east Atlantic.



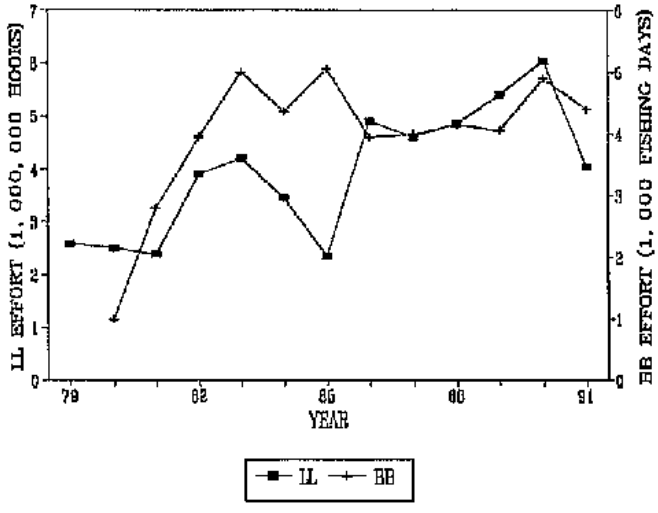
YFT-Fig. 5. Yellowfin tuna catches of the total (TOTAL), surface (SURF) and longline (LL) fisheries in the west Atlantic.



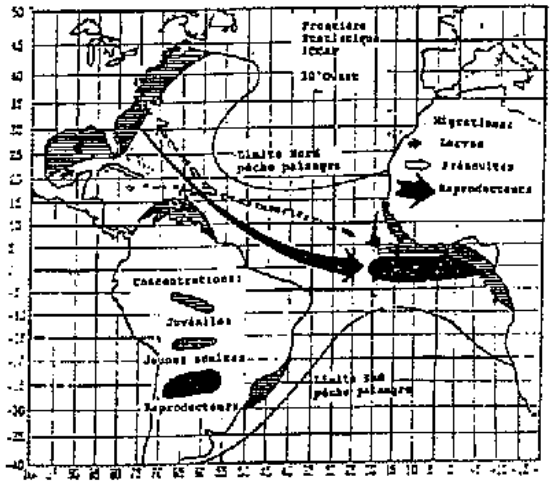
YFT-Fig. 6. Yellowfin tuna catches of the total (TOTAL), surface (SURF) and longline (LL) fisheries in the entire Atlantic.



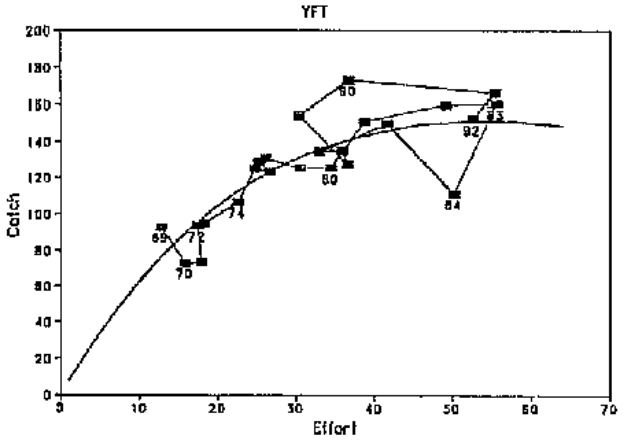
YFT-Fig. 7. Carrying capacity (in 1000 MT) of the east tropical surface fleet.



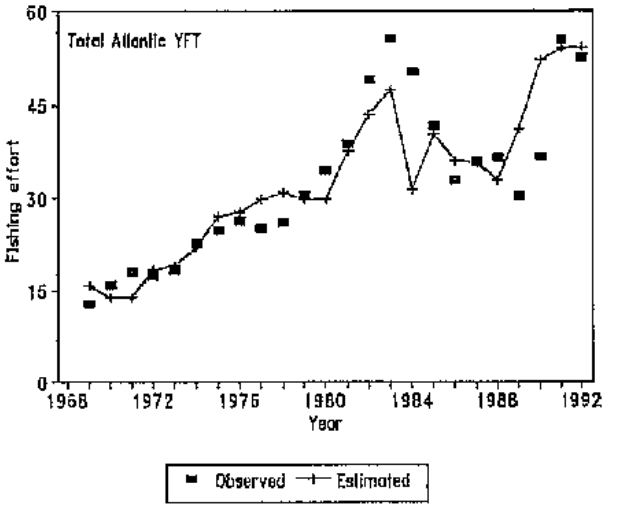
YFT-Fig. 8. Brazilian longline and baitboat fishing effort, 1979-1991.



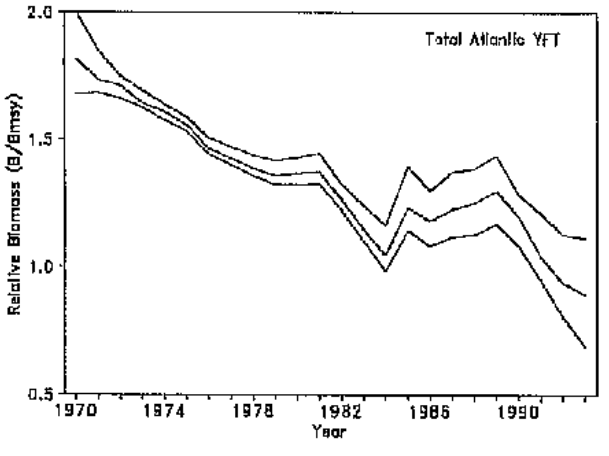
YFT-Fig. 9. Hypothetical migration model for a single Atlantic stock of yellowfin tuna.



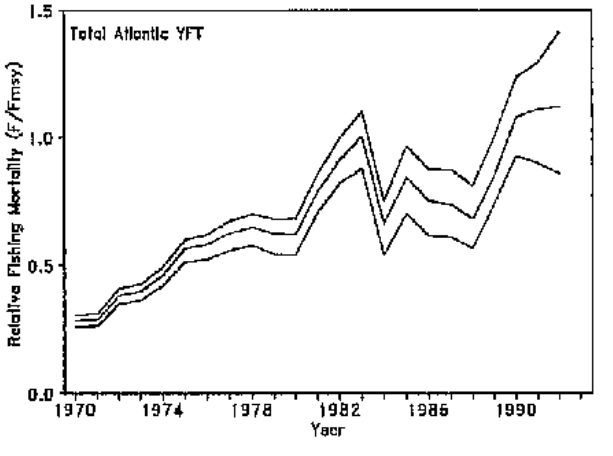
YFT-Fig. 10. Equilibrium production model curve for total Atlantic yellowfin (m=1, k=4). The model is fit to the nominal catch (in 1000 MT) and nominal effort (in fishing days) calculated from FIS and Spanish purse seiners (standardized to category 5 FIS purse seiners), considering an annual increase of 3% since 1981 in fishing power.



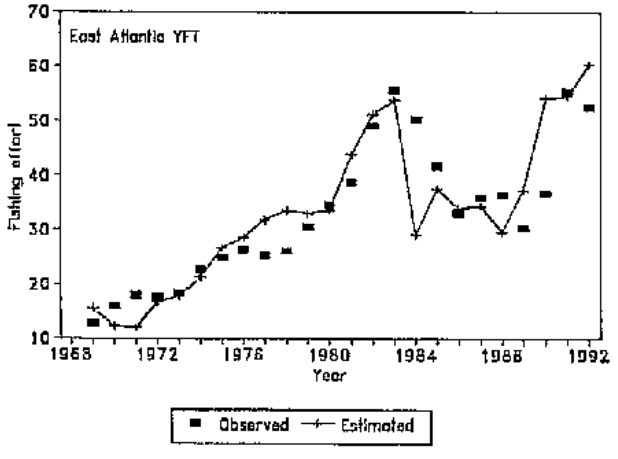
YFT-Fig. 11. Observed and estimated fishing effort from the non-equilibrium production model (ASPIC) of yellowfin tuna under the single-stock hypothesis.



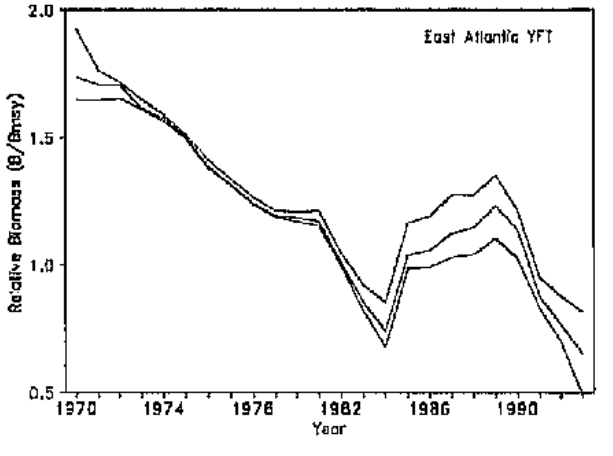
YFT-Fig. 12. Estimated relative biomass trajectory from the basic run (run A) made under the single-stock hypothesis. Bias-corrected estimates are shown with approximate 80% confidence intervals derived from bootstrapping.



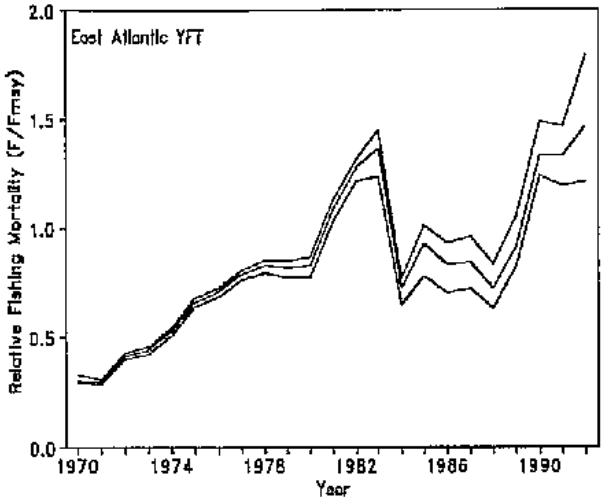
YFT-Fig. 13. Estimated trajectory of relative fishing mortality rate from the basic run (run A) made under the single-stock hypothesis. Bias-corrected estimates are shown with approximate 80% confidence intervals derived from bootstrapping.



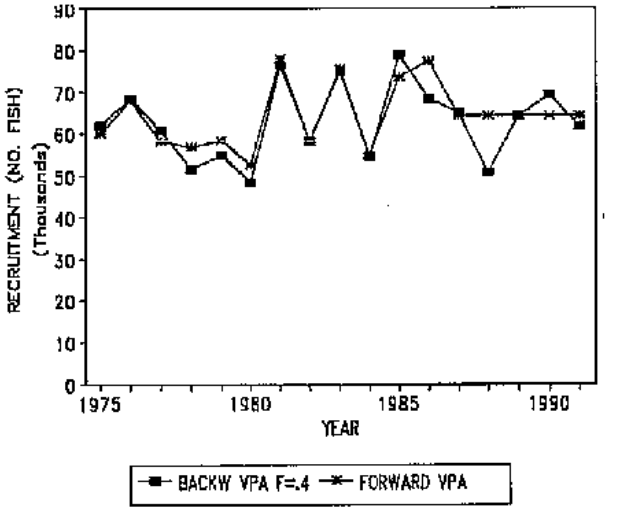
YFT-Fig. 14. Observed and estimated fishing effort from non-equilibrium production model of an east Atlantic stock under the two-stock hypothesis. Identified as run D in text.



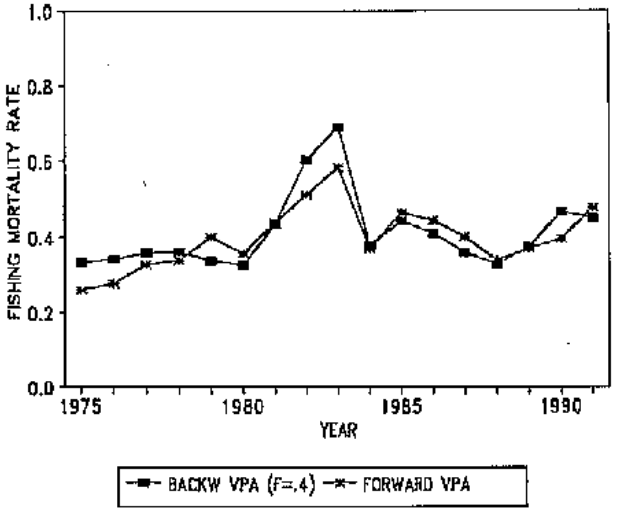
YFT-Fig. 15. Estimated relative biomass trajectory from production model run D. This model is of an east Atlantic stock under the two-stock hypothesis. Bias-corrected estimates are shown with approximate 80% confidence intervals derived from bootstrapping.



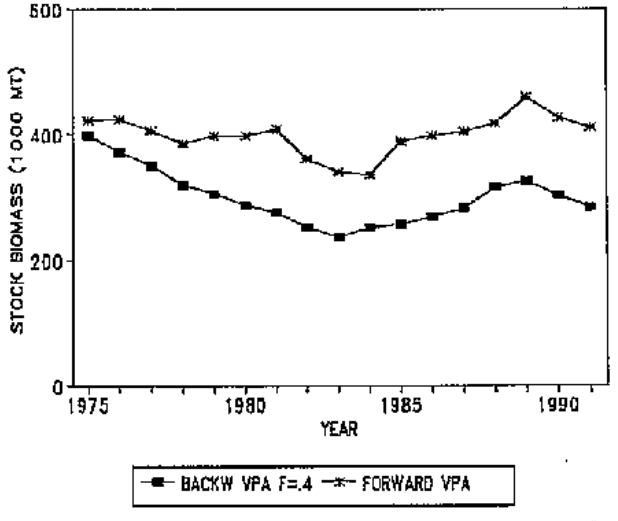
YFT-Fig. 16. Estimated trajectory of relative fishing mortality rate from run D. This model is of an east Atlantic stock under the two-stock hypothesis. Bias-corrected estimates are shown with approximate 80% confidence intervals derived from bootstrapping.



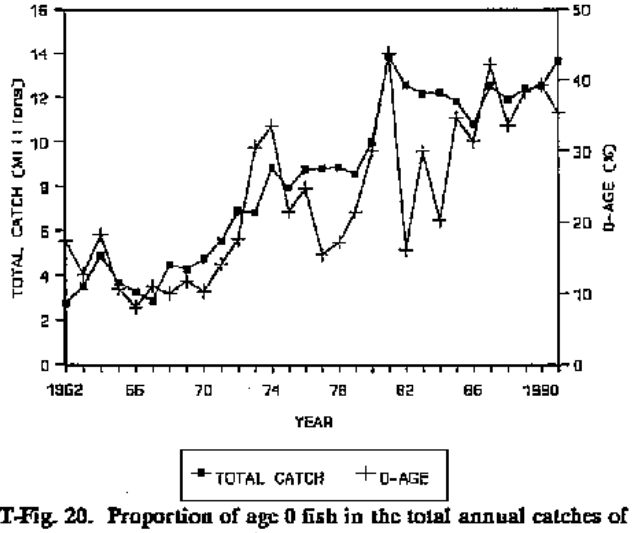
YFT-Fig. 17. Comparison of total Atlantic yellowfin recruitment estimated by backward and forward VPA.



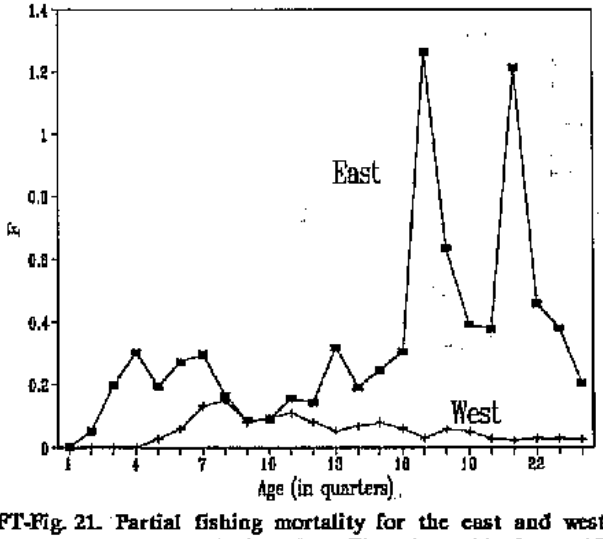
YFT-Fig. 18. Comparison of total Atlantic mean fishing mortality rate (ages 1-4), estimated by backward and forward VPA.



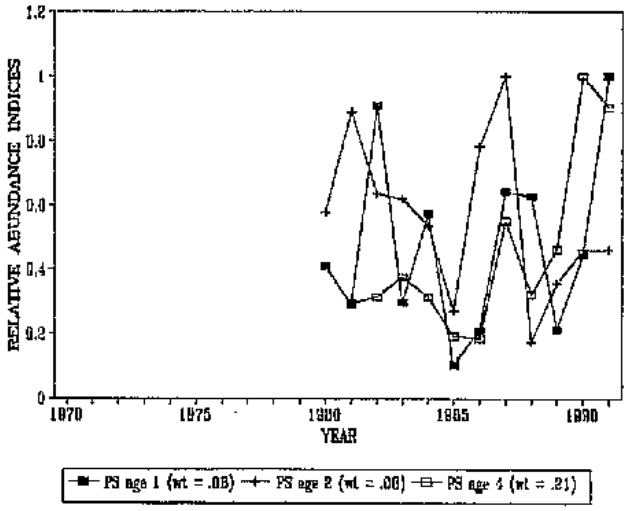
YFT-Fig. 19. Comparison of total Atlantic yellowfin tuna biomass, estimated by backward and forward VPA.



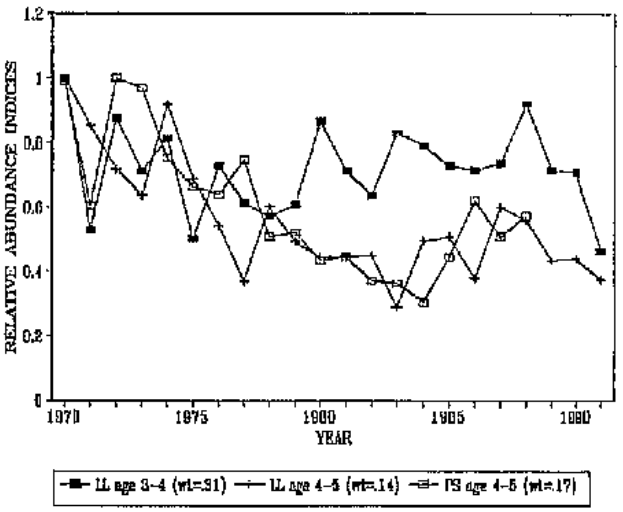
YFT-Fig. 20. Proportion of age 0 fish in the total annual catches of the east Atlantic purse seine fleets.



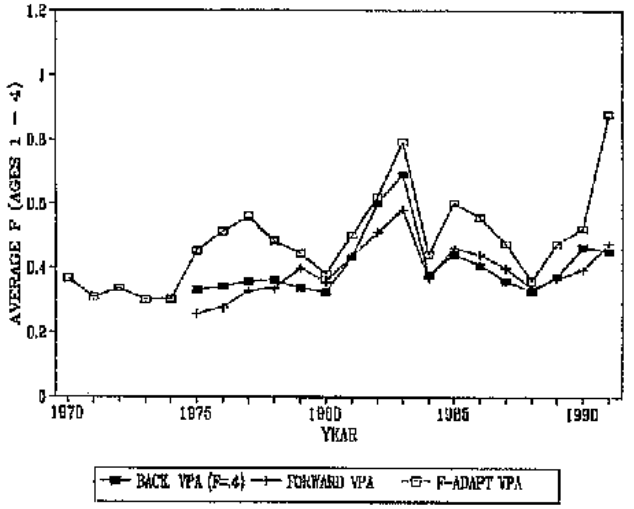
YFT-Fig. 21. Partial fishing mortality for the east and western Atlantic, obtained from Fs estimated by forward VPA for the total Atlantic.



YFT-Fig. 22. Relative standardized catch rates of FIS and Spanish purse seine vessels, assigned to specific ages. The relative weighting of each index in the final model is shown in parentheses.

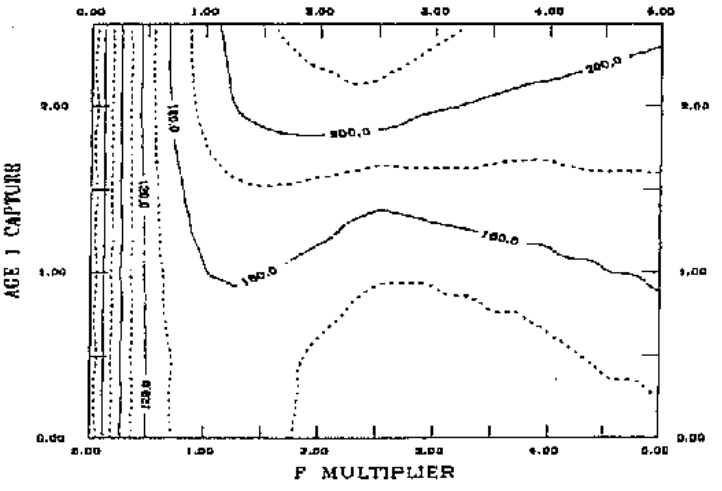


YFT-Fig. 23. Relative standardized catch rates of Japanese longline vessels, assigned to specific ages, and of FIS and Spanish purse seine vessels. The relative weighting of each index in the final model is shown in parentheses.

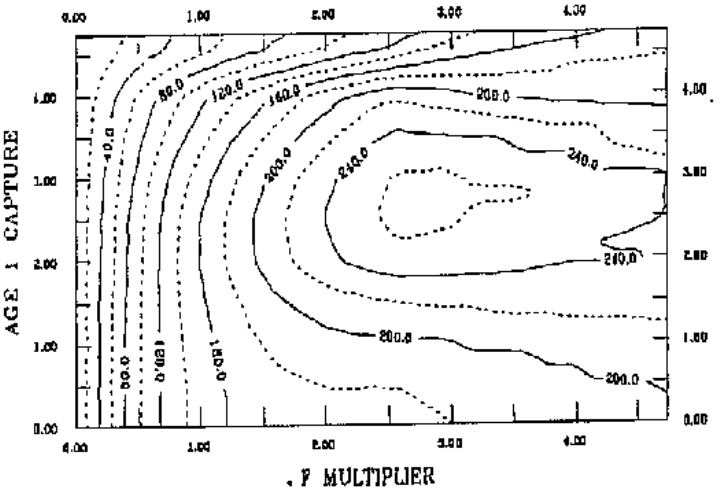


YFT-Fig. 24. Comparison of total Atlantic mean fishing mortality rates (ages 1-4), estimated by backward and forward VPA and F-ADAPT.

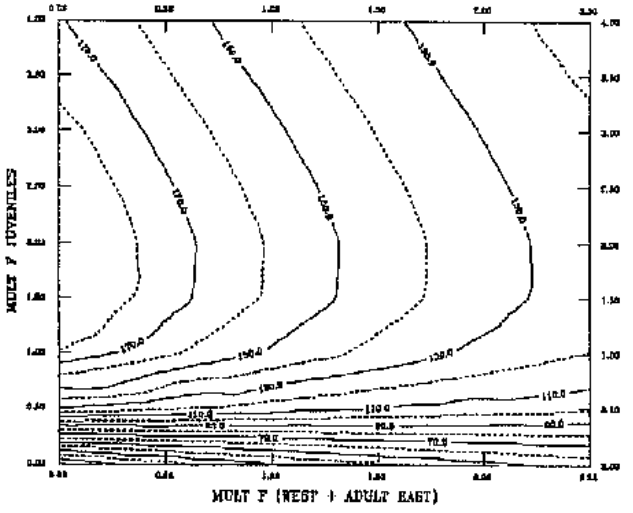
(a) With recruit of 64.4 million fish



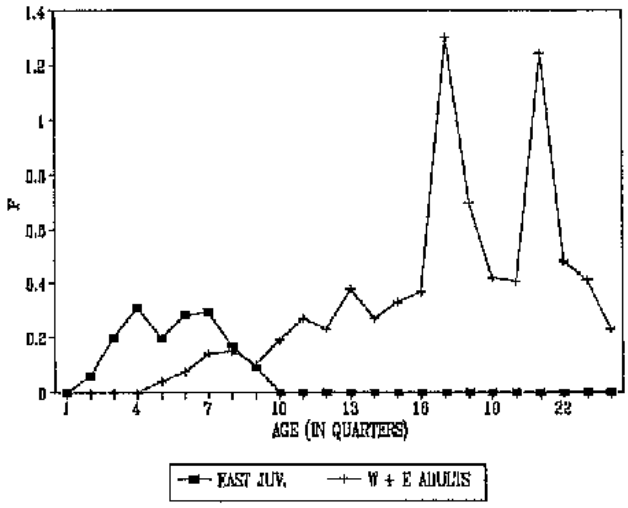
(b) With recruit of 87.7 million fish



YFT-Fig. 25. Yield per recruit of 64.4 million fish which corresponds to high exploitation (a) and of 87.7 million fish which corresponds to low exploitation (b).

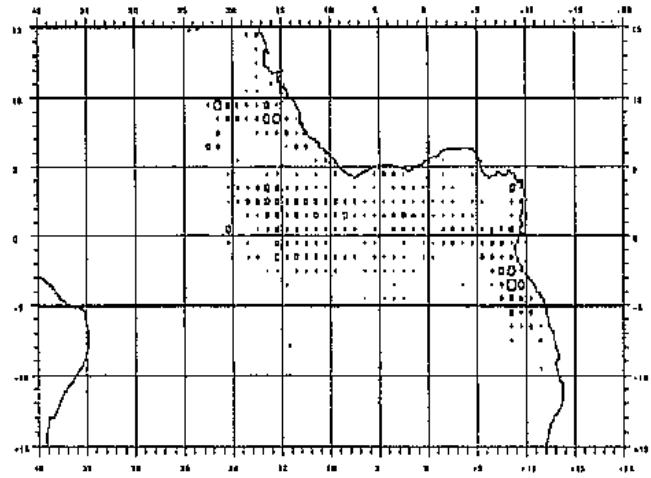


YFT-Fig. 26. Yield of the west Atlantic + east Atlantic adult yellowfin, as a function of fishing mortality on the juvenile stock in the east Atlantic.

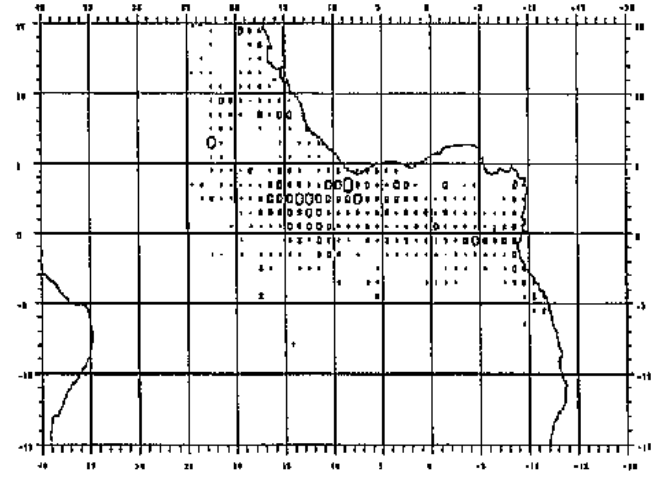


YFT-Fig. 27. Partial fishing mortality for juveniles in the east Atlantic and west Atlantic + adult stock in the east Atlantic, estimated by forward VPA for the total Atlantic.

(a) 1989

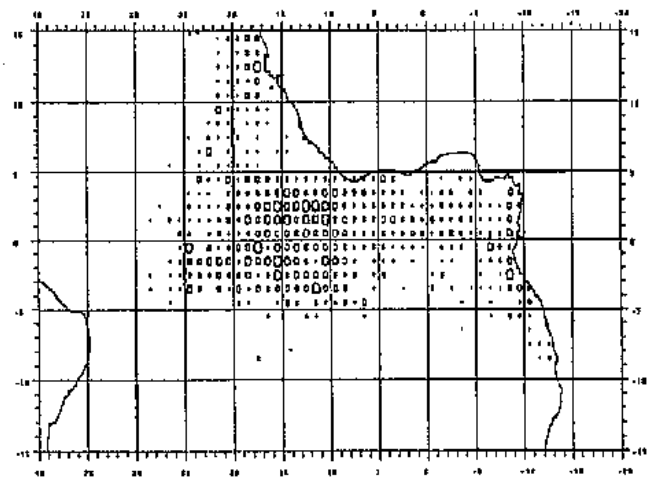


(b) 1990

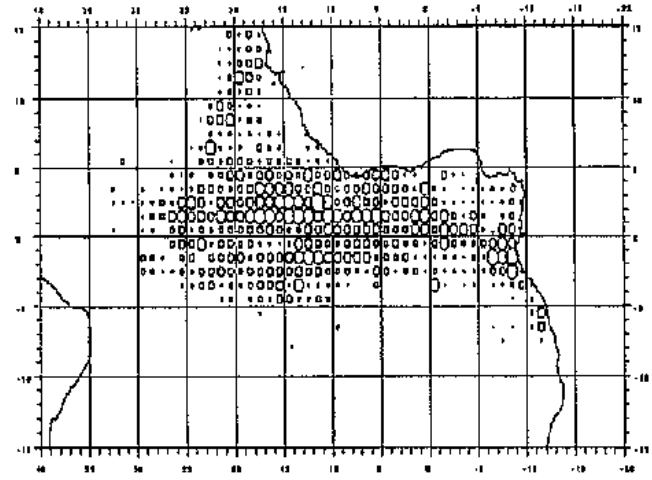


BIT-Fig. 1. Geographical distribution of bigeye tuna catches by FIS and Spanish purse seiners, 1989 and 1990.

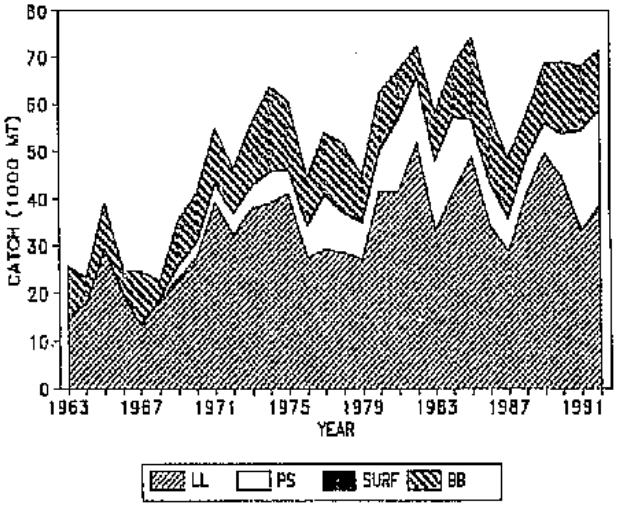
(a) 1991



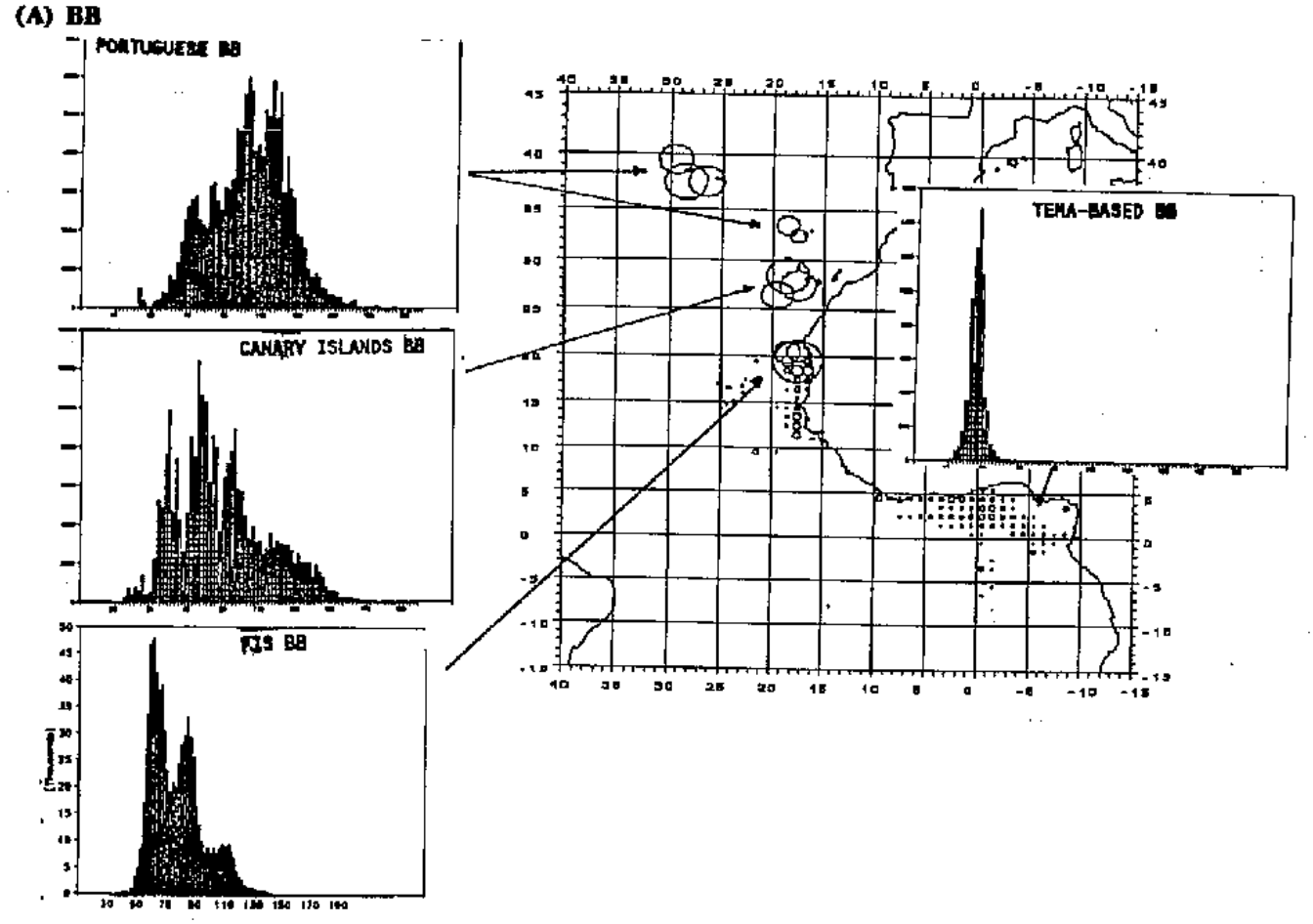
(b) 1992

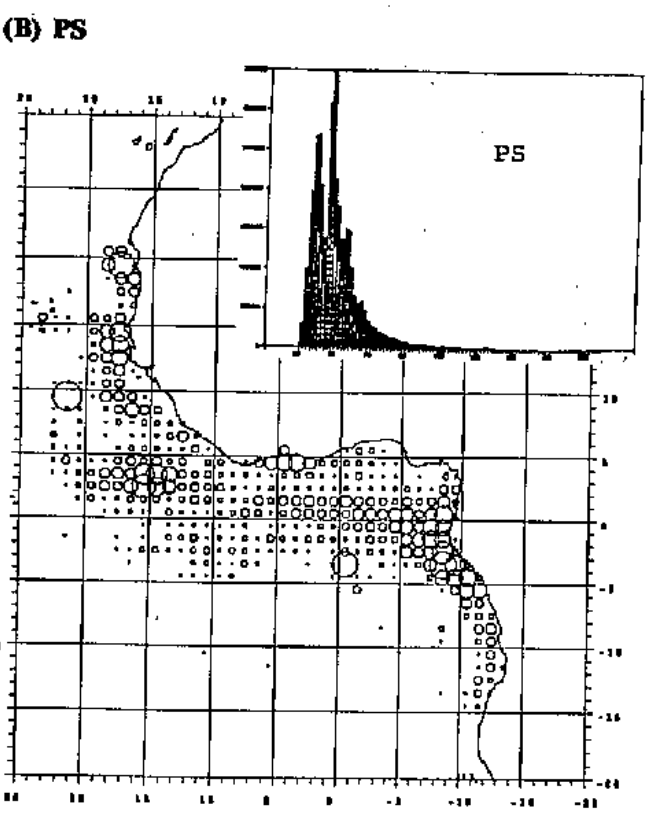


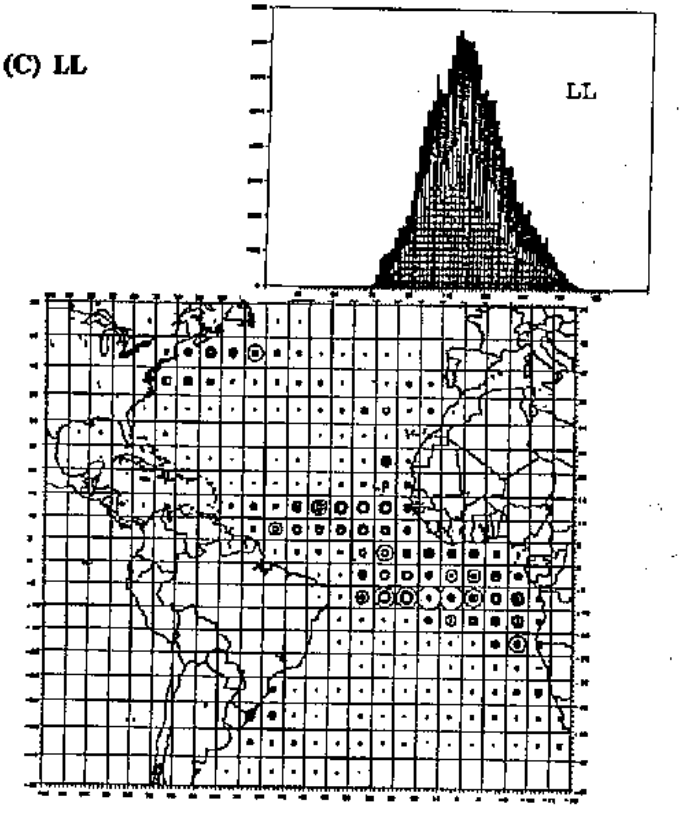
BET-Fig. 2. Geographical distribution of bigeye tuna catches by FIS and Spanish purse seiners, 1991 and 1992.



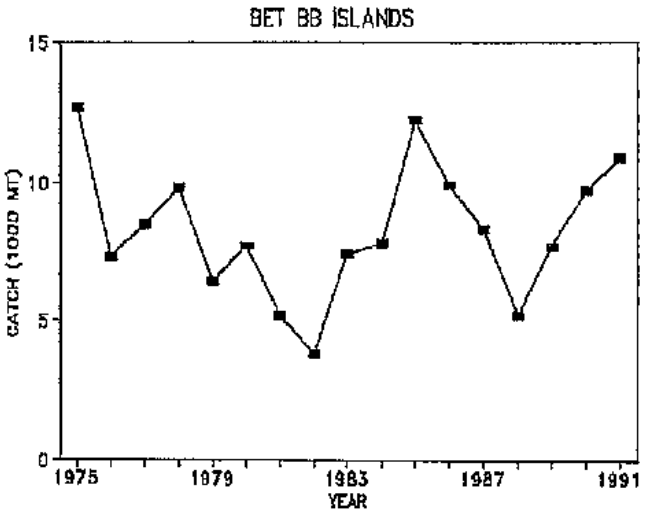
BIT-Fig. 3. Total bigeye catches (in 1000 MT) for the entire Atlantic Ocean, by major fishing gears.

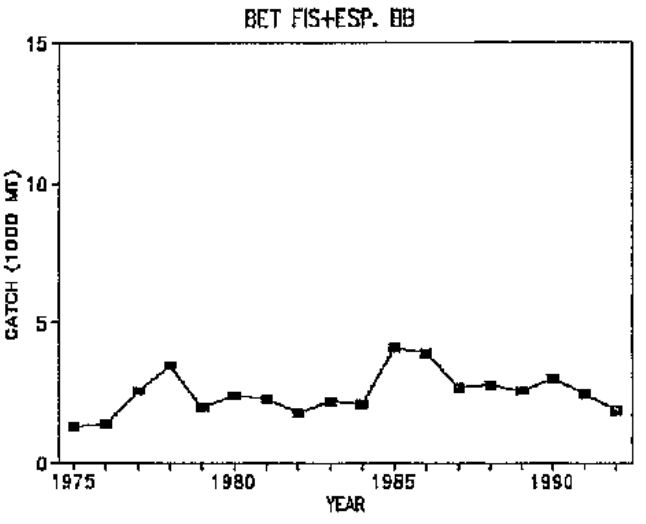


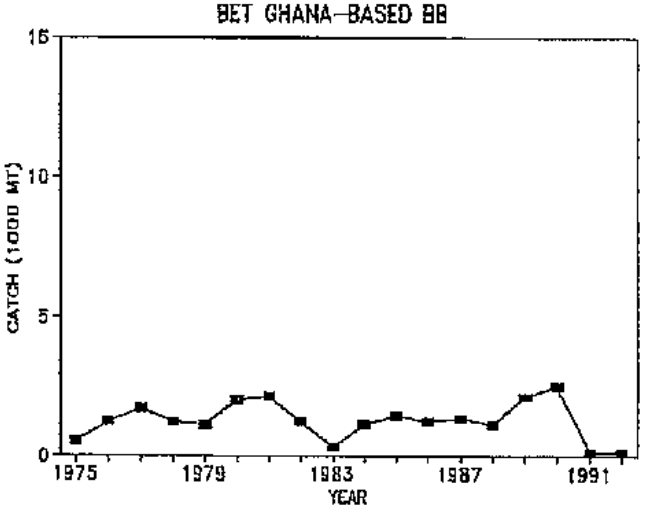


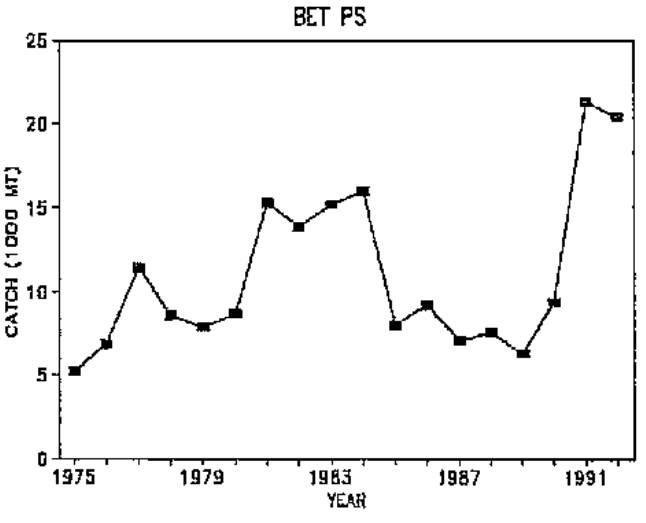


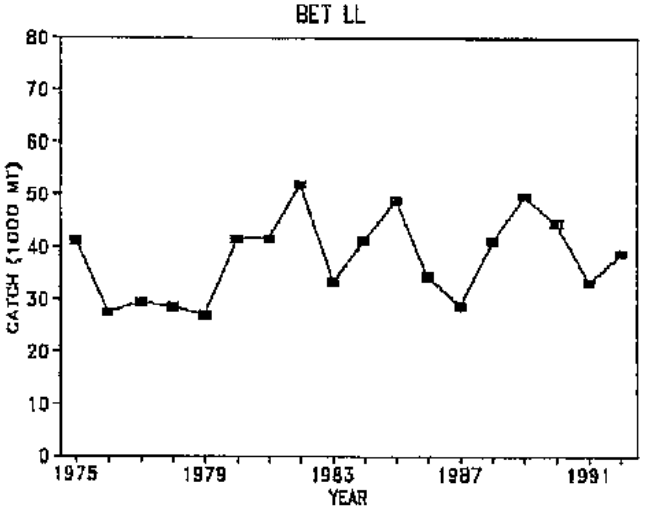
BET-Fig. 4. Areas of operation and size frequencies of the main bigeye fisheries in the Atlantic (A) baitboats, (B) purse seine, and (C) longline.



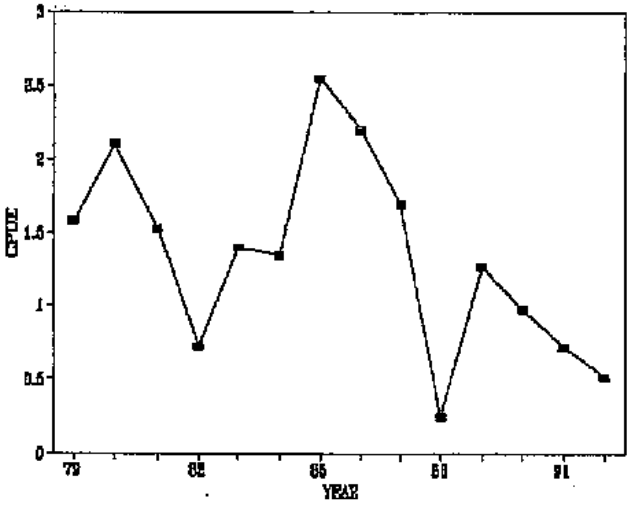




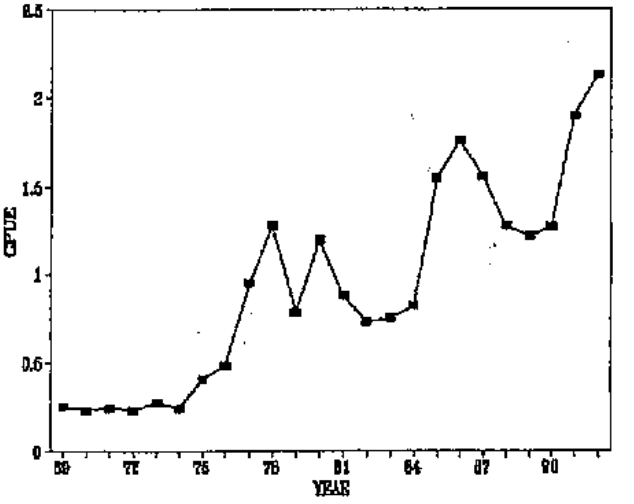




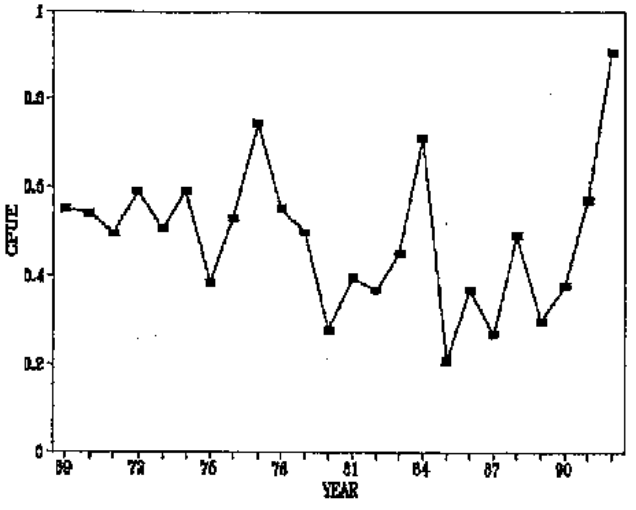
BET-Fig. 5. Annual catches of bigeye tuna by major fisheries.



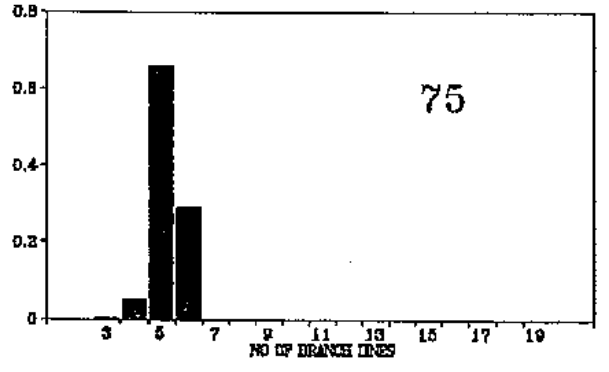
BET-Fig. 6. Bigeye tuna CPUE trends of Azorian baitboats (2nd quarter), 1979 - 1992.

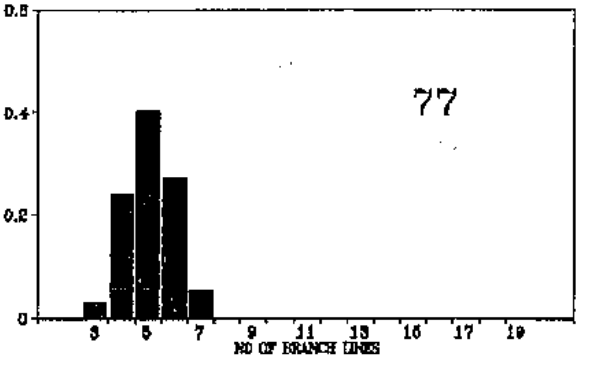


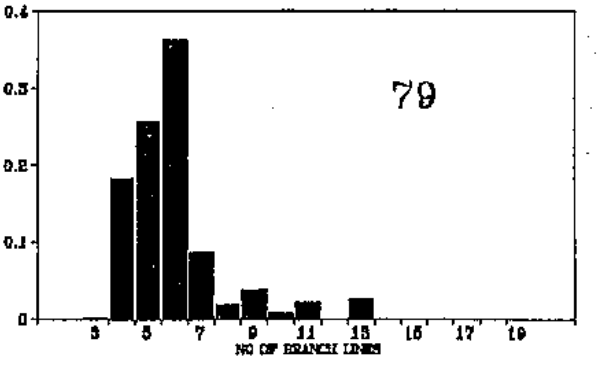
BET-Fig. 7. Bigeye tuna CPUE trends of Dakar-based baitboats, 1969 - 1992.



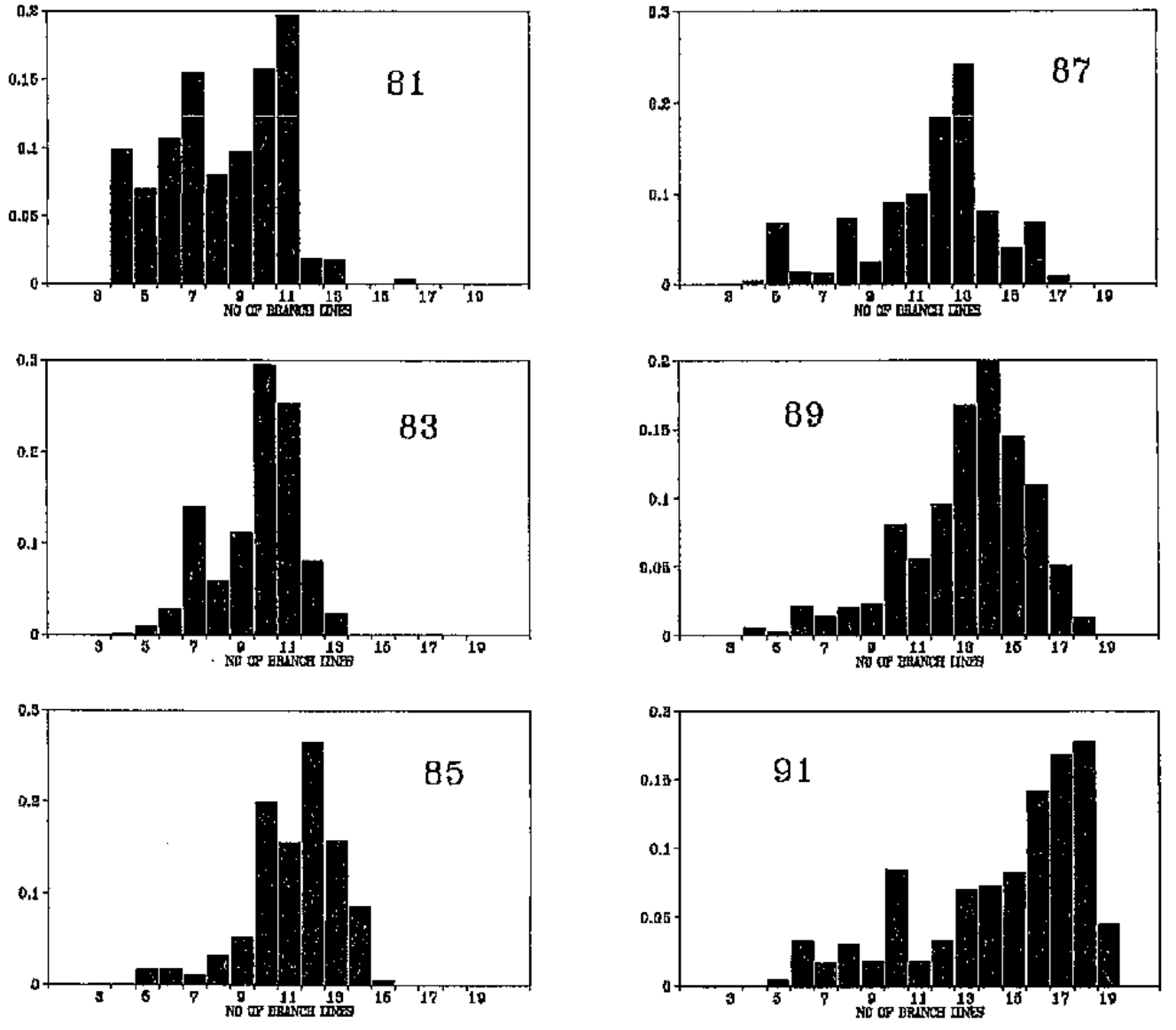
BET-Fig. 8. Bigeye tuna CPUE trends of FIS purse seiners, 1969 - 1992.



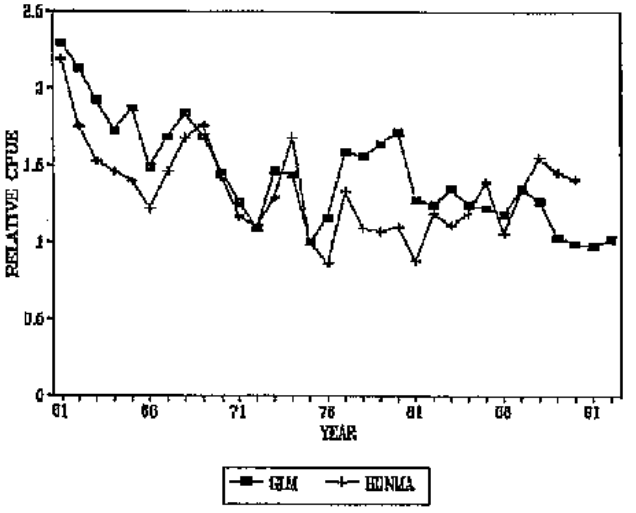




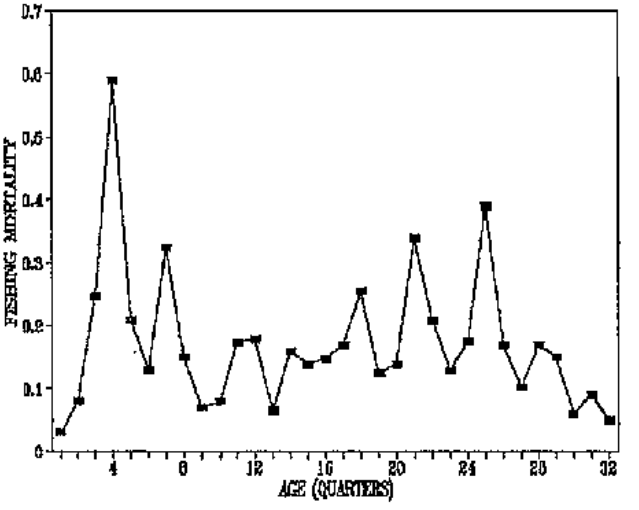
BET-Fig. 9. Relative frequency of hooks deployed by the Japanese longline fishery in the tropical and subtropical Atlantic, by the number of branch lines between floats, 1975 - 1991.



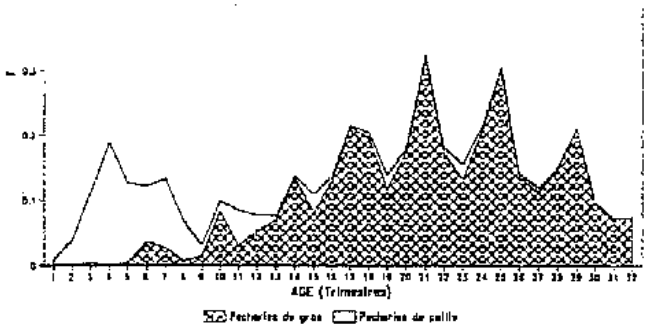
BET-Fig. 9. Continued...



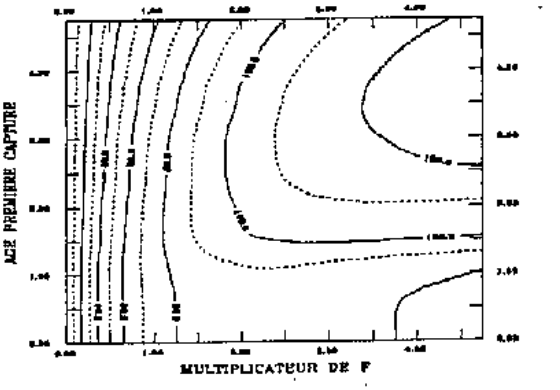
BET-Fig. 10. Standardized CPUE (GLM and Honma) of Atlantic bigeye tuna from the Japanese longline fishery. Scaled to 1975.



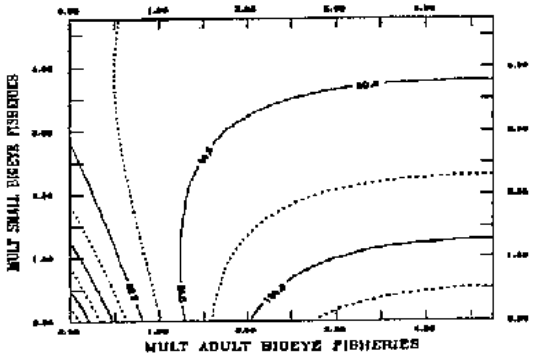
BET-Fig. 11. Bigeye tuna fishing mortality, by ages, calculated by cohort analysis, for the 1991 fishing year, all gears combined.



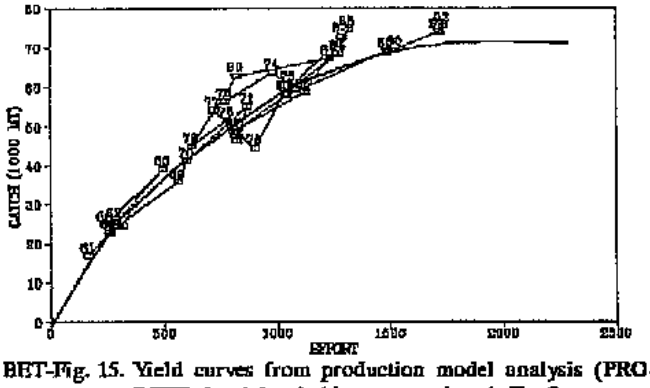
BET-Fig. 12. Fishing mortality (F), by quarterly age for the fisheries on small and large bigeye tuna, for the 1986-1990 period.



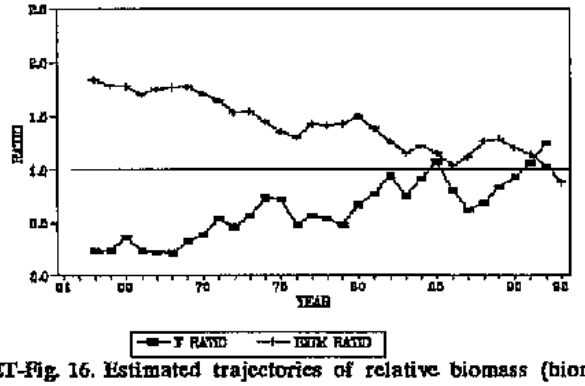
BET-Fig. 13. Yield-per-recruit curves (Ricker model). Yield estimated for the Atlantic bigeye tuna stock, for the fishing year 1991.



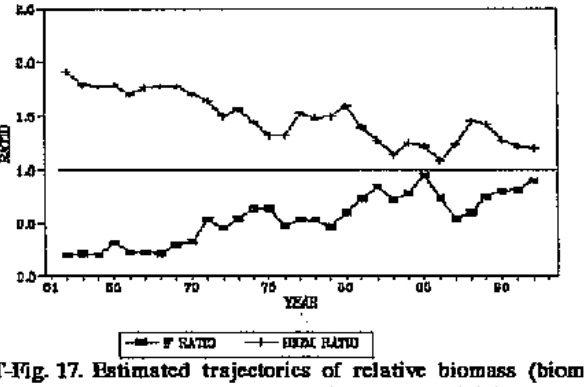
BET-Fig. 14. Multi-gear yield-per-recruit curves. Yield estimated for the Atlantic bigeye tuna stock, for the fishing year 1991.



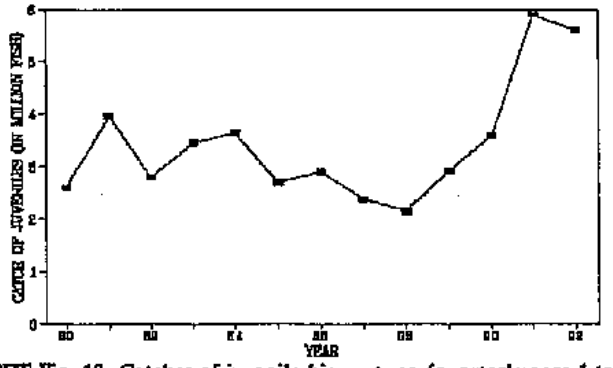
BET-Fig. 15. Yield curves from production model analysis (PRODFIT) for Atlantic bigeye tuna (m=1, K=6).



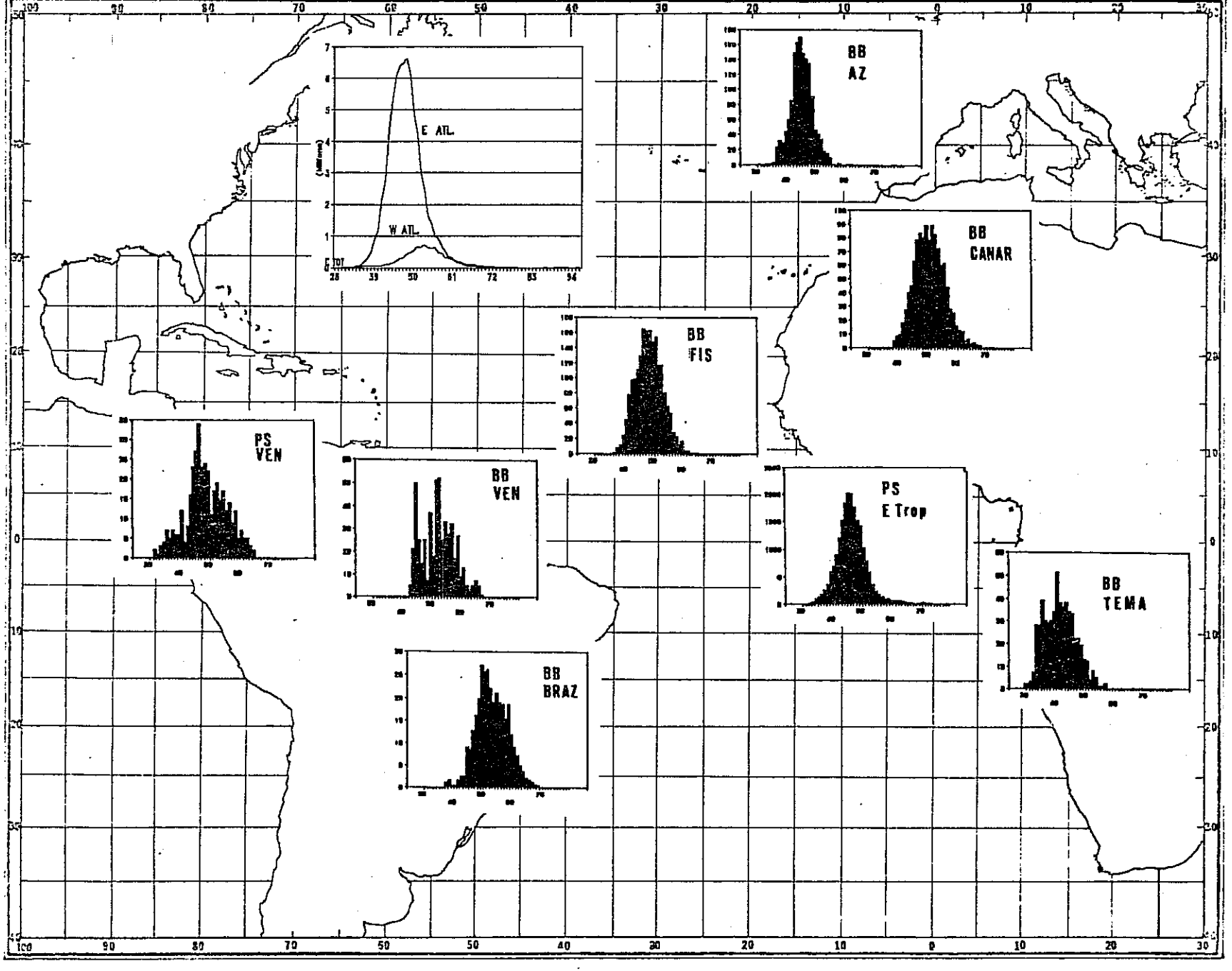
BET-Fig. 16. Estimated trajectories of relative biomass (biomass divided by B_{MSY}, the biomass at which MSY can be obtained) and relative fishing mortality (fishing mortality rate F divided by the F that provides MSY if the stock is at B_{MSY}). These trajectories result from a non-equilibrium production model of bigeye tuna under the total Atlantic hypothesis, based on a 1961-92 time series.



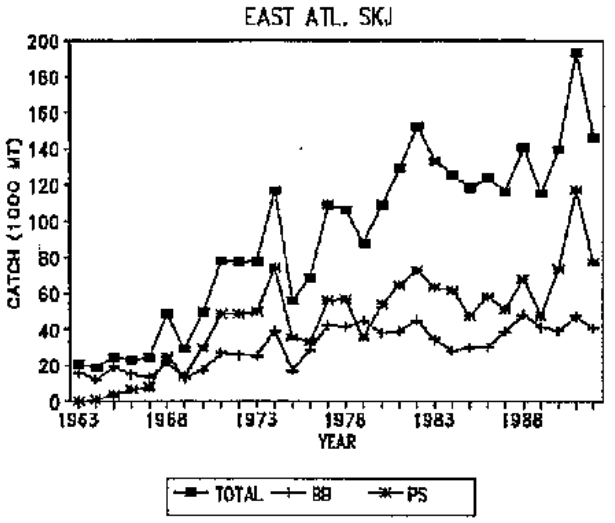
BET-Fig. 17. Estimated trajectories of relative biomass (biomass divided by B_{MSY}, the biomass at which MSY can be obtained) and relative fishing mortality (fishing mortality rate F divided by the F that provides MSY if the stock is at B_{MSY}). These trajectories result from a non-equilibrium production model of bigeye tuna under the total Atlantic hypothesis, based on two time series, 1961-74 and 1975-92.



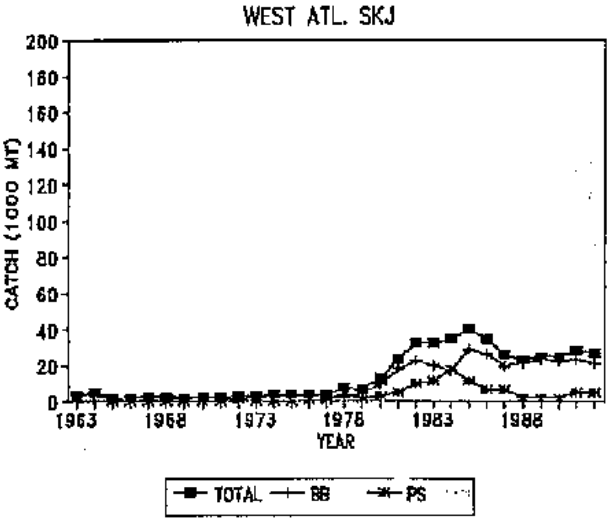
BET-Fig. 18. Catches of juvenile bigeye tuna (quarterly ages 1 to 8) from 1980 to 1992.



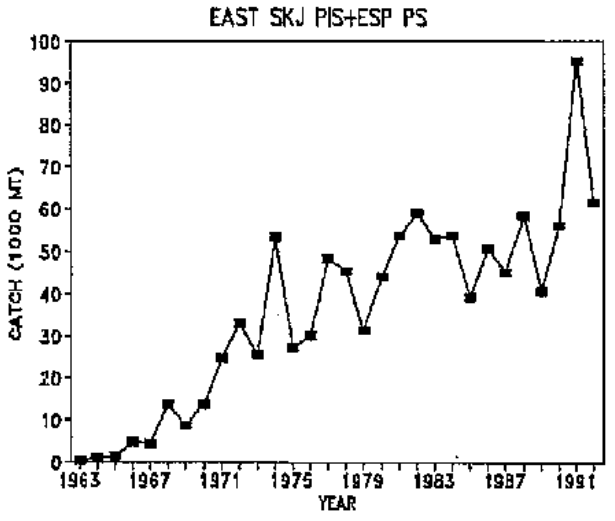
SKJ-Figure 1. **Size distribution of skipjack catches by the principal Atlantic fisheries.**

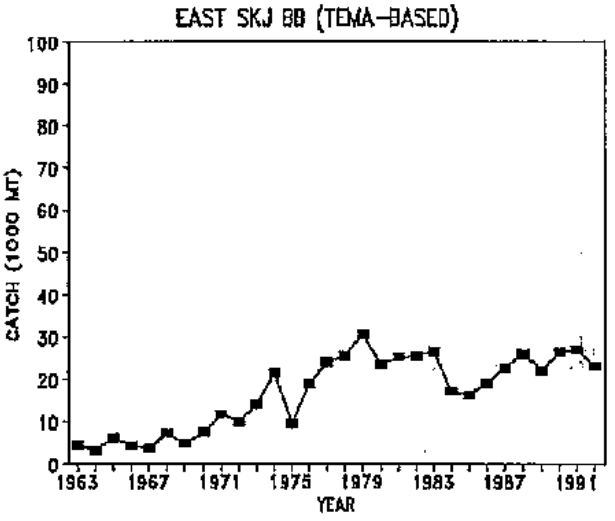


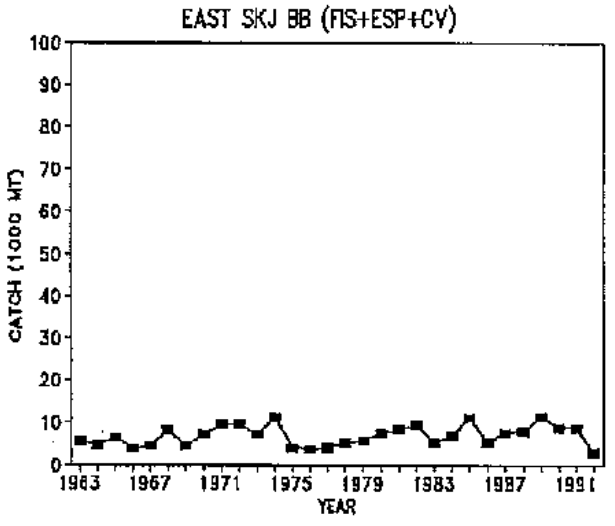
SKJ-Fig. 2. Skipjack catches (in 1000 MT) in the east Atlantic Ocean, by gear.

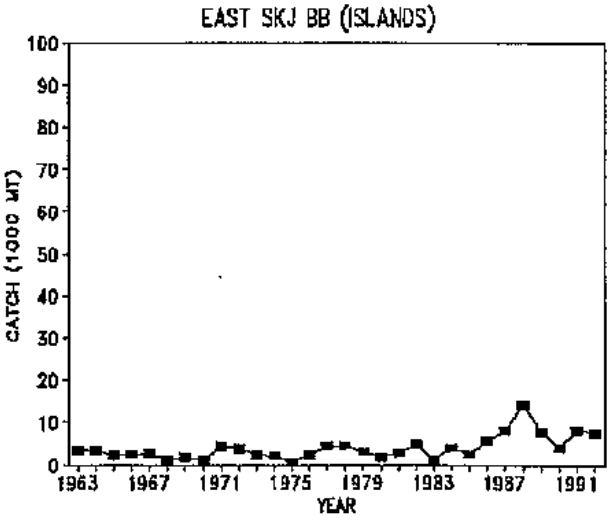


SKJ-Fig. 3. Skipjack catches (in 1000 MT) in the west Atlantic Ocean, by gear.

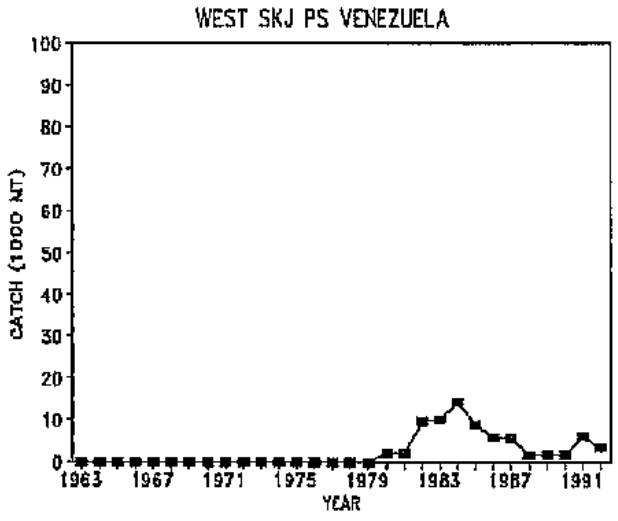


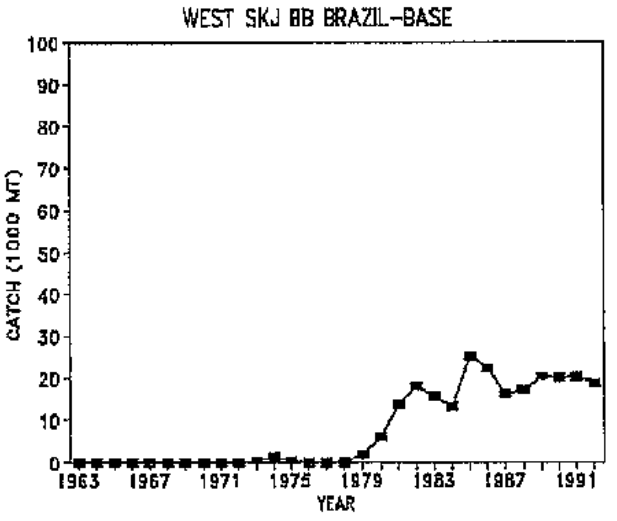


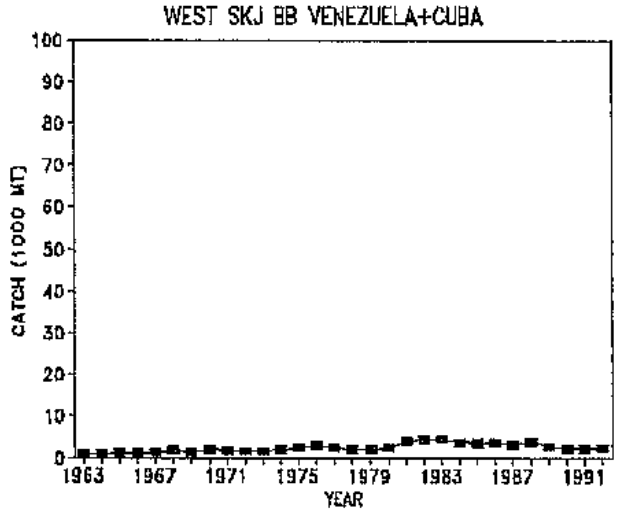




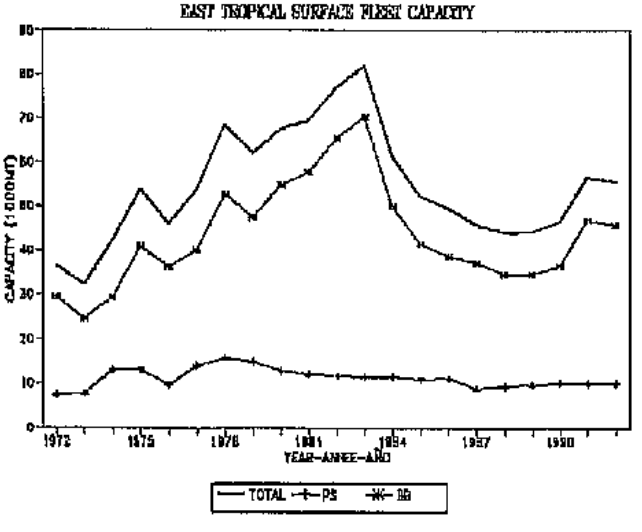
SKJ-Fig. 4. Annual catches (in 1000 MT) by the principal skipjack fisheries in the east Atlantic.



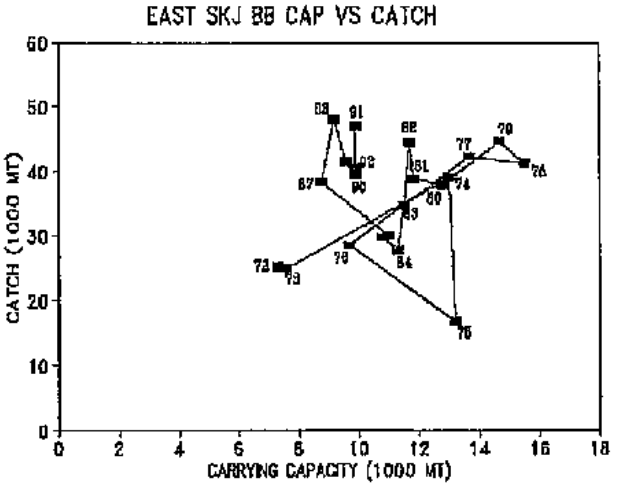




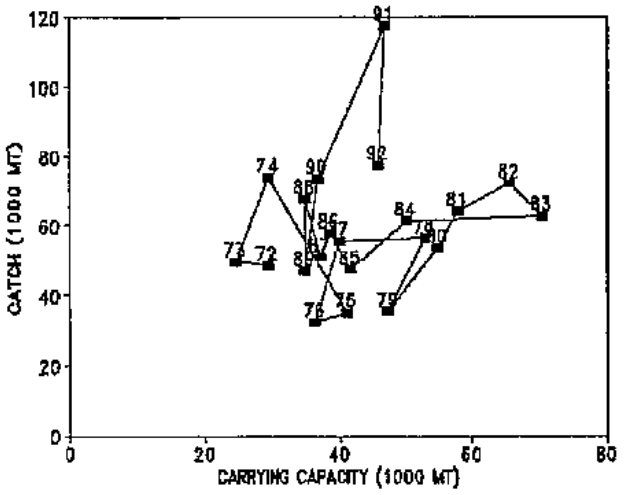
SKJ-Fig. 5. Annual skipjack catches (in 1000 MT) by the principal fisheries in the west Atlantic.



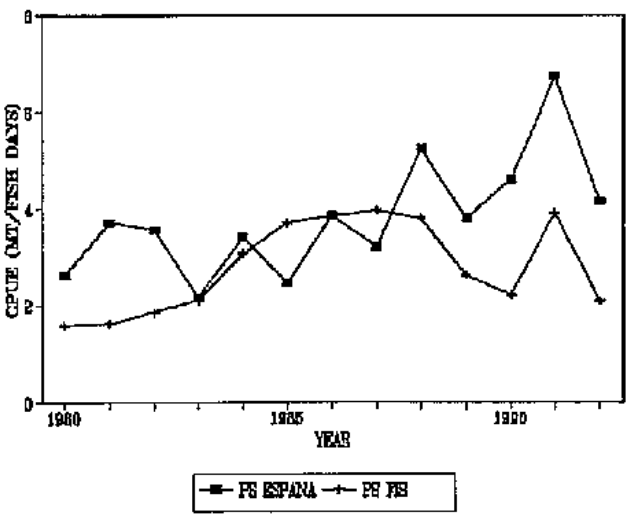
SKJ-Fig. 6. Carrying capacity (in 1000 MT) of the total surface, purse seine and baitboat fishing fleets in the east tropical Atlantic, 1972-1992.



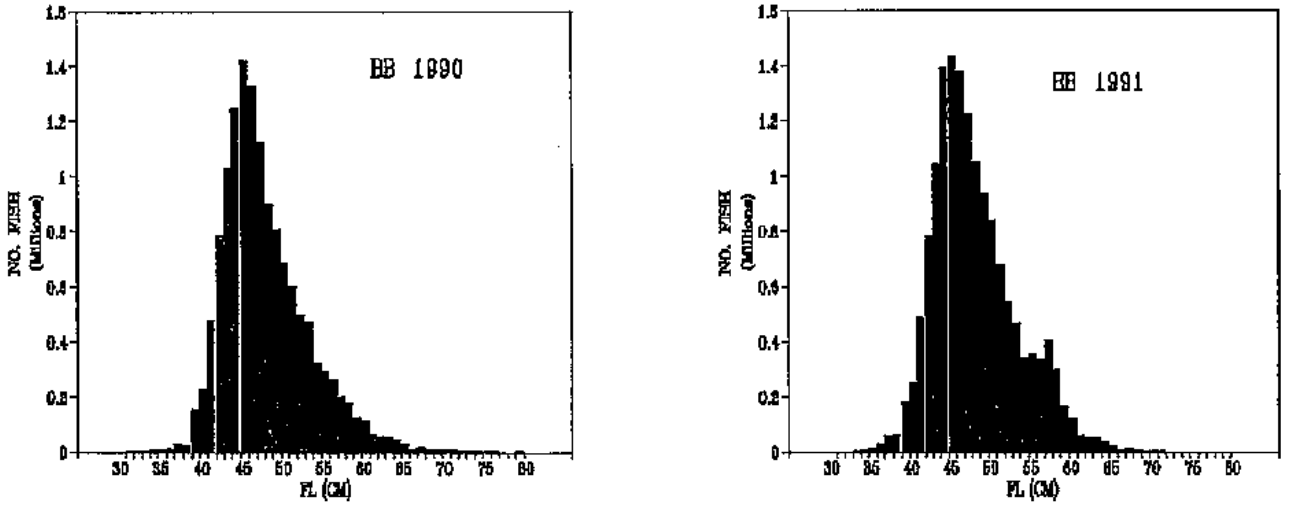
SKJ-Fig. 7. Skipjack catches vs. carrying capacity of the east Atlantic baitboat fleet.



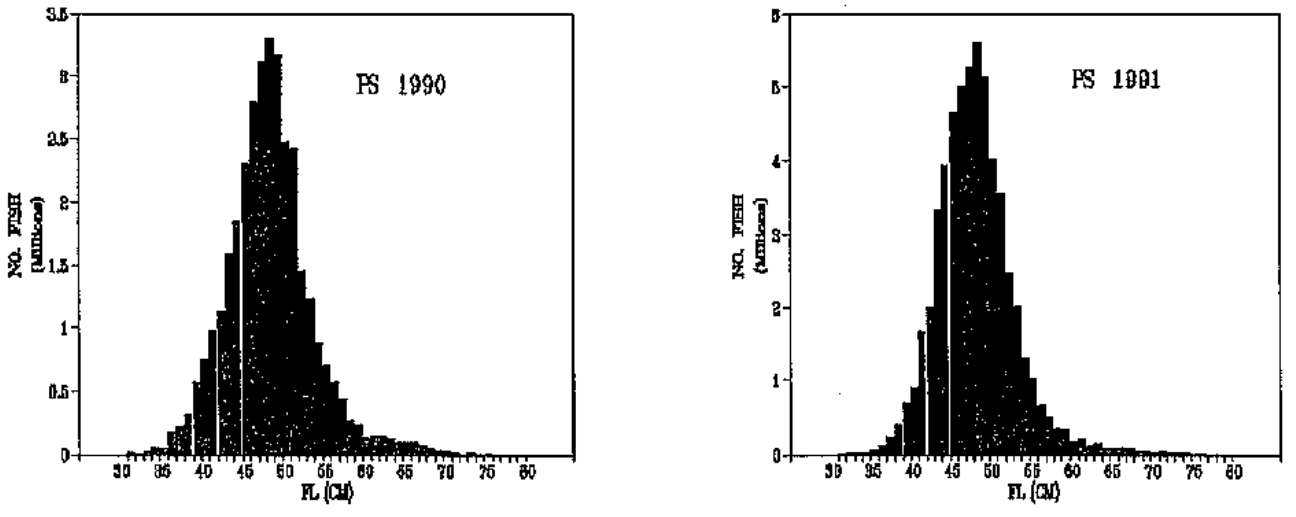
SKJ-Fig. 8. Skipjack catches vs carrying capacity of the east Atlantic purse seine fleet.



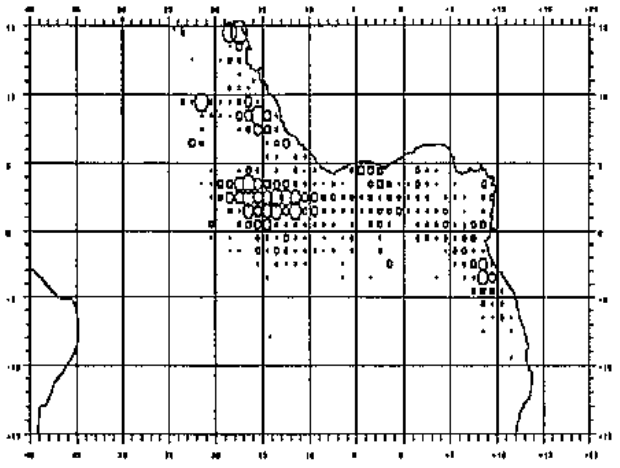
SKJ-Fig. 9. Annual CPUE (MT/days fishing) of the FIS and Spanish purse seine fleets in the east Atlantic, 1980 - 1992.



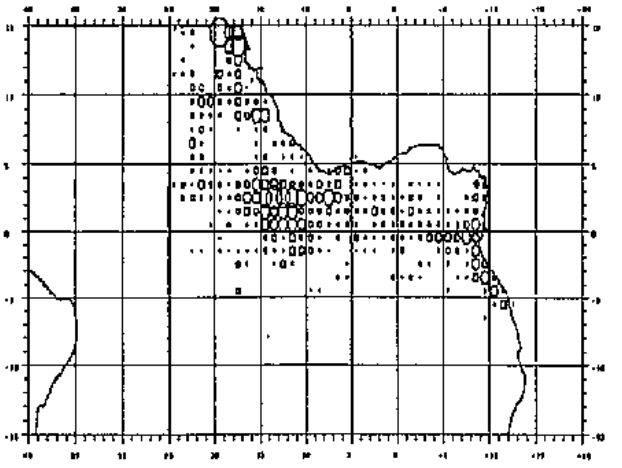
SKJ-Fig. 10. Size distributions of skipjack (1990-1991) caught by baitboat fisheries.



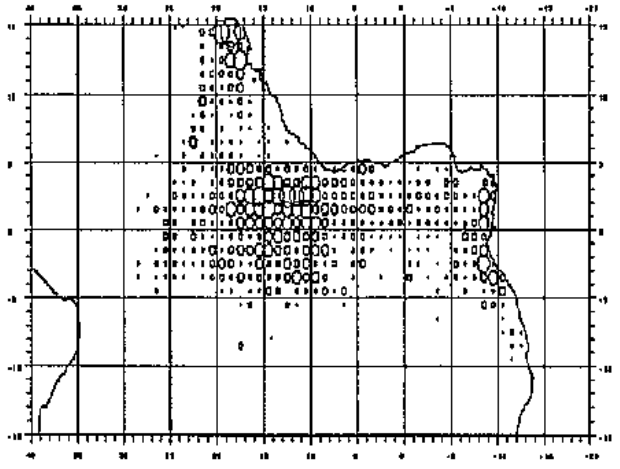
SKJ-Fig. 11. Size distributions of skipjack (1990-1991) caught by purse seine fisheries.



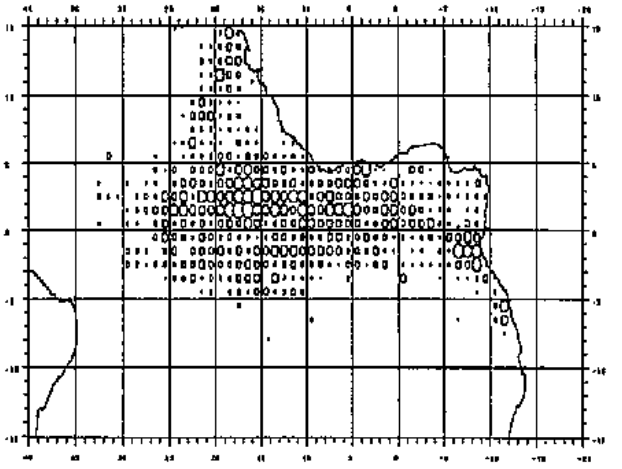
SKJ-Fig. 12. Geographical distribution of purse seine catches of skipjack in the east tropical Atlantic, 1989.



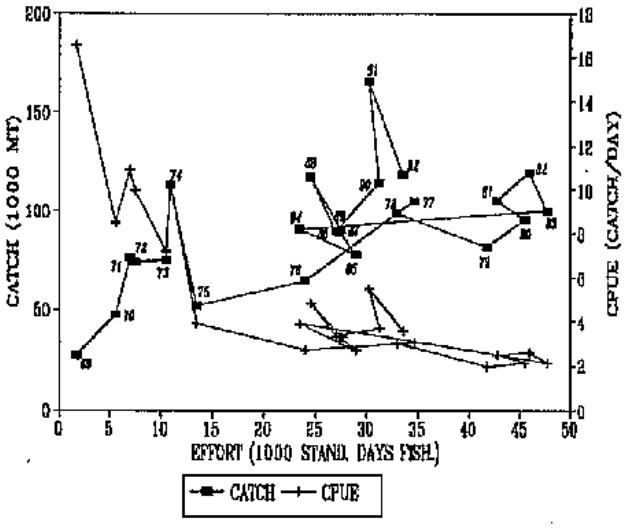
SKJ-Fig. 13. Geographical distribution of purse seine catches of skipjack in the east tropical Atlantic, 1990.



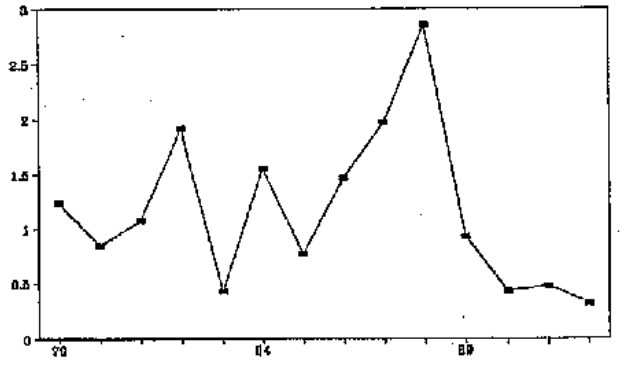
SKJ-Fig. 14. Geographical distribution of purse seine catches of skipjack in the east tropical Atlantic, 1991.



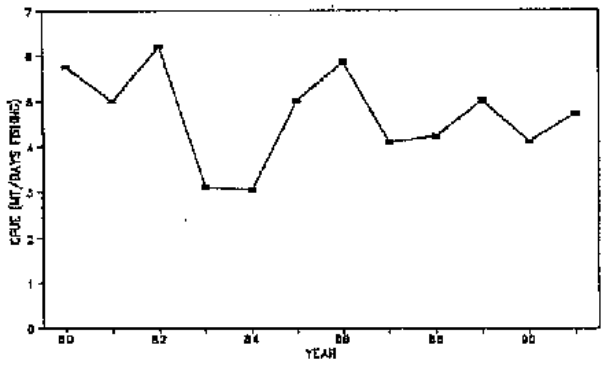
SKJ-Fig. 15. Geographical distribution of purse seine catches of skipjack in the east tropical Atlantic, 1992.



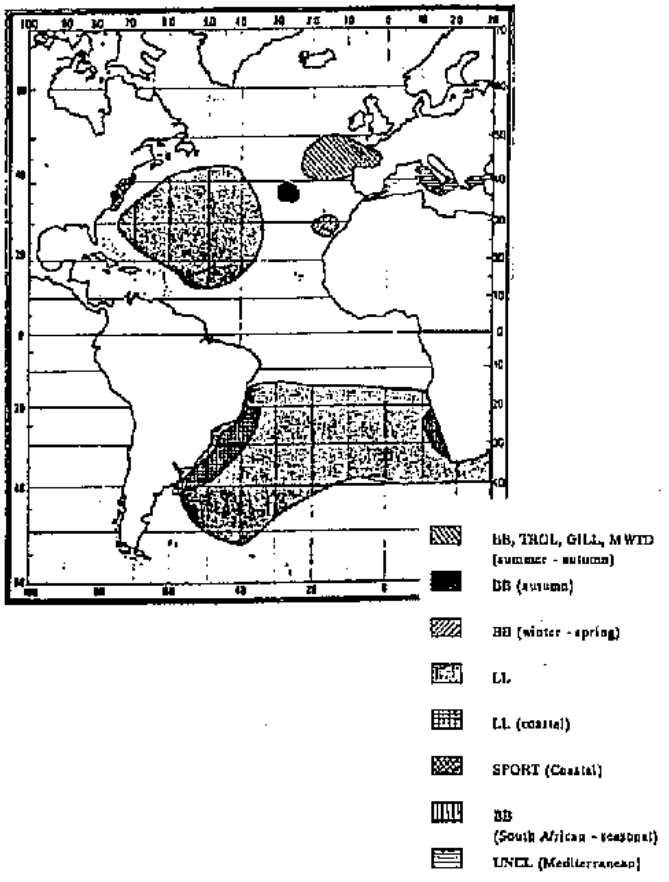
SKJ-Fig. 16. Catches and CPUE vs effort for the east Atlantic. (Total effort estimated from purse seine effort extrapolated to the total catch. For the 1969-1979 period, effort has been estimated from Spanish purse seine carrying capacity multiplying the annual carrying capacity by 0.34 (average conversion factor calculated as the relation of effective effort/carrying capacity. During the 1980-1992 period, effort is calculated in days fishing of FIS large purse seiners (400 MT), from FIS and Spanish purse seine effort).



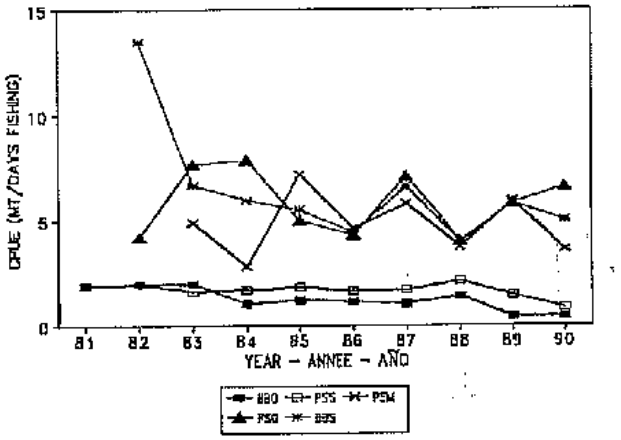
SKJ-Fig. 17. CPUE trends of skipjack by Azorian baitboats (third quarter), from 1979 to 1992.



SKJ-Fig. 19. Changes in CPUE (in MT/days fishing) in the Brazilian baitboat fishery, 1980 - 1991.

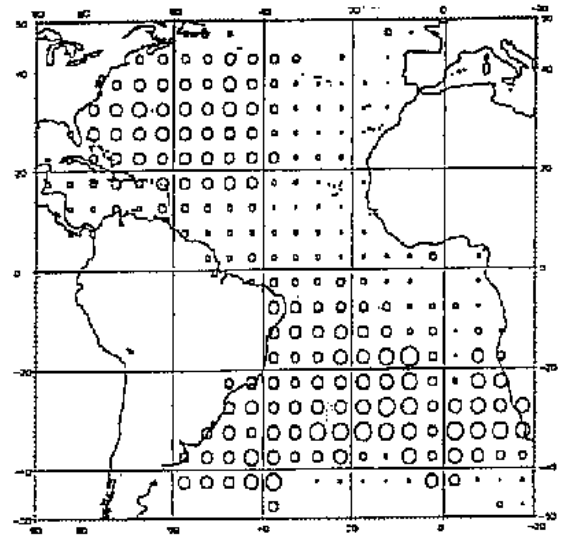


ALB-Fig. 1. Distribution of albacore fisheries in the Atlantic.

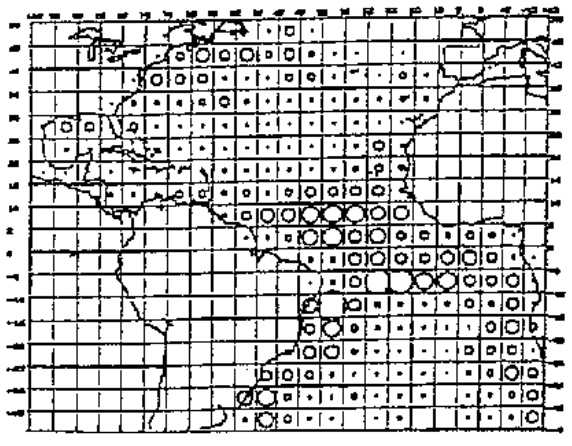


SKJ-Fig. 18. Skipjack CPUE for the different Venezuelan fleets, 1981-1990.

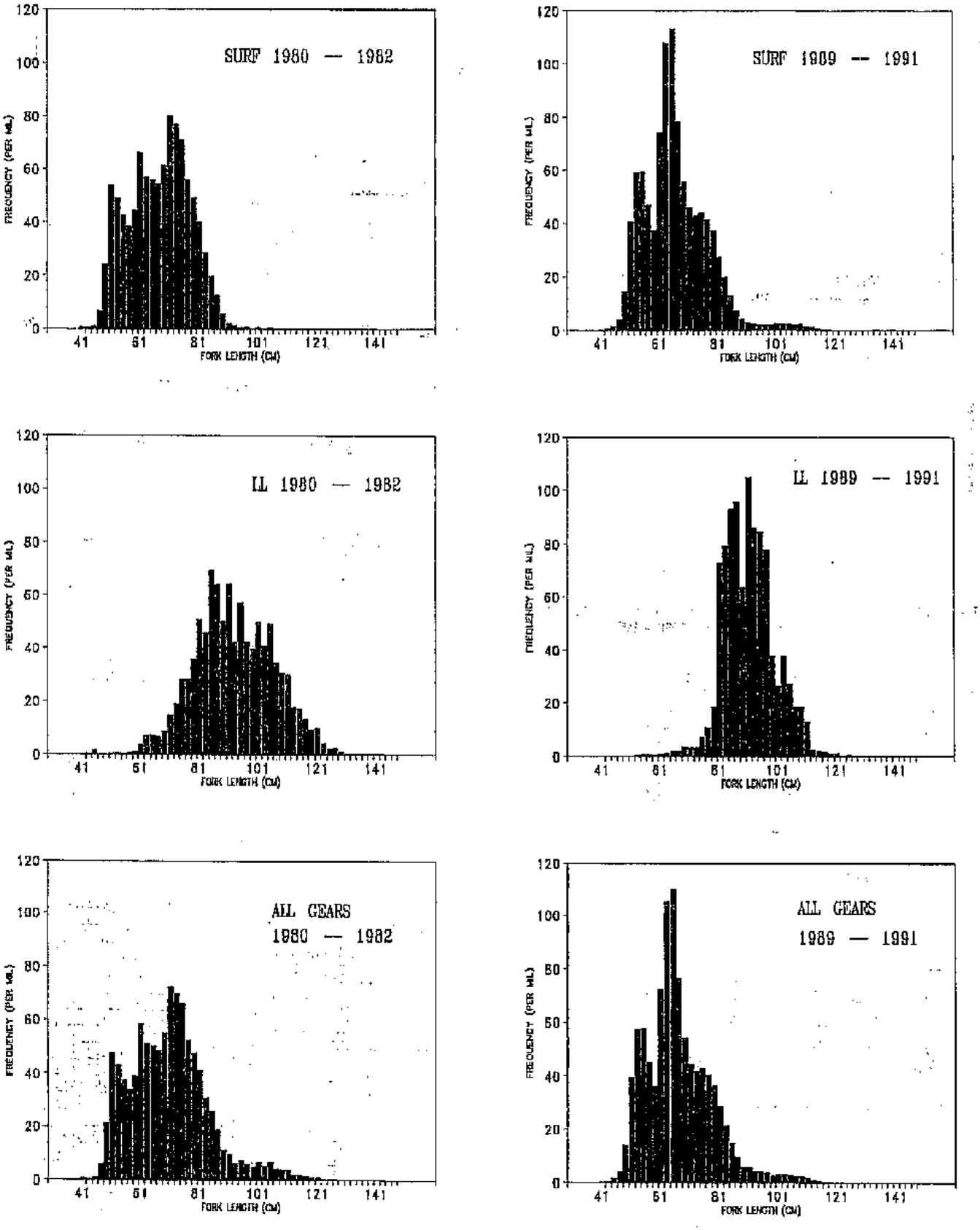
(a) Average albacore catch-rates (1960-1975)



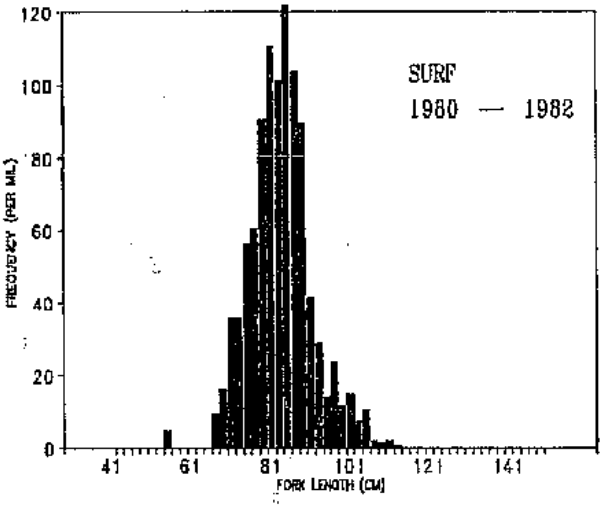
(b) Average fishing effort (1987-1991)

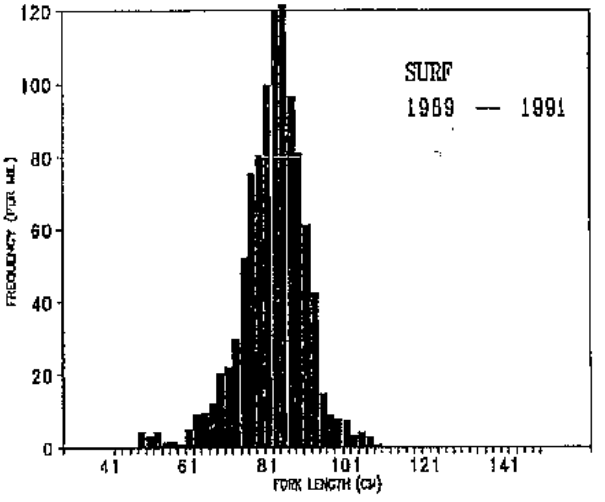


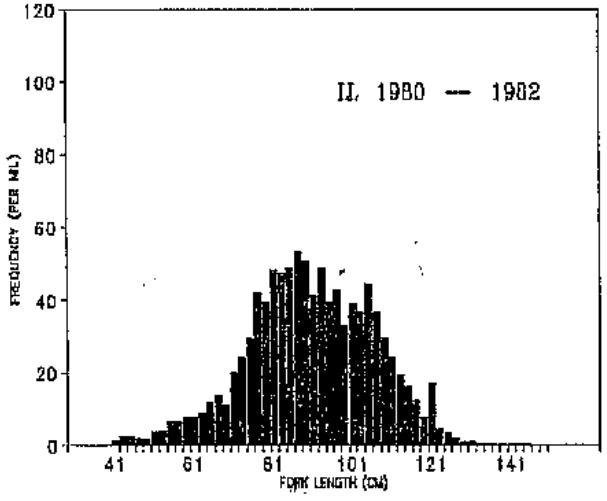
ALB-Fig. 2 Average distribution (1960-1975) of albacore catch-rates (a) and total fishing effort (1987-1991) for the Japanese longline fishery.

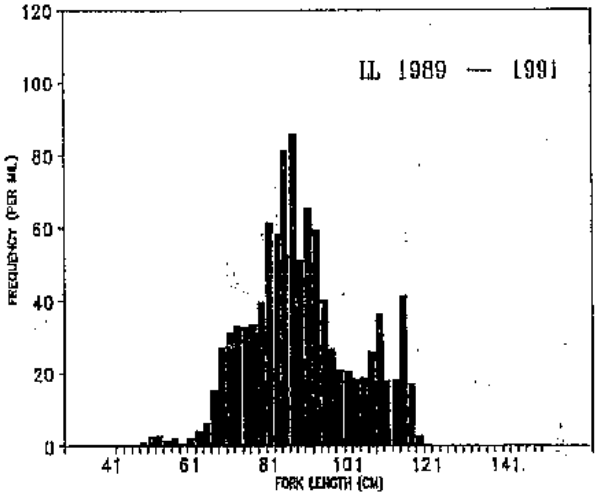


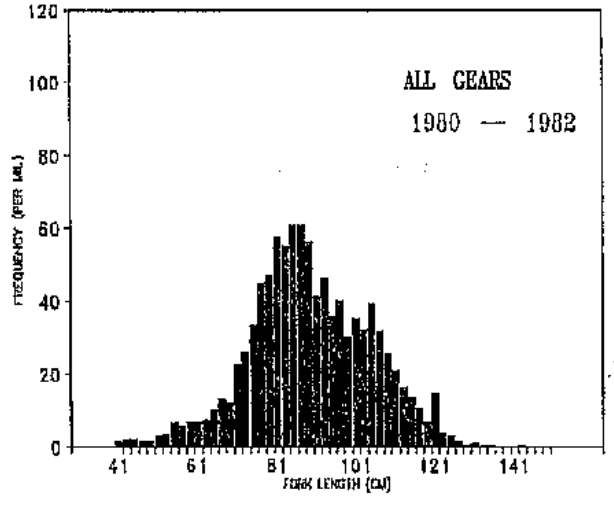
ALB-Fig. 3. Comparison of north Atlantic albacore catch at size for two periods (1980-1982 vs 1989-1991), for surface, longline and all gears combined.

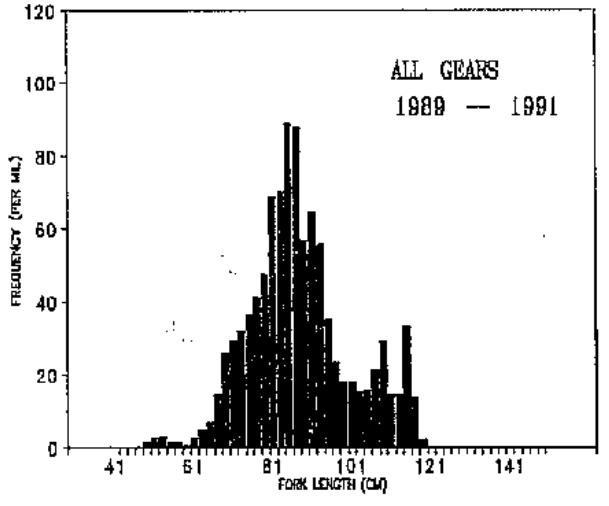




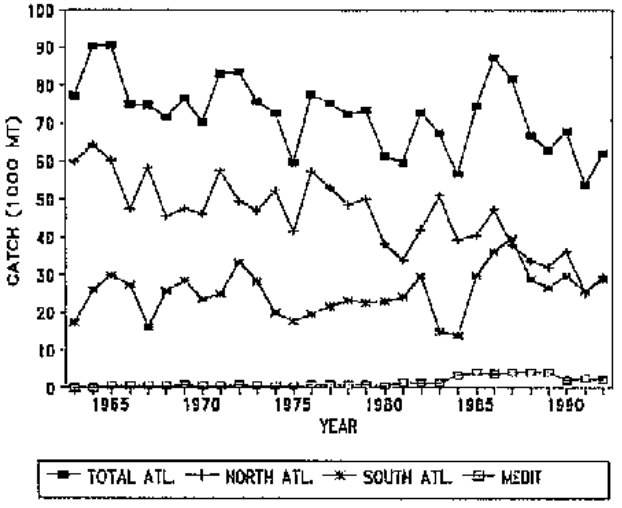


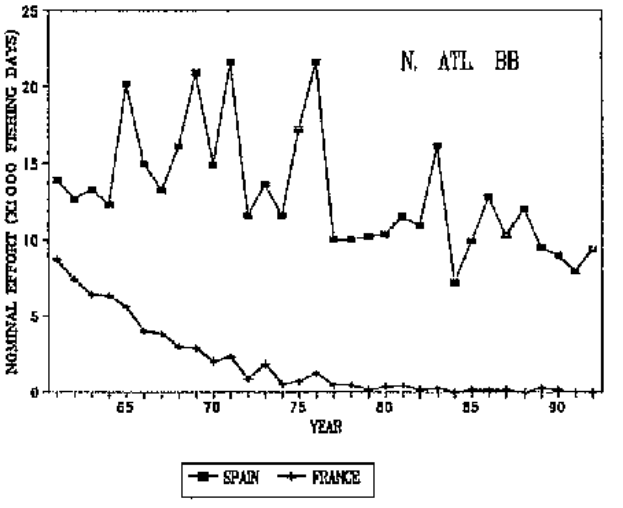




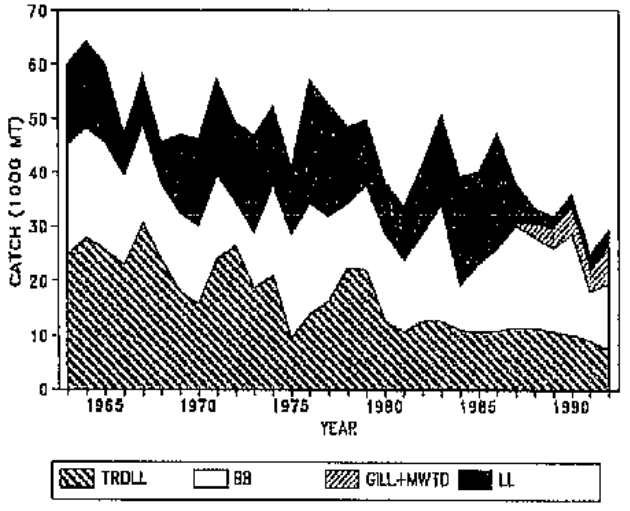


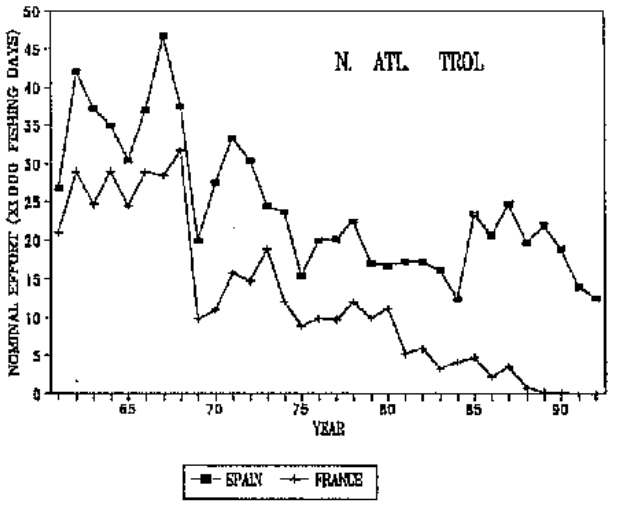
ALB-Fig. 4. Comparison of south Atlantic albacore catch at size for two periods (1980-1982 vs 1989-1991), for surface, longline and all gears combined.



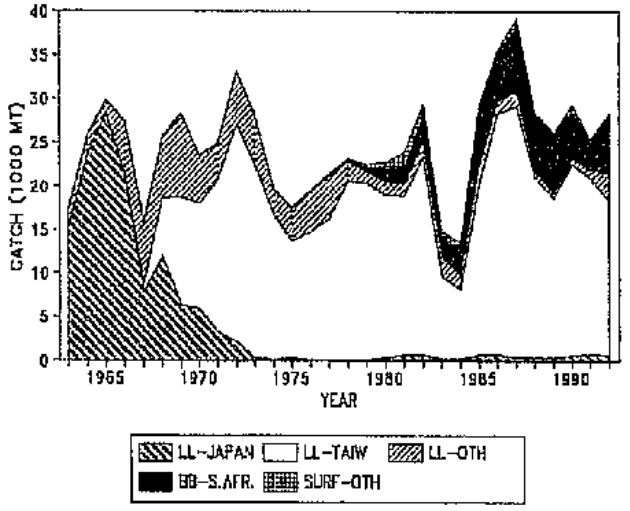


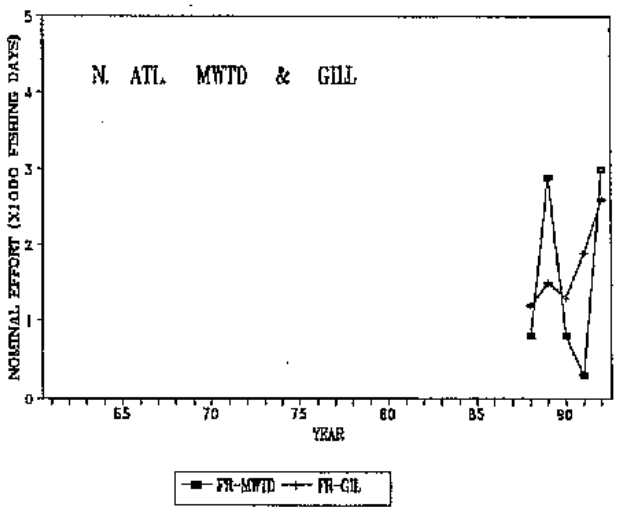
ALB-Fig. 5. Annual nominal catch (in 1000 MT) of albacore by total, north and south Atlantic, and Mediterranean.





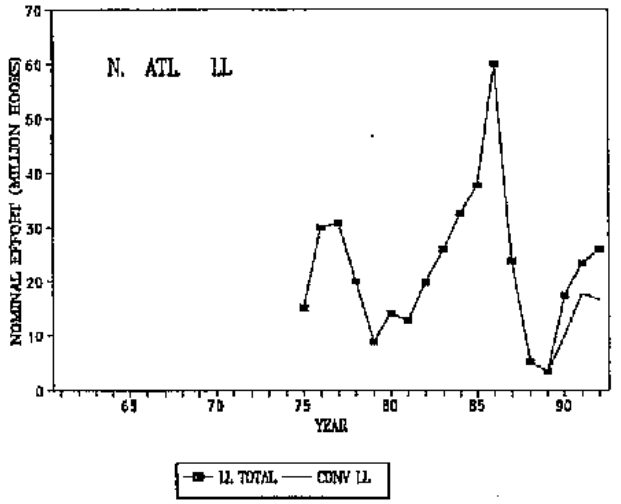
ALB-Fig. 6. North Atlantic albacore catches (in 1000 MT) by gear (accumulative).



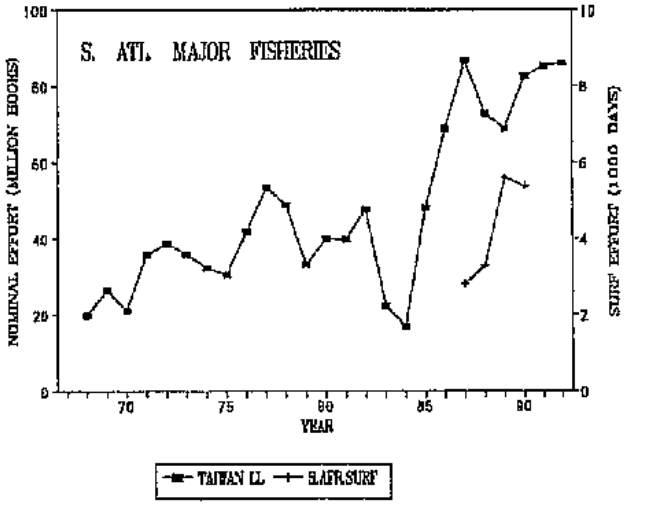


ALB-Fig. 7. South Atlantic albacore catches (in 1000 MT) by surface and longline gears (accumulative).

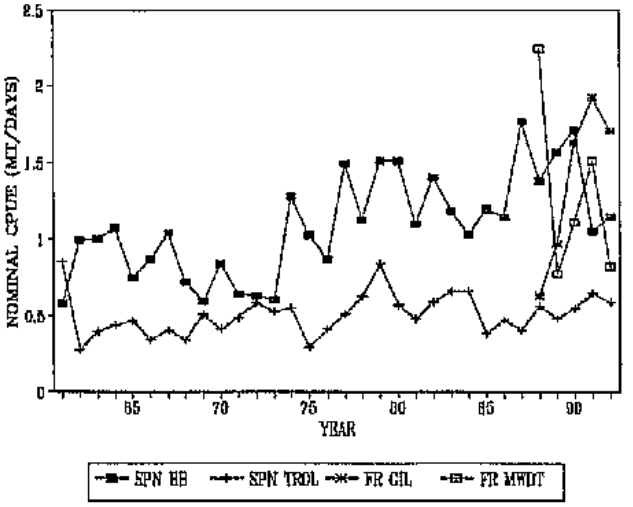
ALB-Fig. 8. Nominal fishing effort (in 1000 fishing days) for the major north Atlantic albacore surface fisheries.



ALB-Fig. 9. Nominal fishing effort (in million hooks) of the major north Atlantic albacore longline fishery.

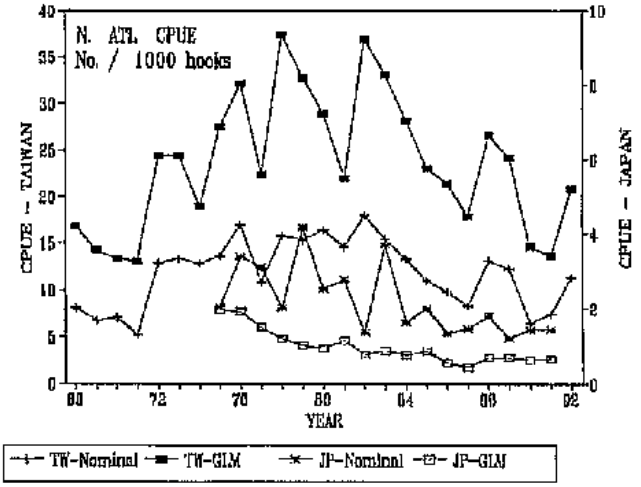


ALB-Fig. 10. Nominal fishing effort (in million hooks) of the major south Atlantic albacore longline fisheries.

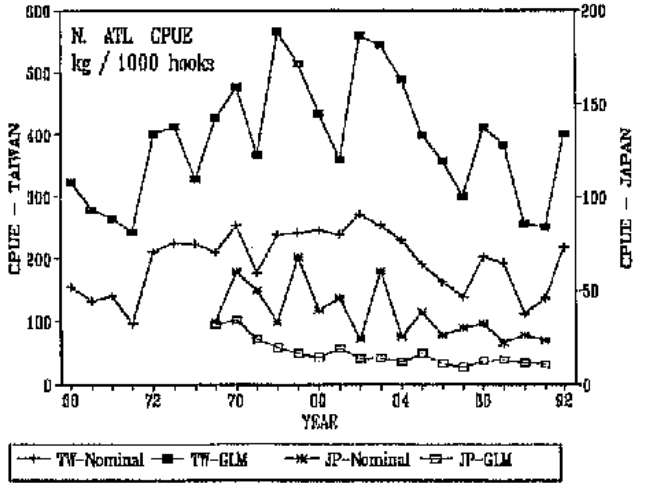


ALB-Fig. 11. Nominal catch per unit of effort (in MT/fishing days) of the major north Atlantic albacore surface fisheries.

(a) No. of fish/1000 hooks

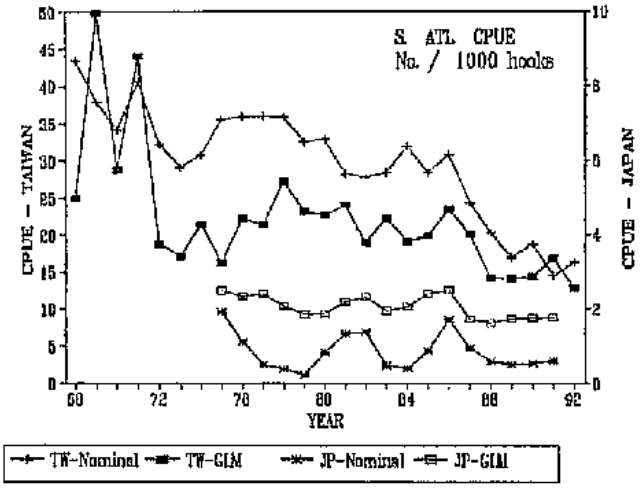


(b) Kg/1000 hooks

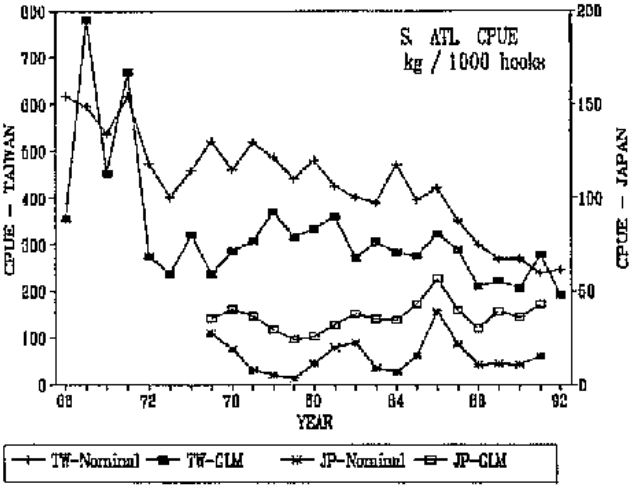


ALB-Fig. 12. Nominal albacore catch per unit of effort (a) in number of fish per 1000 hooks and (b) in weight (kg) per 1000 hooks for the north Atlantic longline fisheries.

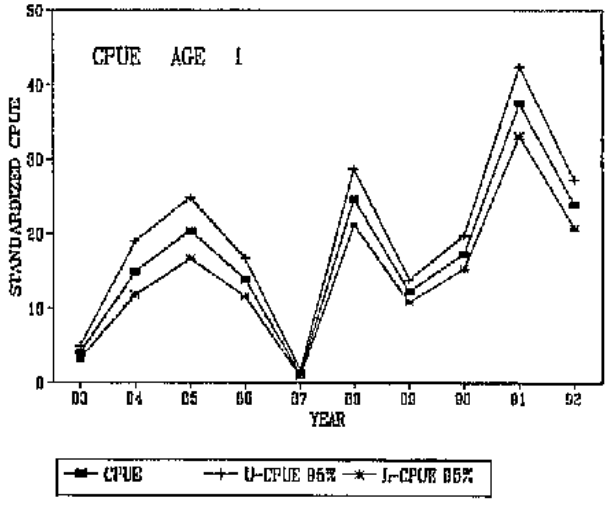
(a) No. of fish/1000 hooks

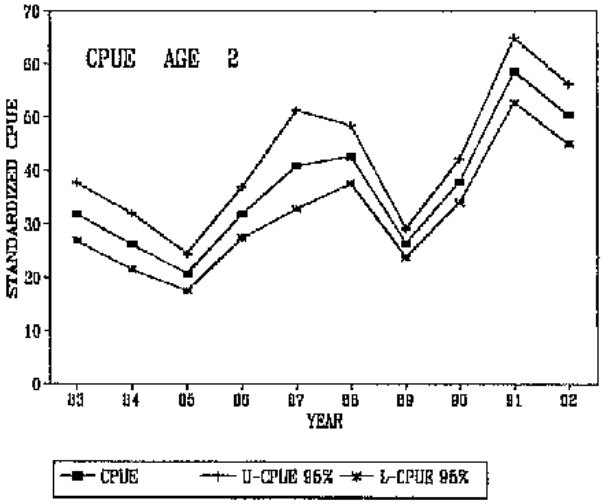


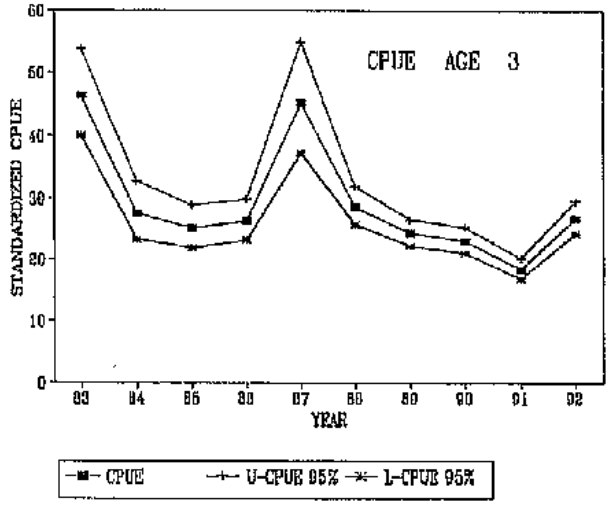
(b) Kg/1000 hooks

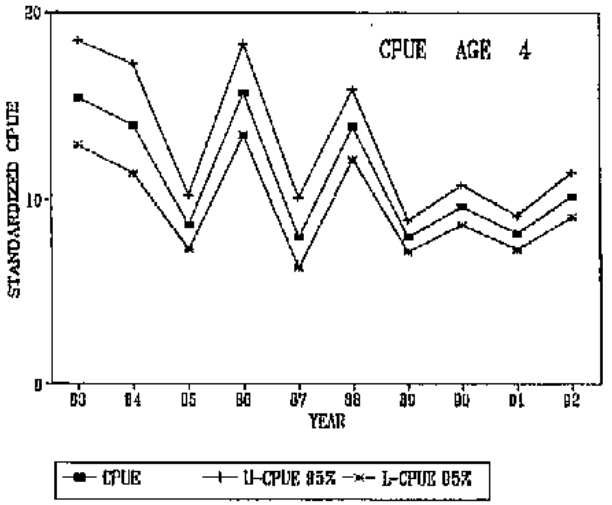


ALB-Fig. 13. Nominal and standardized albacore catch per unit of effort (a) in number of fish/1000 hooks and (b) weight (kg) per 1000 hooks for the south Atlantic fisheries.

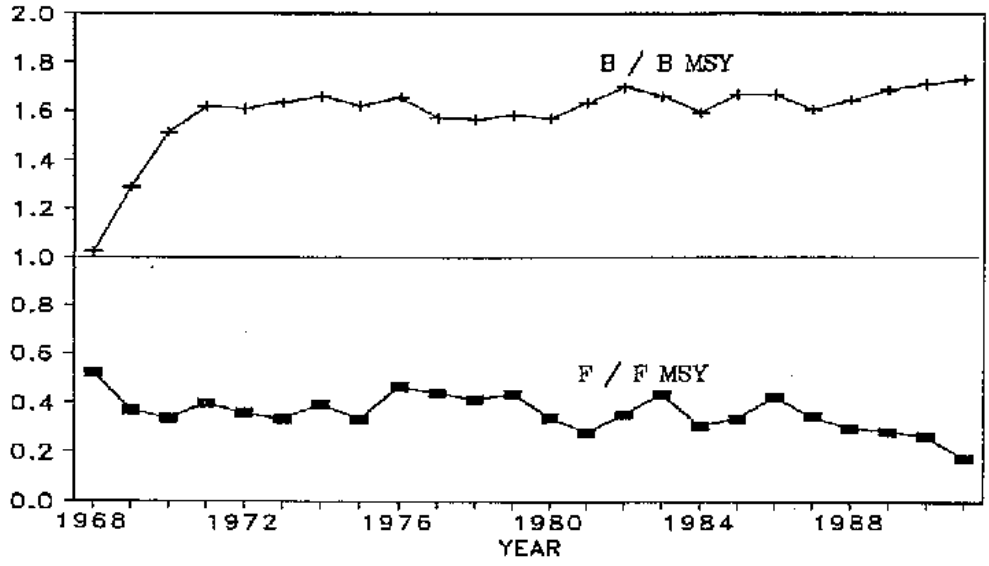






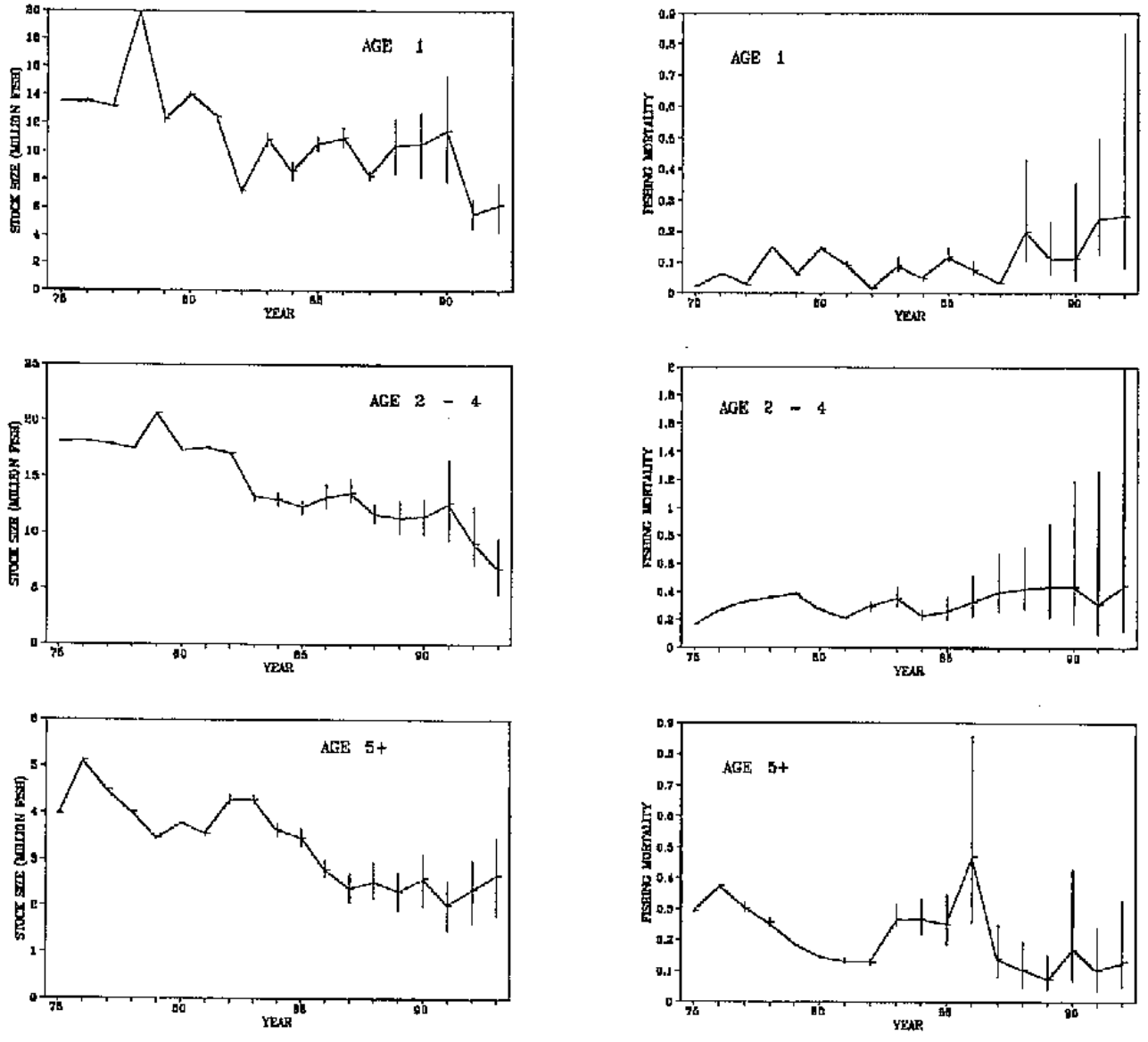


ALB-Fig. 14. Annual change of standardized CPUE, by age classes 1, 2, 3 and 4.



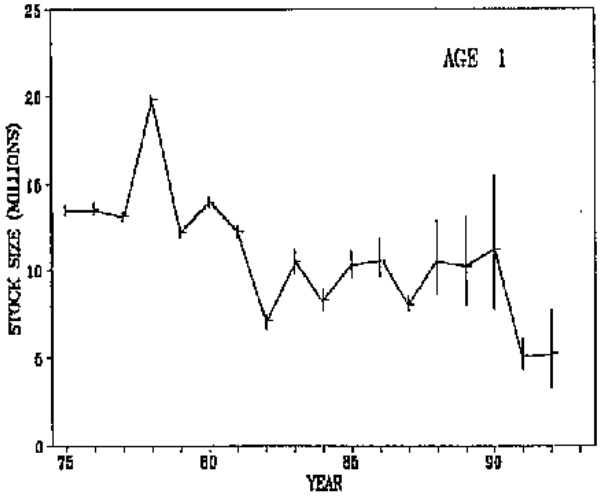
ALB-Fig. 15. North Atlantic albacore biomass and F-ratio estimates by the ASPIC model.

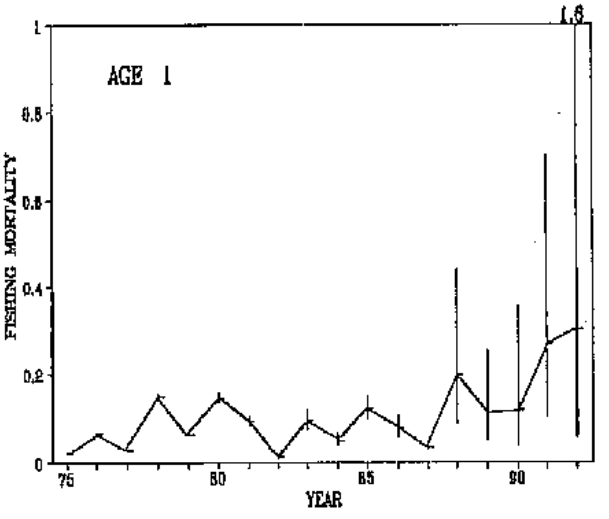
(a) N. Atl. albacore stock size estimates from Run 7.

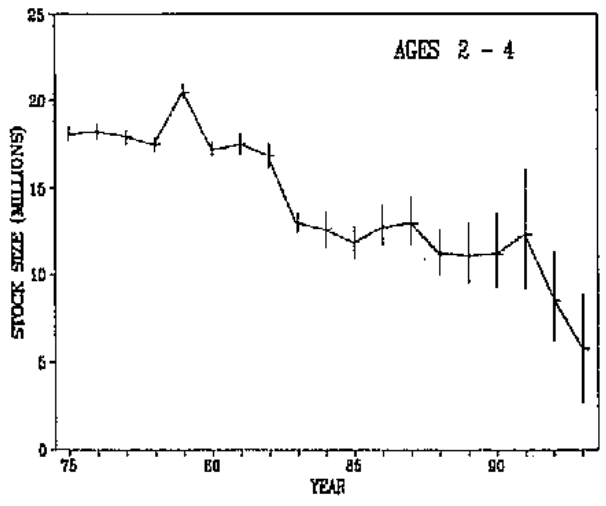


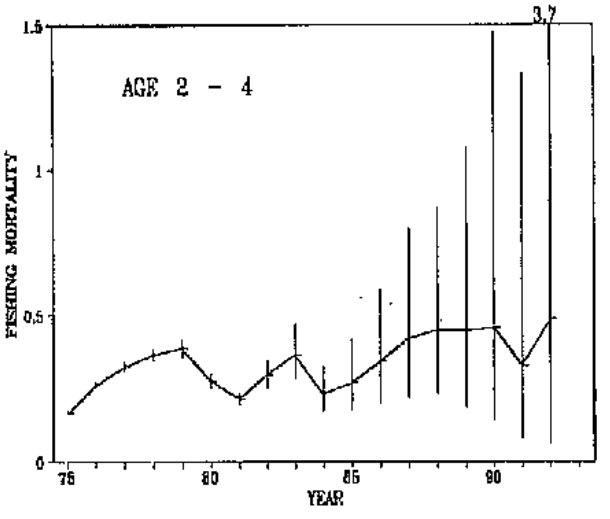
ALB-Fig. 16. North Atlantic albacore stock size estimated from VPA (ADAPT).

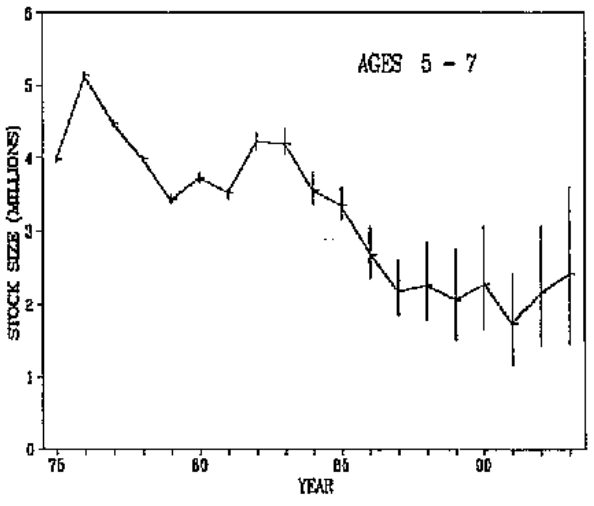
(b) N. Atl. albacore stock size estimates from Run 12.

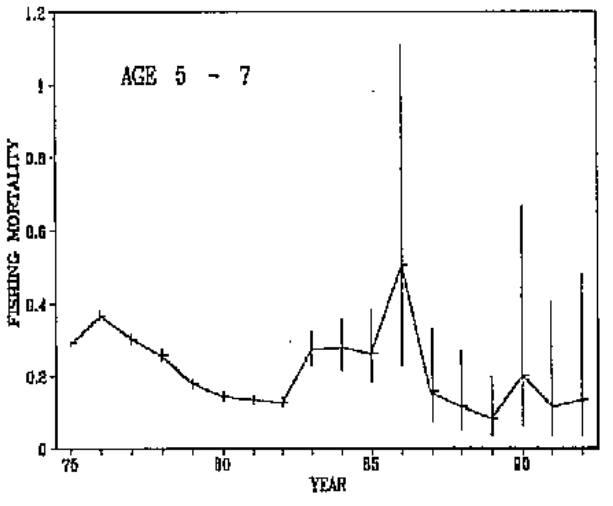




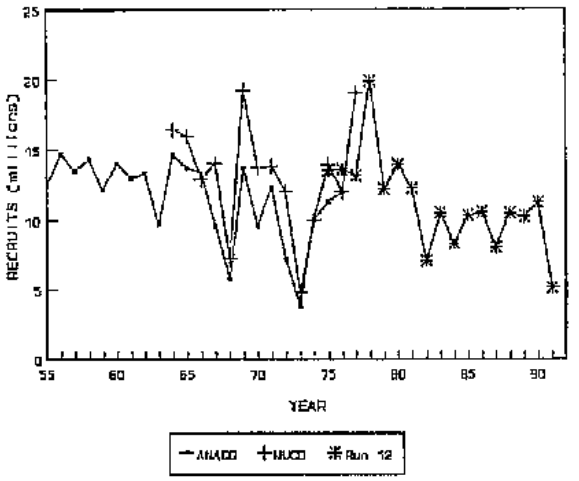




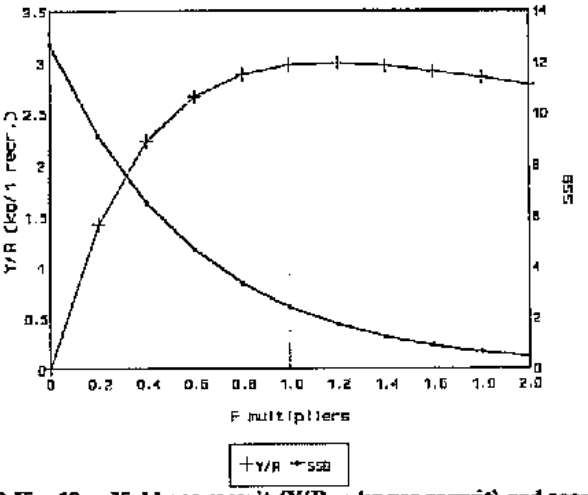




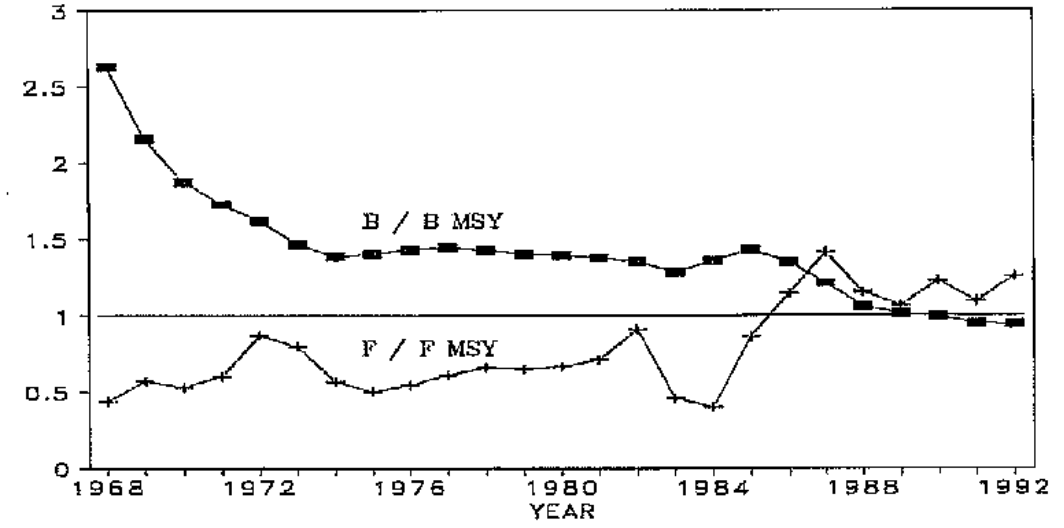
ALB-Fig. 16. Continued.



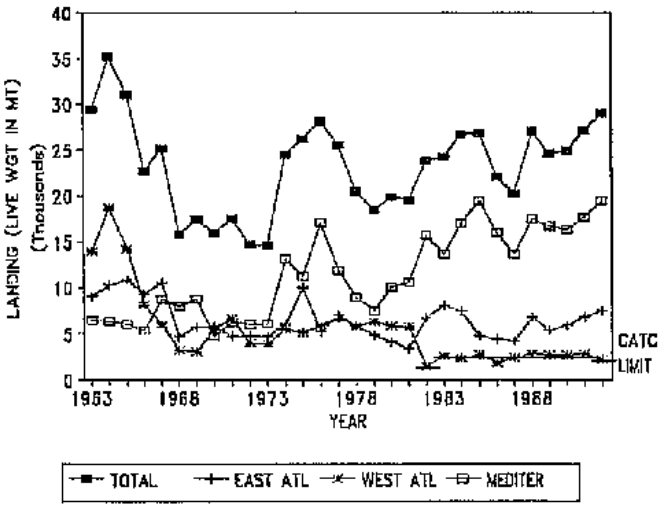
ALB-Fig. 17. Comparison of historic recruitment levels for 1955-1977 compared to ADAPT VPA estimates for 1975-1991. (ANACO=backward cohort analysis, Bard 1981; MUCO=multi-cohort analysis, Bard 1981; and Run 12=solution selected from ADAPT runs - see ALB-Fig. 16).



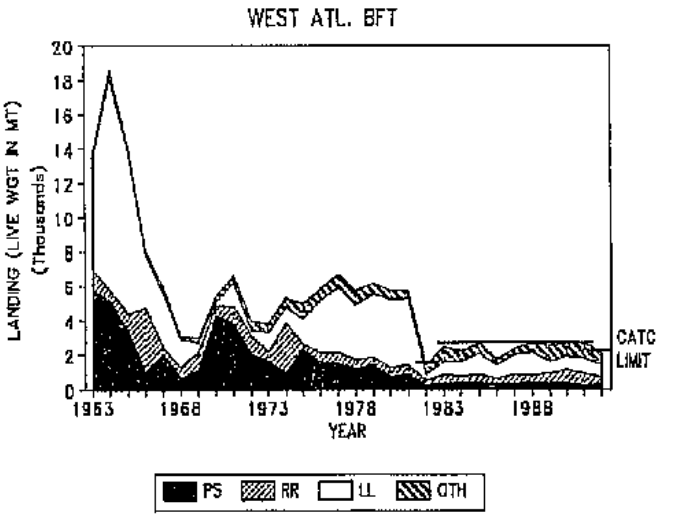
ALB-Fig. 18. Yield per recruit (Y/R = kg per recruit) and spawning stock biomass (SSB) of north Atlantic albacore, estimated from VPA's (Run 7). Average fishing mortality (F) vectors for 1988-1991 were used.



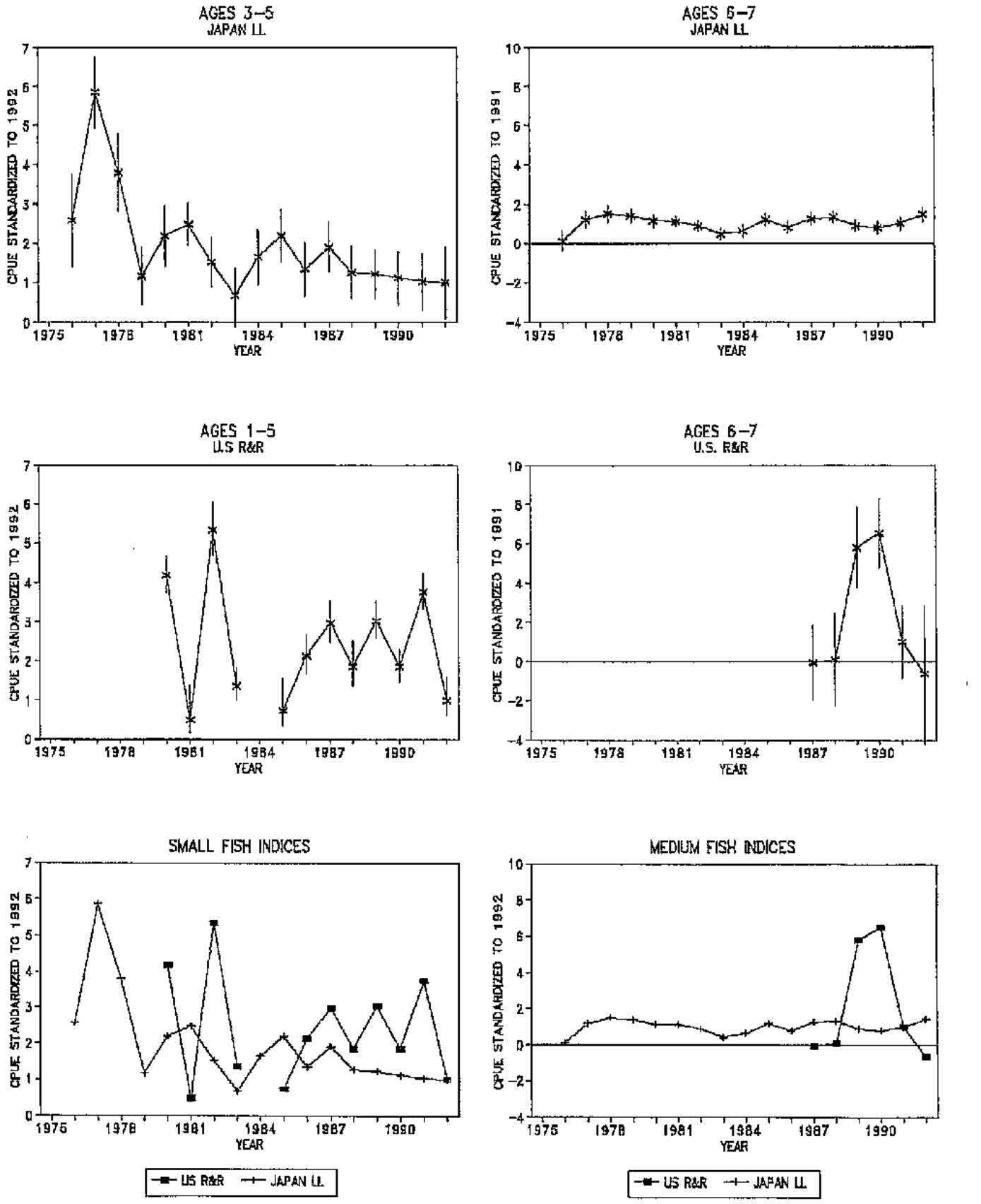
ALB-Fig. 19. South Atlantic albacore biomass (B/B_{MSY}) and F-ratio (F/F_{MSY}) estimated from the ASPIC model.



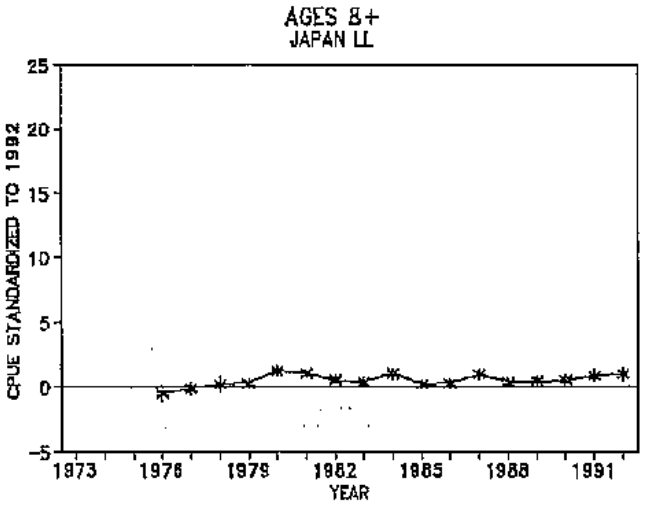
BFT-Fig. 1. Total Atlantic bluefin landings (live weight in MT) by regions.

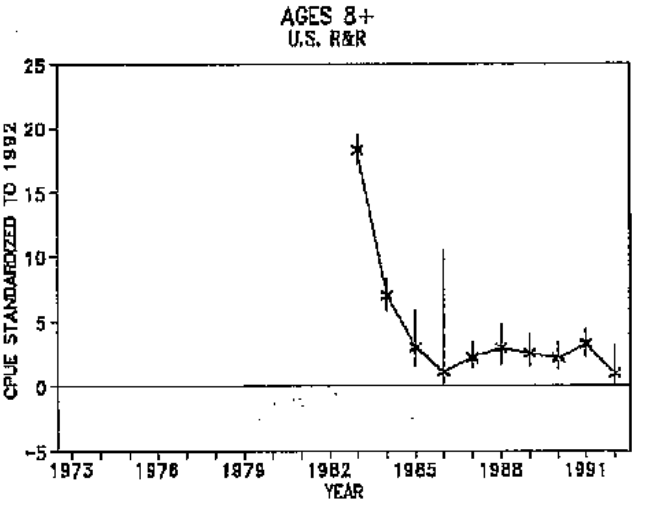


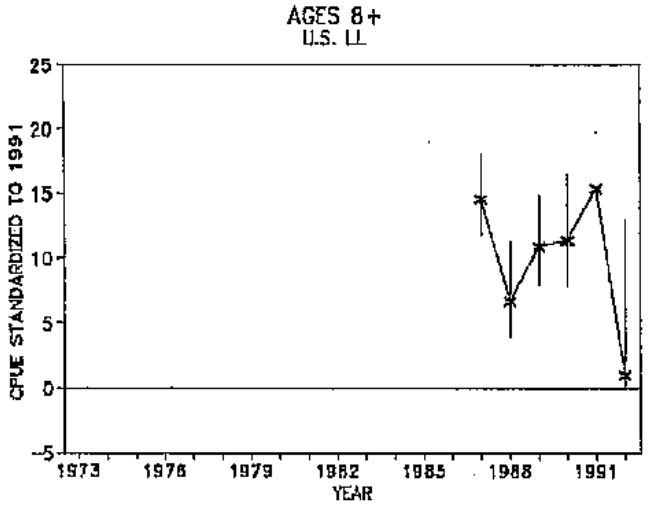
BFT-Fig. 2. Total cumulative bluefin landings (live weight in MT) by gears for the west Atlantic.

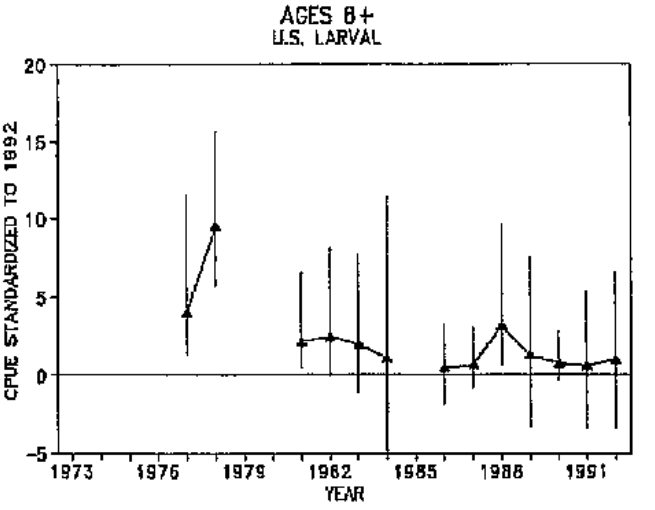


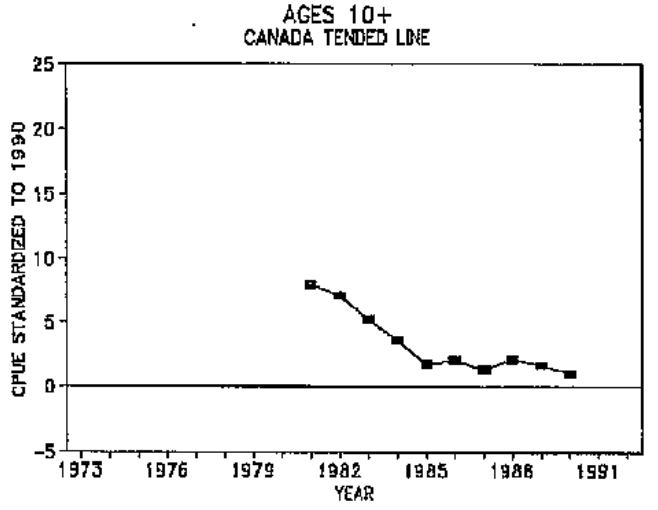
BFT-Fig. 3. CPUE series available for analysis of west Atlantic bluefin stock status.

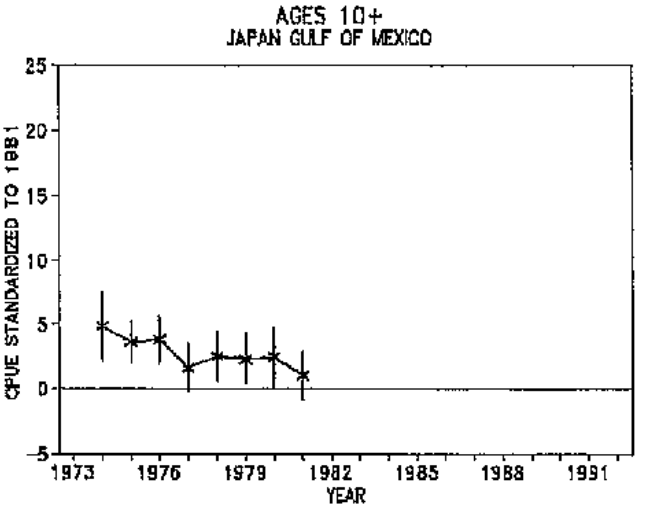




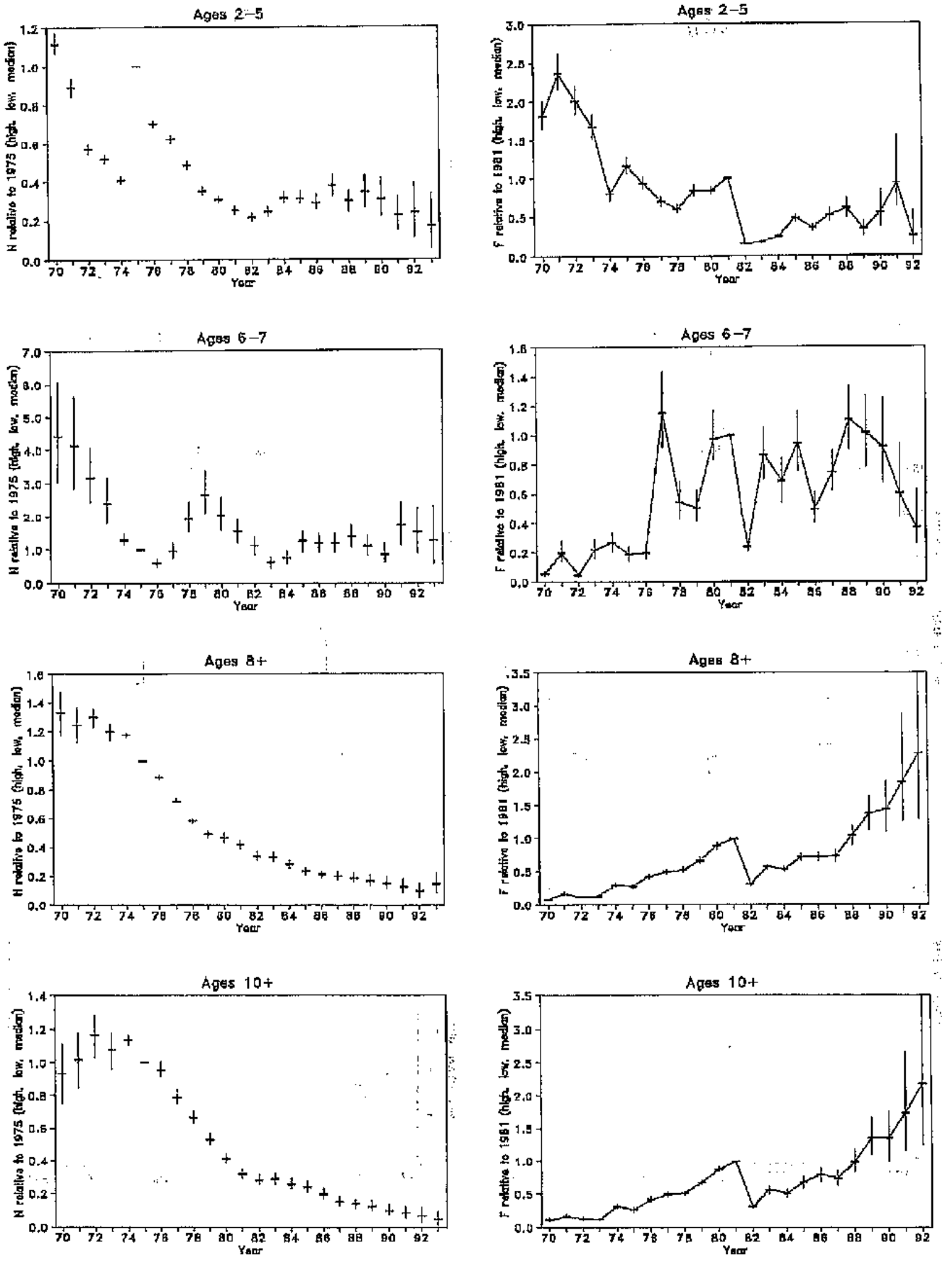




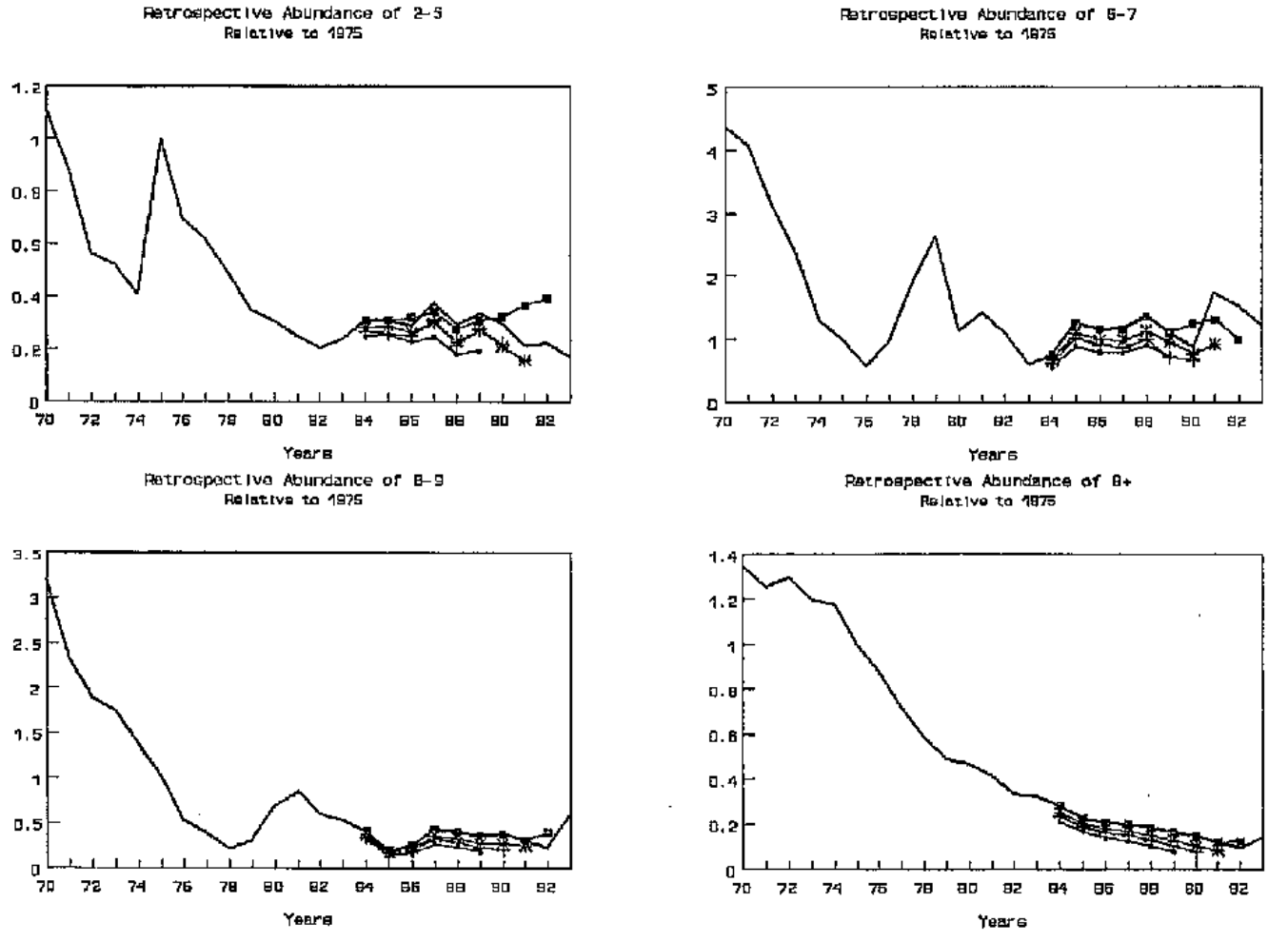




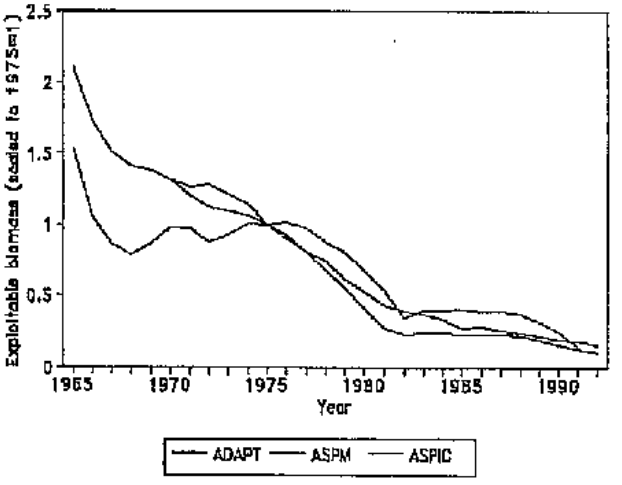
BFT-Fig. 3. Continued.



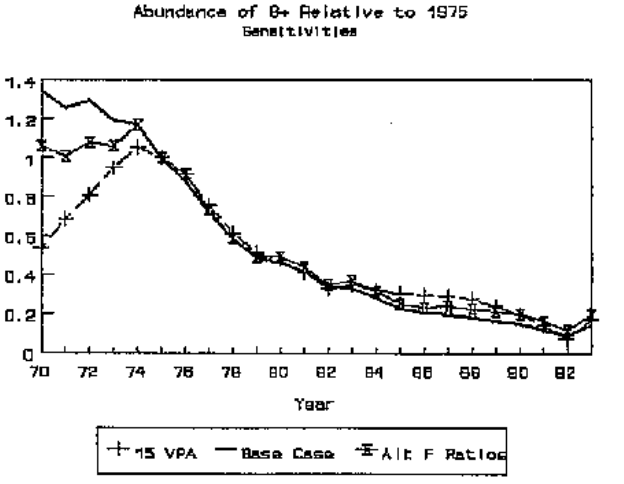
BFT-Fig. 4. Estimated stock sizes (relative to 1975) and corresponding fishing mortality rates (relative to 1981) for the indicated age groups. Bars represent bootstrap 80% confidence intervals.



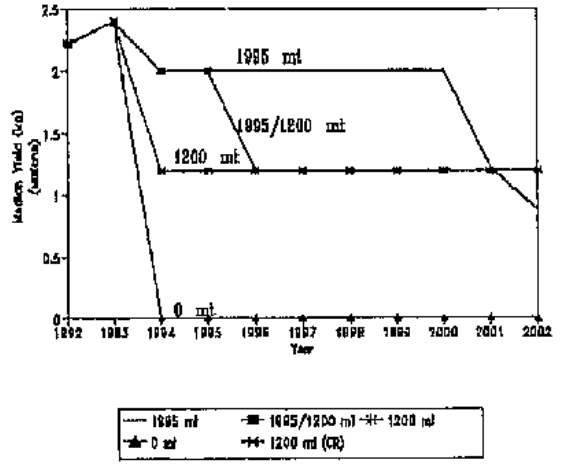
BFT-Fig. 5. Retrospective analysis of VPA results. The base case VPA (using catch at age data from 1970-92) is compared to population trends by age group assuming only data through 1988 were available; through 89; through 90 and through 91.



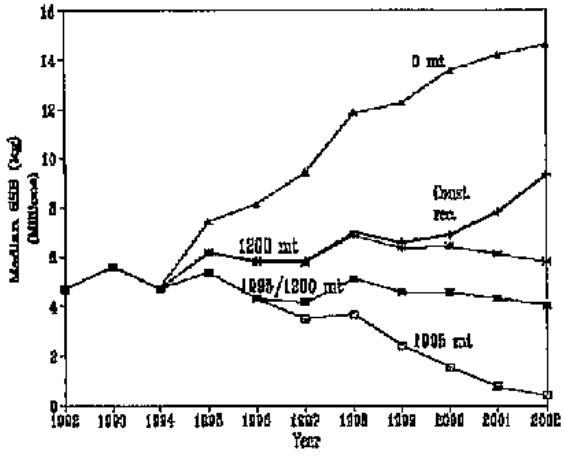
BFT-Fig. 6. Biomass trajectory of west Atlantic bluefin tuna as estimated by three different methods. Each curve has been scaled so that the 1975 value is unity. ADAPT refers to the base-case tuned VPA; ASPM is an age-structured production model; ASPIC is a pooled-biomass production model.



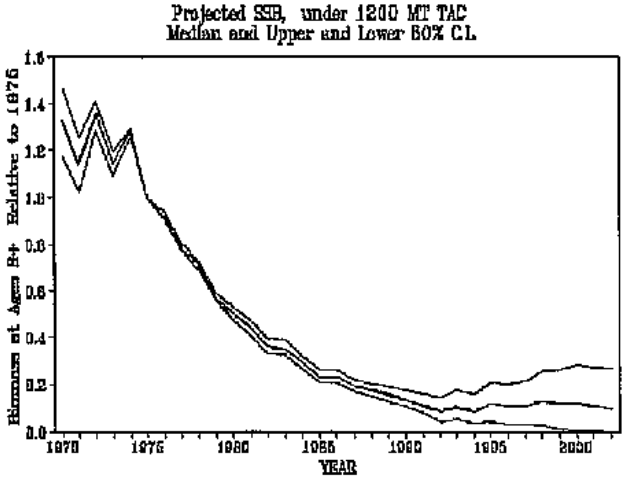
BFT-Fig 7. Sensitivity analysis of the trend 8+ abundance (relative to 1975) compared to the base case. The sensitivities were: 1) carrying the VPA out to age 15+; and 2) using an alternative F ratio pattern depicting selection of large fish.



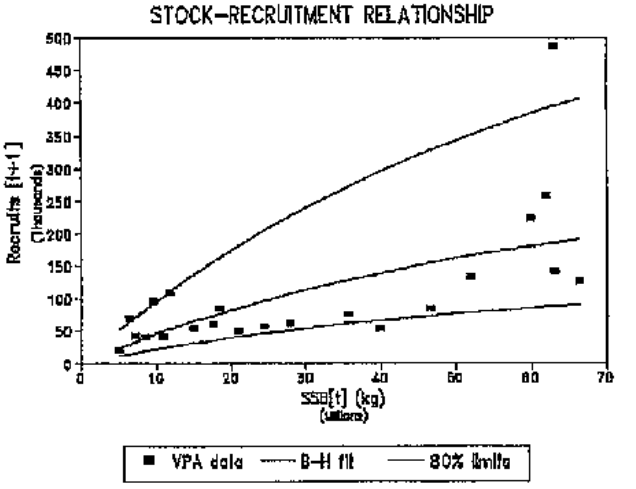
BFT-Fig. 8. Yield trajectories used in the projections considered by the SCRS. Case a, 1995 MT; case b, 1995/1200 MT; case c, 0 MT; case d, 1200 MT (see BFT-Fig. 13 for details)



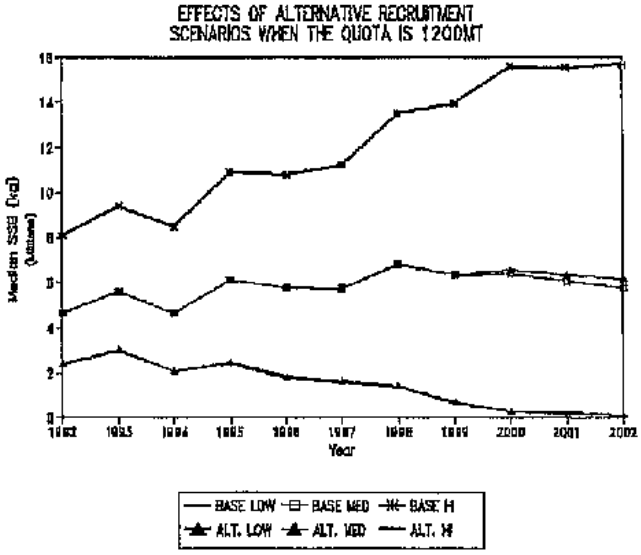
BFT-Fig. 10. Median trajectories of projected SSB (from 500 bootstrap iterations), under the various catch and stock-recruitment cases considered. Case a, 1995 MT; case b, 1995 / 1200; case c, 0 MT; case d, 1200 MT; case e, constant recruitment (see BFT-Fig. 13 for details).



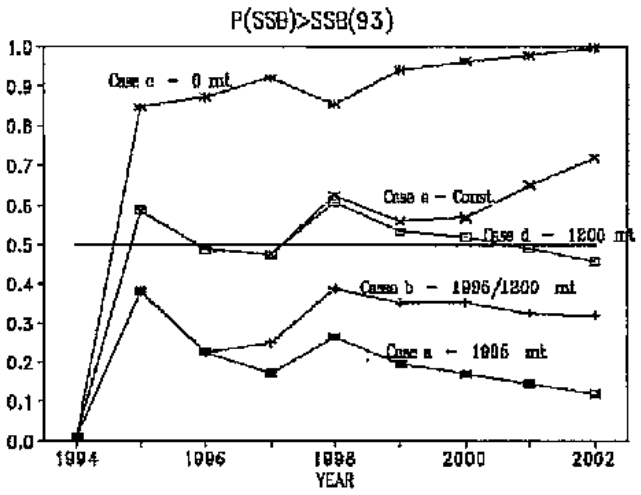
BFT-Fig. 12. Projected spawning stock biomass (1994-2002) expressed relative to estimated 1975 levels, assuming annual catches of 1200 MT from 1994 through 2001. The trajectory prior to 1994 represents estimated spawning stock biomass from the VPA analysis. Heavy line represents the trajectory of median values. Light lines represent bootstrapped 80 % confidence interval ranges.



BFT-Fig. 9. Stock-recruitment relationship derived from the base VPA. The points are averages over 500 parametric bootstrap runs. The curves were generated from the averages of the parameter estimates. The base fit was done applying the methods in SCRS/93/72. The alternative fit was done by substituting the recruitment in 1992 with the next lowest value observed in the 1970-1991 time series as recommended by the SCRS.



BFT-Fig. 11. Median trajectories (Base Med) for case d, above (1200 MT) with bootstrap 80% confidence intervals (BASE LOW, BASE HI). The ALT MED trajectory is the median SSB resulting from catches as in case d, but with recruitment predicted from the stock recruitment curve fitted by substituting the 1992 VPA estimate of age 1 fish with the next lowest estimated recruitment in the time series, as recommended by the SCRS. ALT LOW and ALT HI are the lower and upper 80% CI, which overlay the BASE LOW and BASE HIGH lines.



Case a: Assumes that 1,995 MT are taken from 1994-2001 and recruitment is predicted from the fitted stock recruitment relationship.

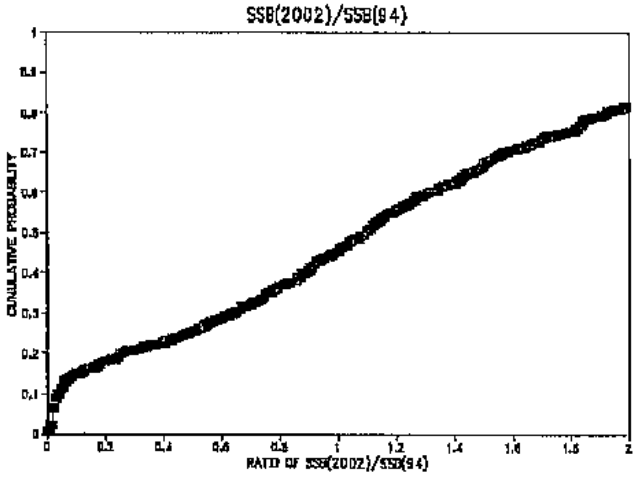
Case b: Assumes 1,995 MT are taken in 1994 and 1995, 1200 MT taken thereafter, and recruitment is predicted from the fitted stock recruitment relationship.

Case c: Assumes 0 MT are taken in 1994-2001, and recruitment is predicted from the fitted stock recruitment relationship.

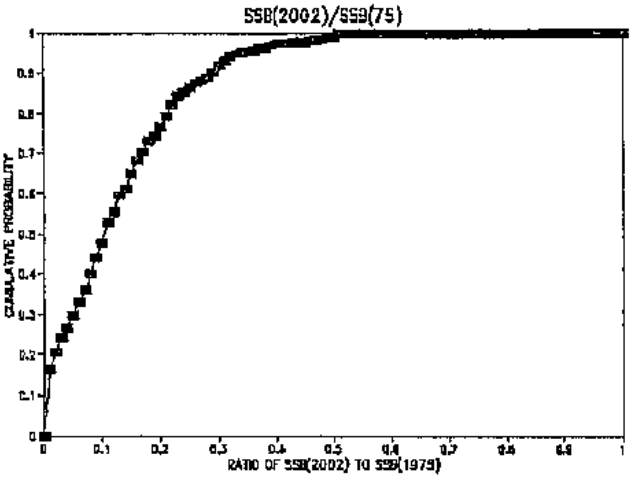
Case d: Assumes 1,200 MT are taken in 1994-2001, and recruitment is predicted from the fitted stock recruitment relationship.

Case e: Assumes 1,200 MT are taken in 1994-2001, and recruitment is assumed to be an average of 1983-1992 recruitments.

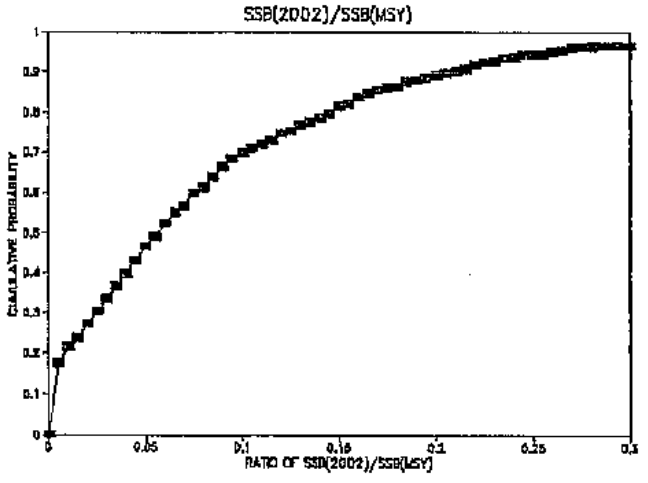
BFT-Fig. 13 Model probabilities of spawning stock biomass in each year exceeding the level estimated in 1993 under several catch and recruitment assumptions. In all cases the catch in 1993 was assumed at 2394 MT.



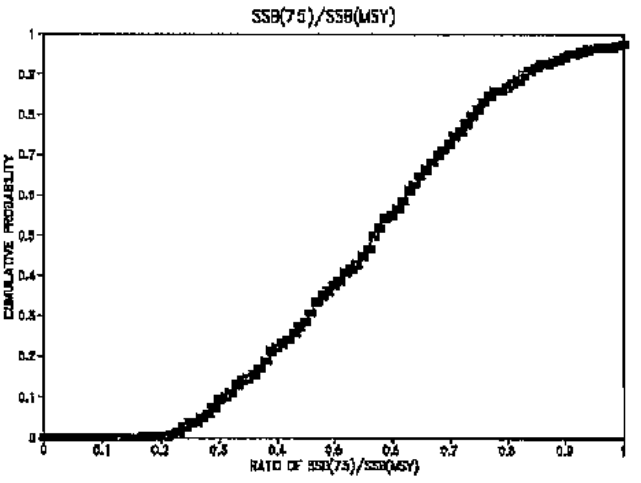
(a)



(b)

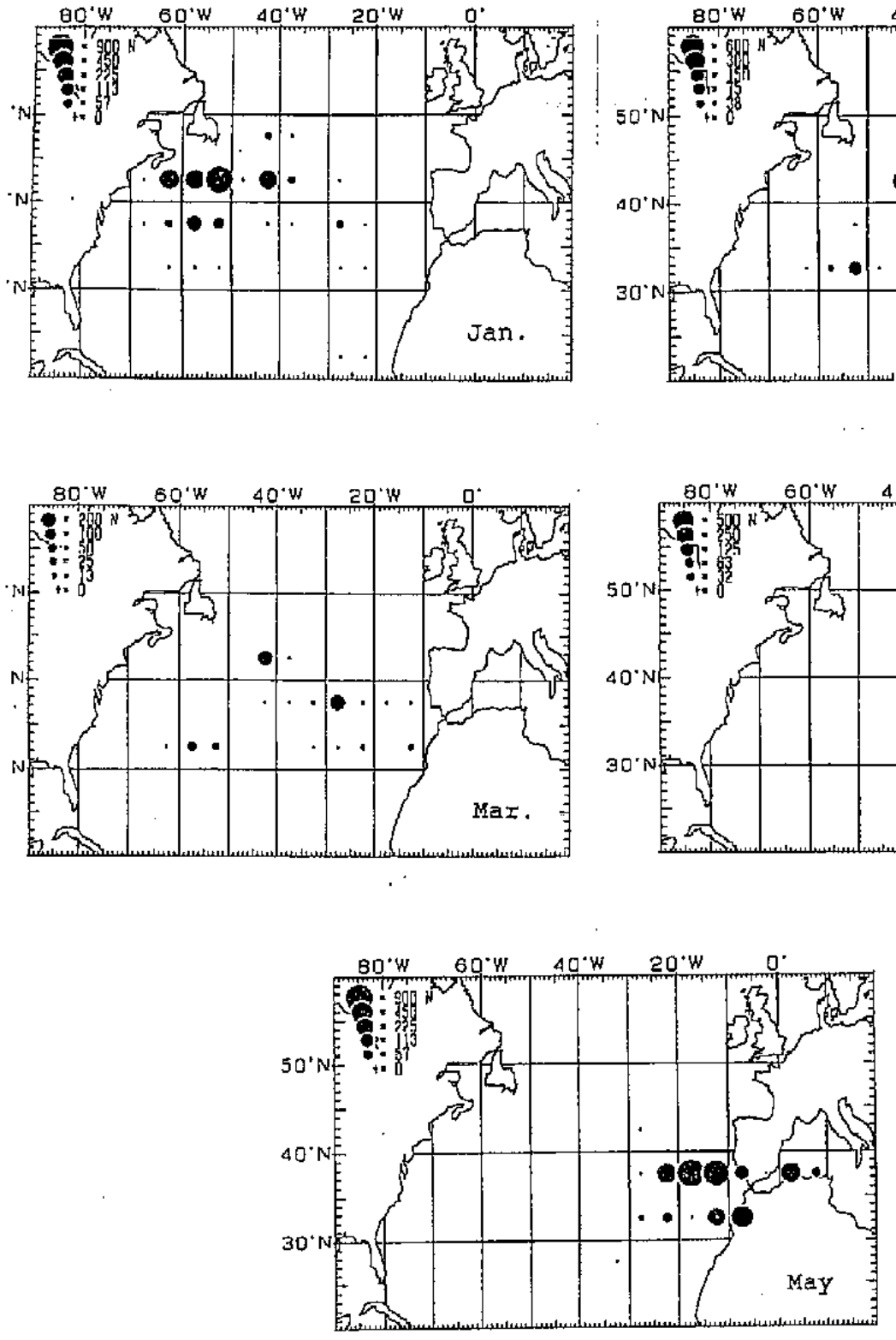


(c)

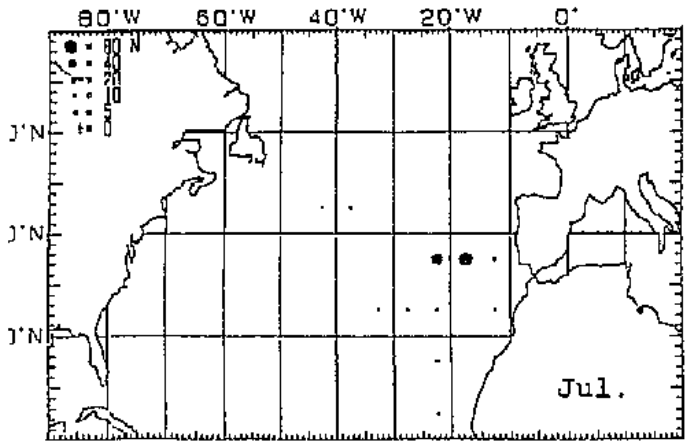


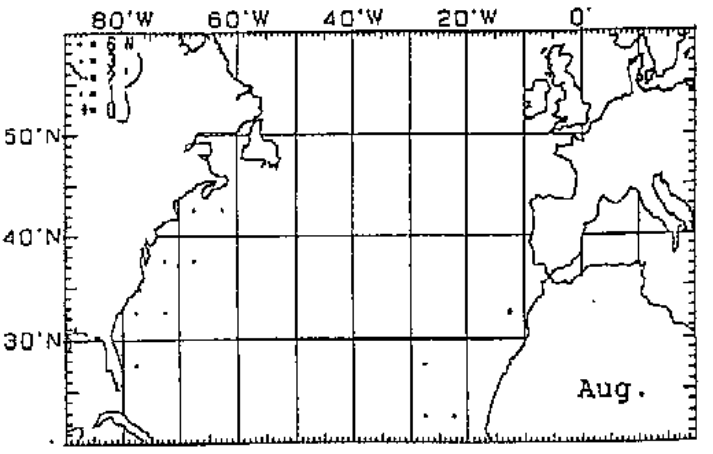
(d)

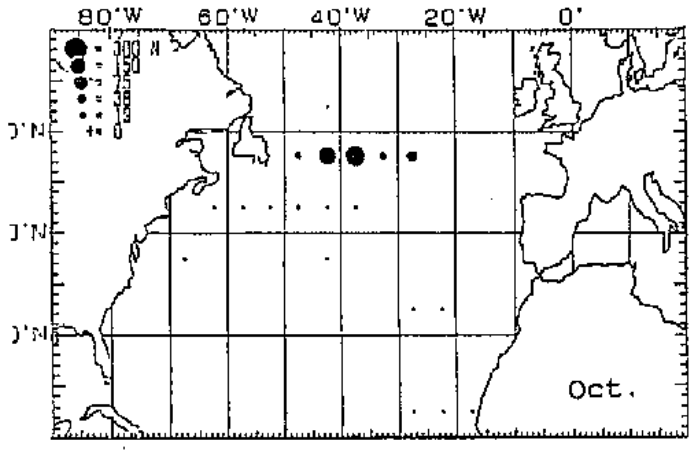
BFT-Fig. 14. Probability distributions of projected spawning stock biomass in projection years with respect to certain years in the time series. Plate a) shows the distribution of estimates of SSB in 2002 relative to that in 1994; plate b) shows SSB_{2002} relative to SSB in 1975; and plate c) shows SSB_{2002} relative to SSB which could produce MSY; and d) shows SSB_{75} relative to SSB which could produce MSY.

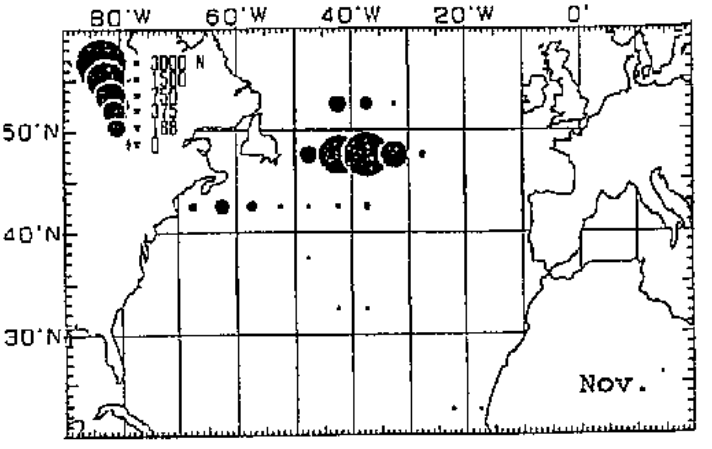


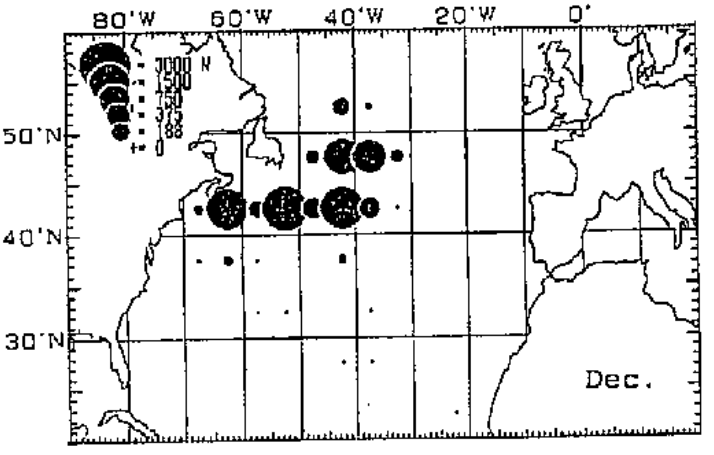
BFT-SUPPL. Fig. 1. Monthly distribution of the west Atlantic bluefin tuna catch (in number of fish) in 1991 from the Japanese longline fishery in the north Atlantic. The plus (+) sign indicates fishing with no catch.



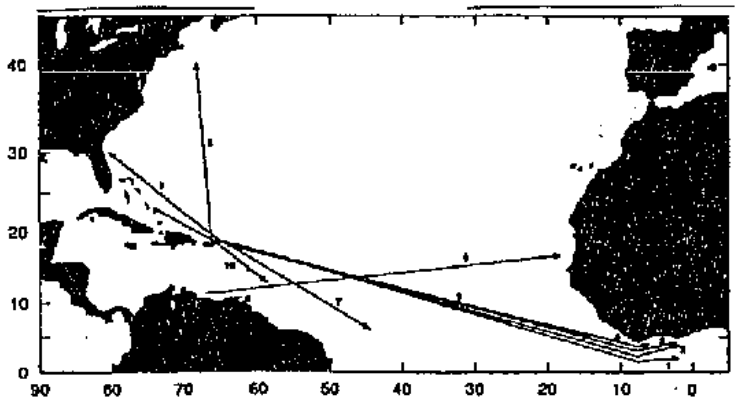




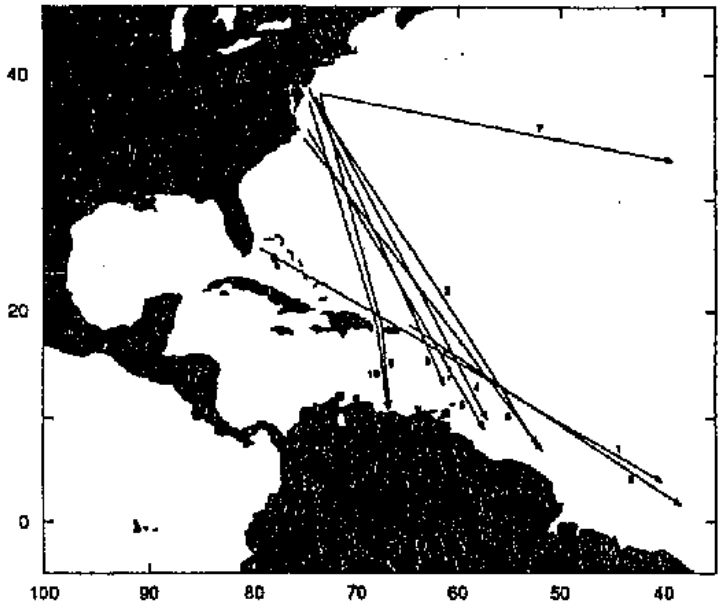




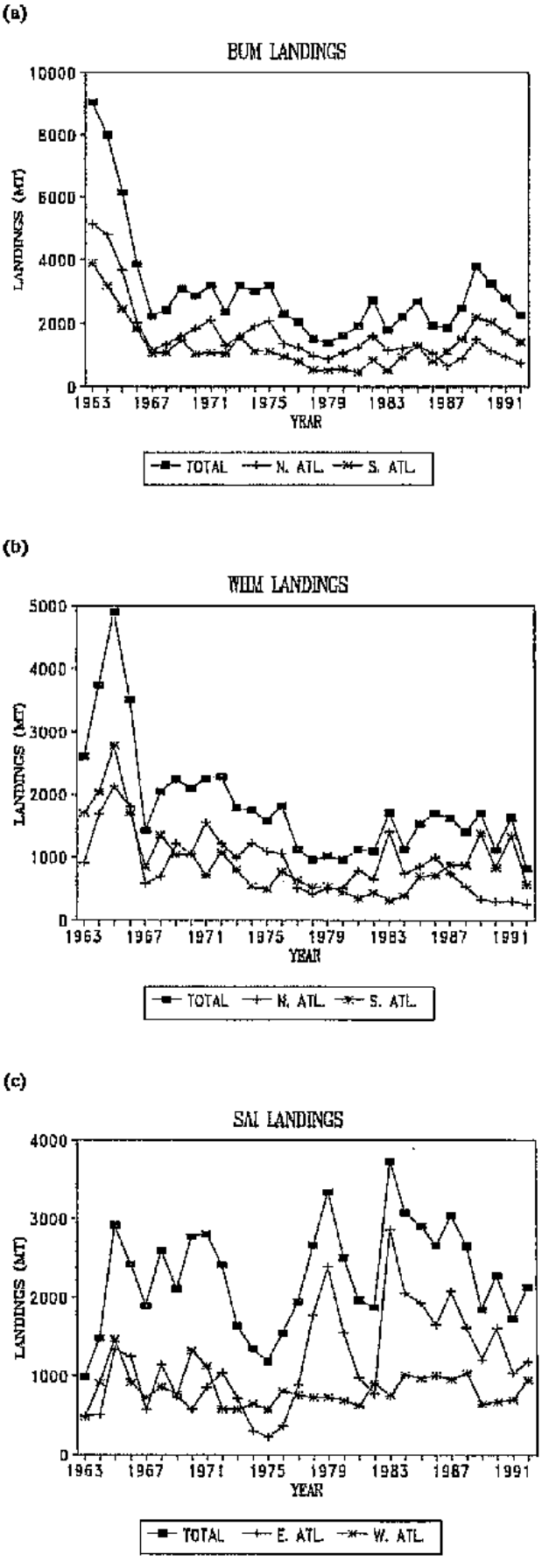
BFT-SUPPL Fig. 1. Continued.



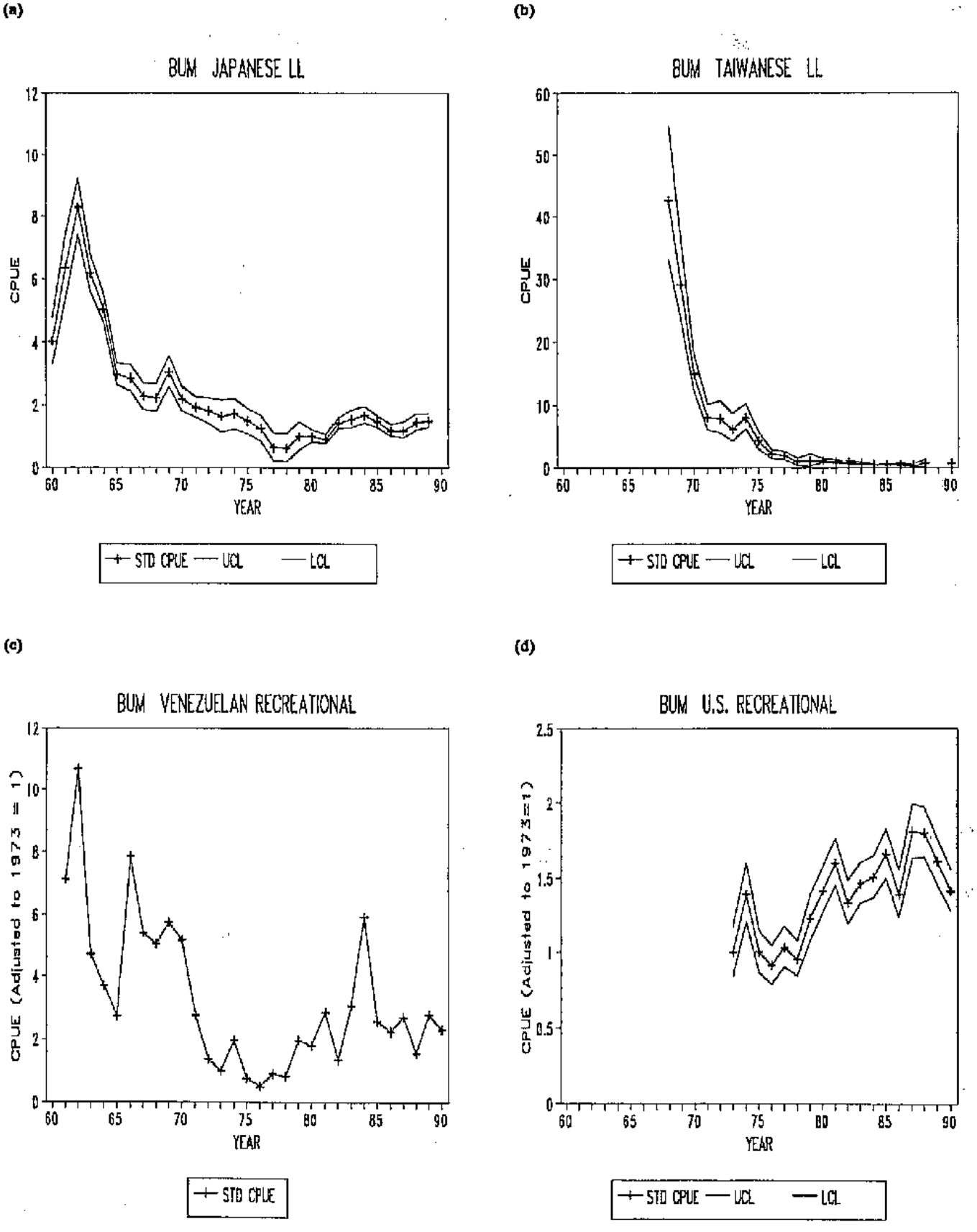
BIL-Fig. 1a. Tagged blue marlin documented by the National Marine Fisheries Service's Cooperative Game Fish Tagging Program (1954-1992). The 1993 returns are discussed in the text.



BIL-Fig. 1b. The ten longest movements (minimum distances traveled) for tagged white marlin documented by the National Marine Fisheries Service's Cooperative Game Fish Tagging Program (1954-1992). The 1993 returns are discussed in the text.

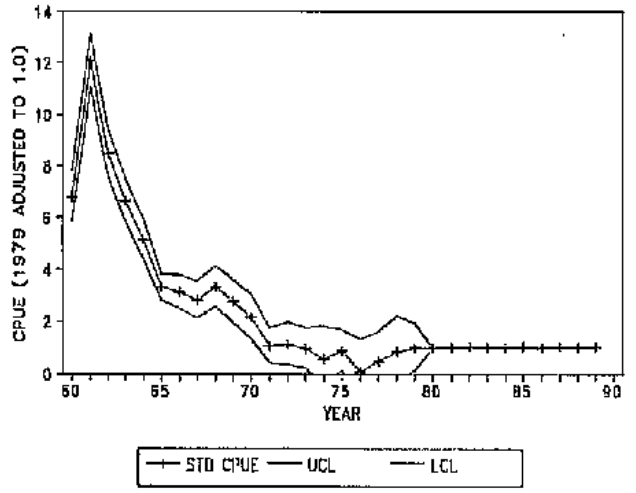


BIL-Fig. 2. Nominal landings (in MT) of (a) blue marlin, (b) white marlin, and (c) sailfish by Atlantic regions.

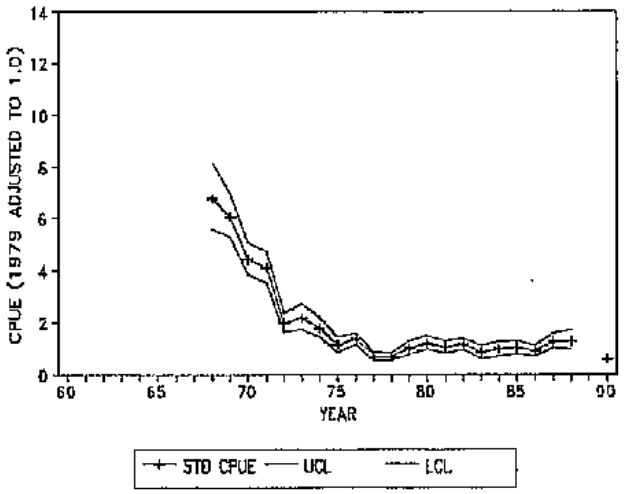


BIL-Fig. 3. Annual standardized mean CPUE's for blue marlin from the Japanese (a) and Taiwanese (b) longline fisheries and the Venezuelan (c) and U.S. (d) recreational fisheries, for the north Atlantic, with associated approximate 90% confidence bounds. Values are adjusted to 1.00 in 1979 or in case (d) in 1980.

(a)



(b)



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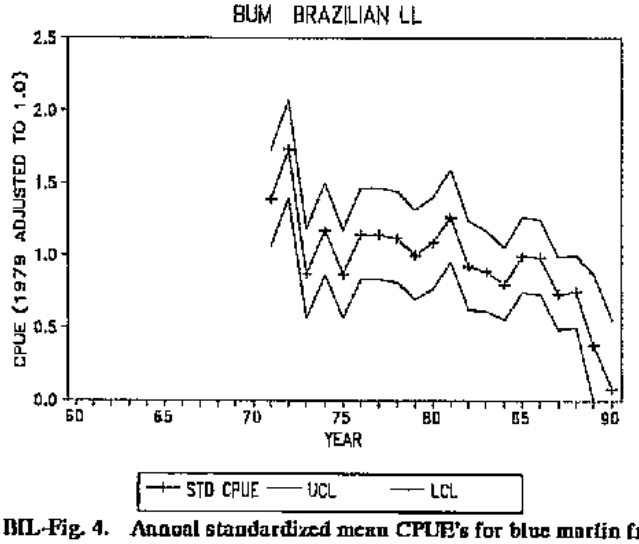
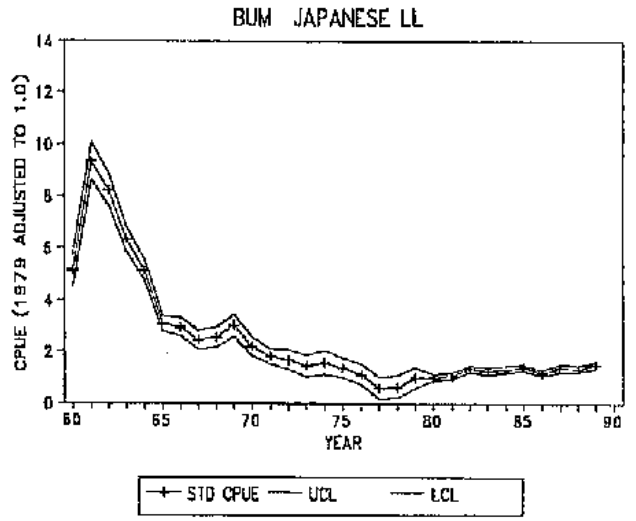
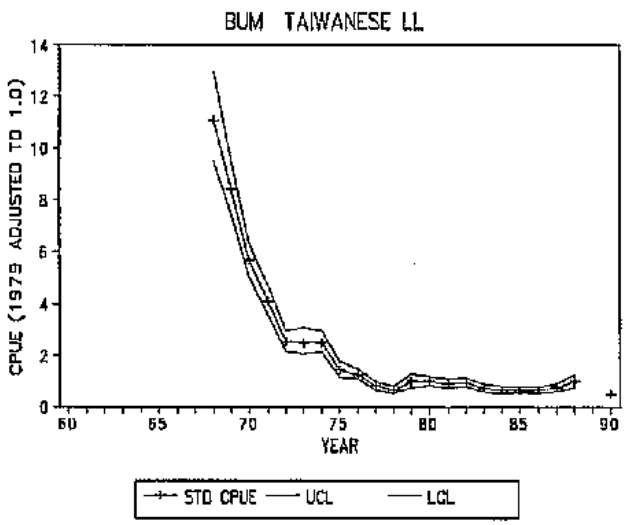


BIL-Fig. 4. **Annual standardized mean CPUE's for blue marlin from (a) the Japanese and (b) Taiwanese, and Brazilian (c) longline fisheries for the south Atlantic, with associated approximate 90% confidence bounds. Values are adjusted to 1.00 only in 1979.**

(a)

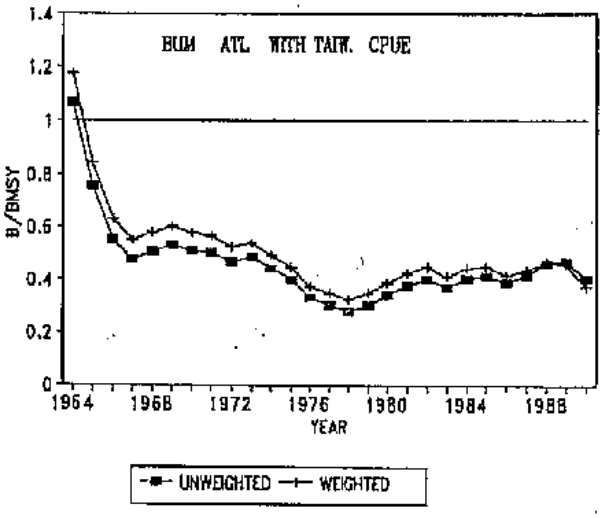


(b)

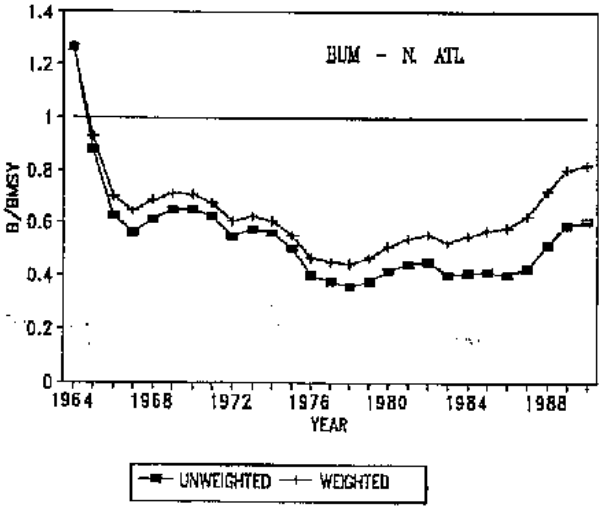


BIL-Fig. 5. **Annual standardized mean CPUE's for blue marlin from the Japanese (a) and Taiwanese (b) longline fisheries for the total Atlantic, with associated approximate 909% confidence bounds. Values are adjusted to 1.00 in 1979 and 1980.**

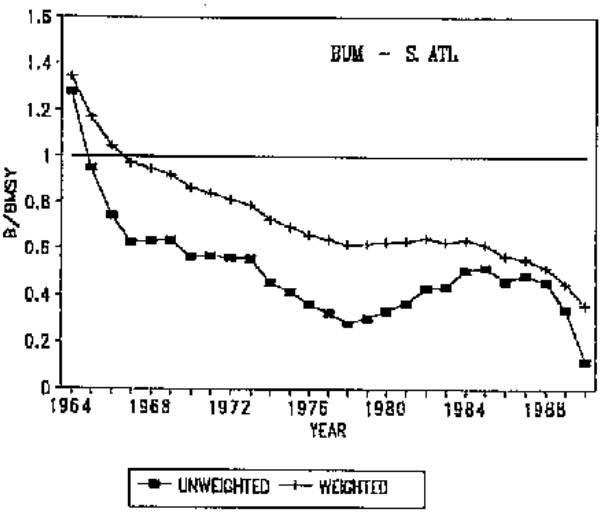
(a) Total Atlantic



(b) North Atlantic

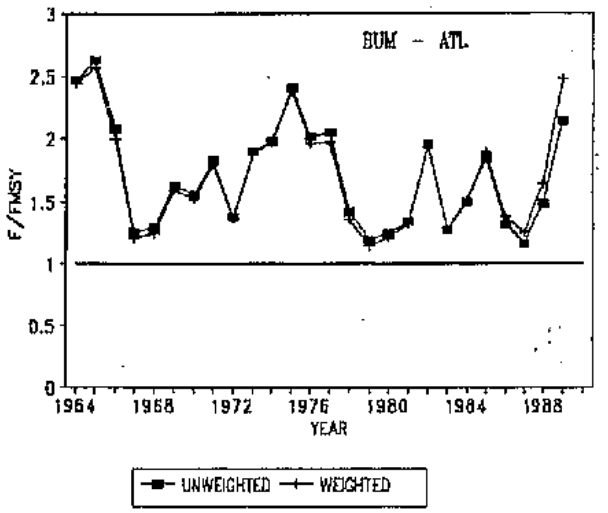


(c) South Atlantic

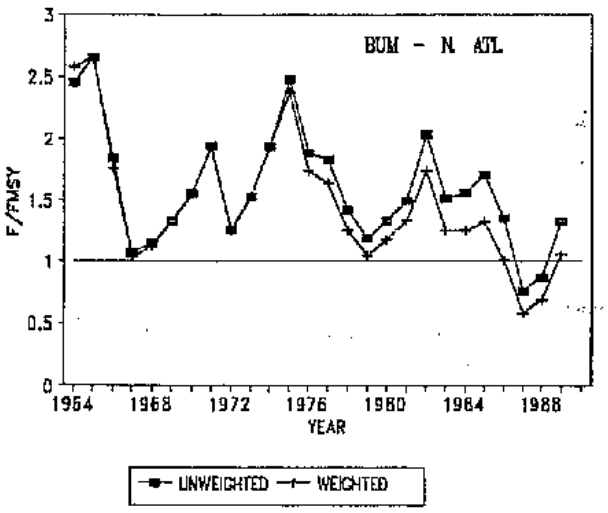


BIL-Fig. 6. Blue marlin estimated trajectory of B/B_{MSY} for the (a) total Atlantic, (b) north Atlantic and (c) south Atlantic. The values for the first three years of the time series have been omitted, as estimates are less precise.

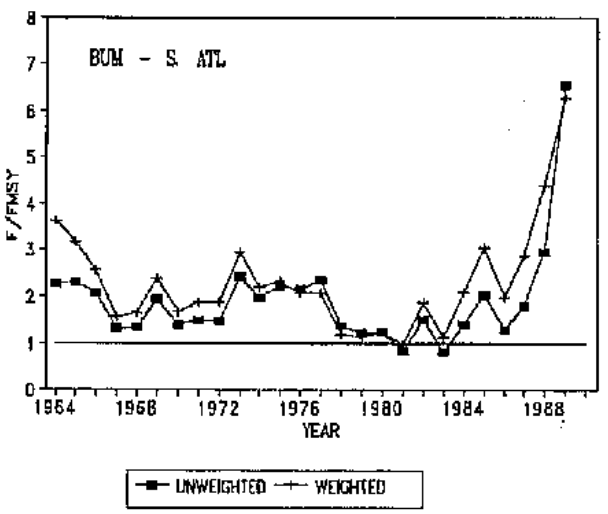
(a) Total Atlantic



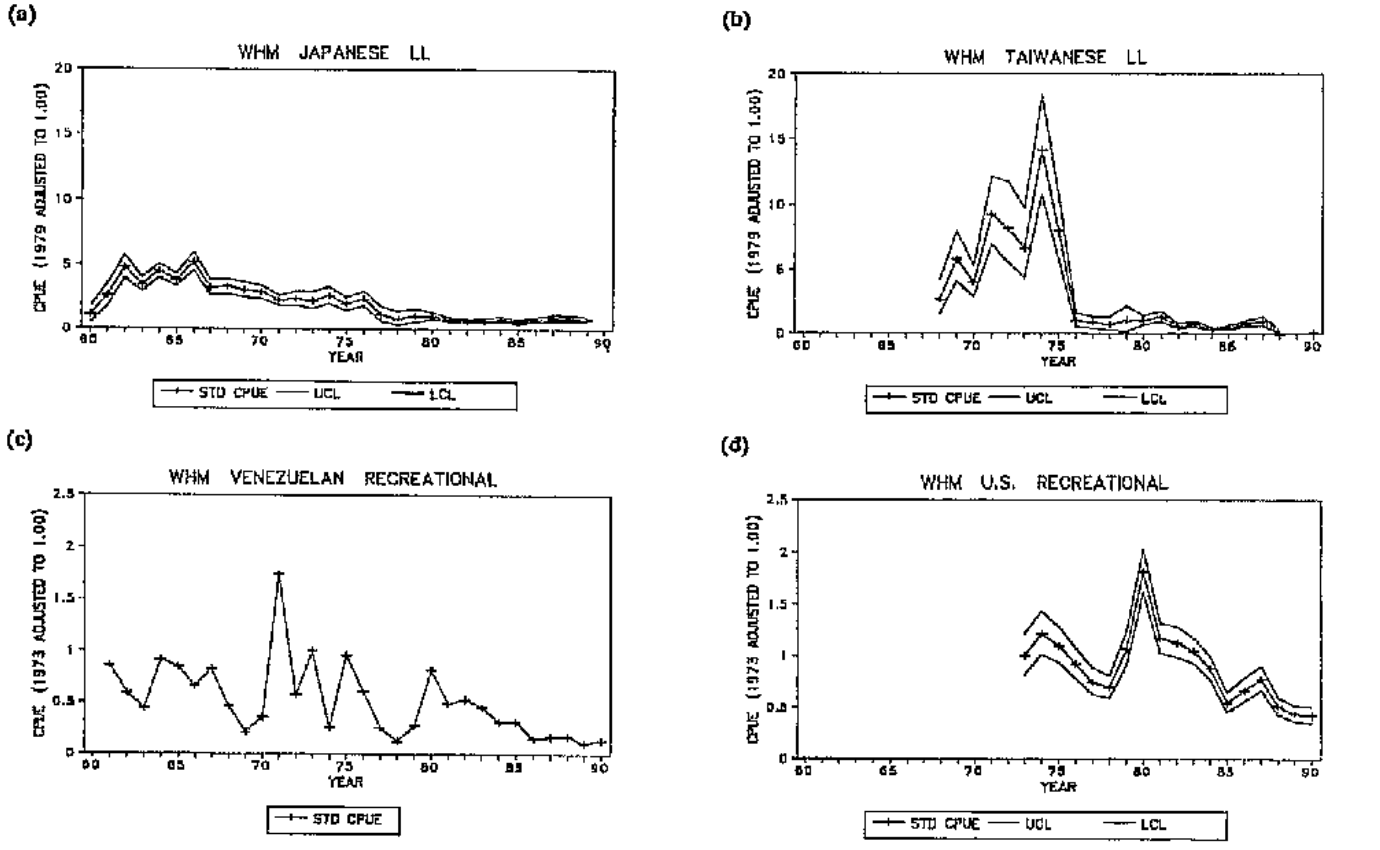
(b) North Atlantic



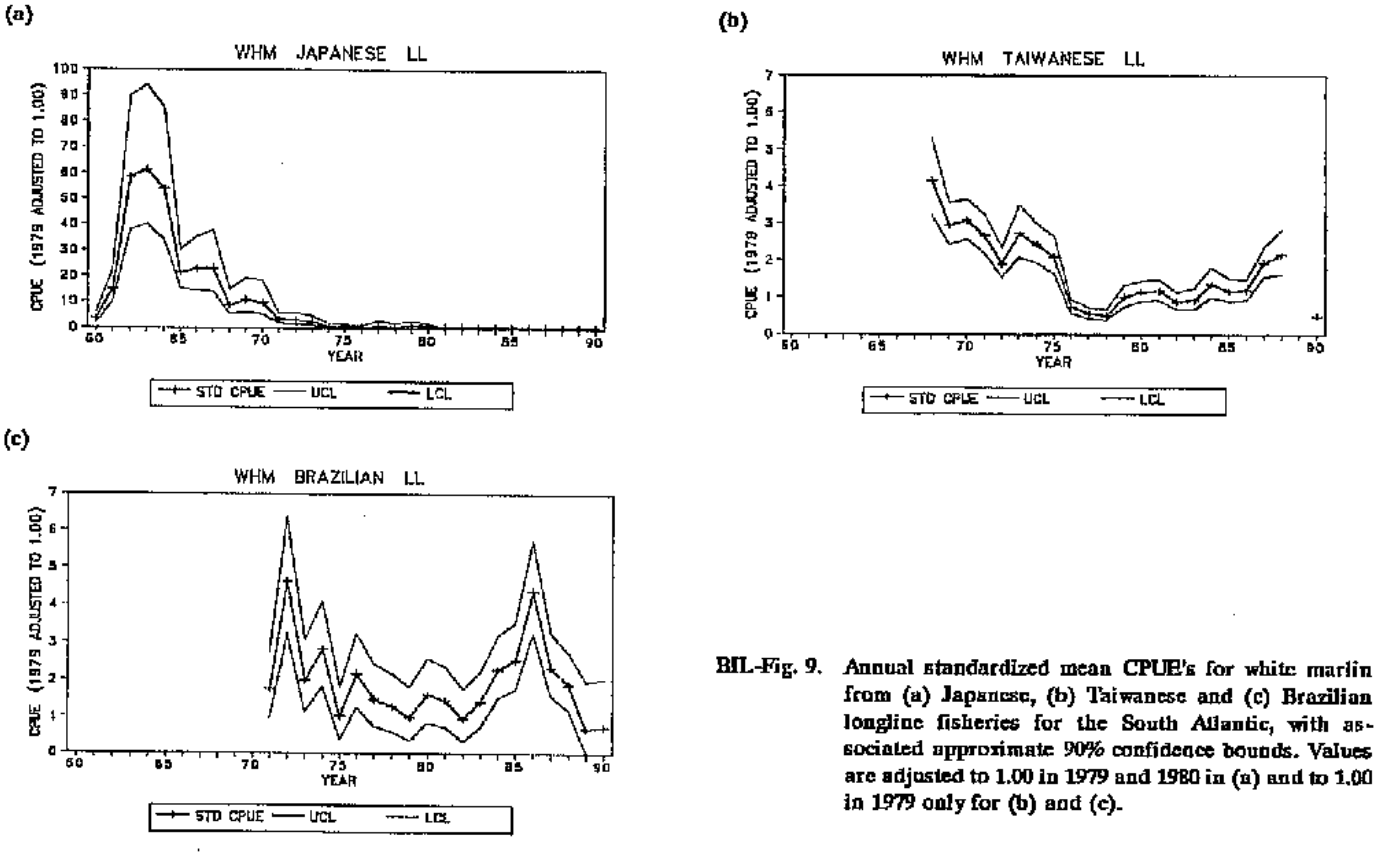
(c) South Atlantic



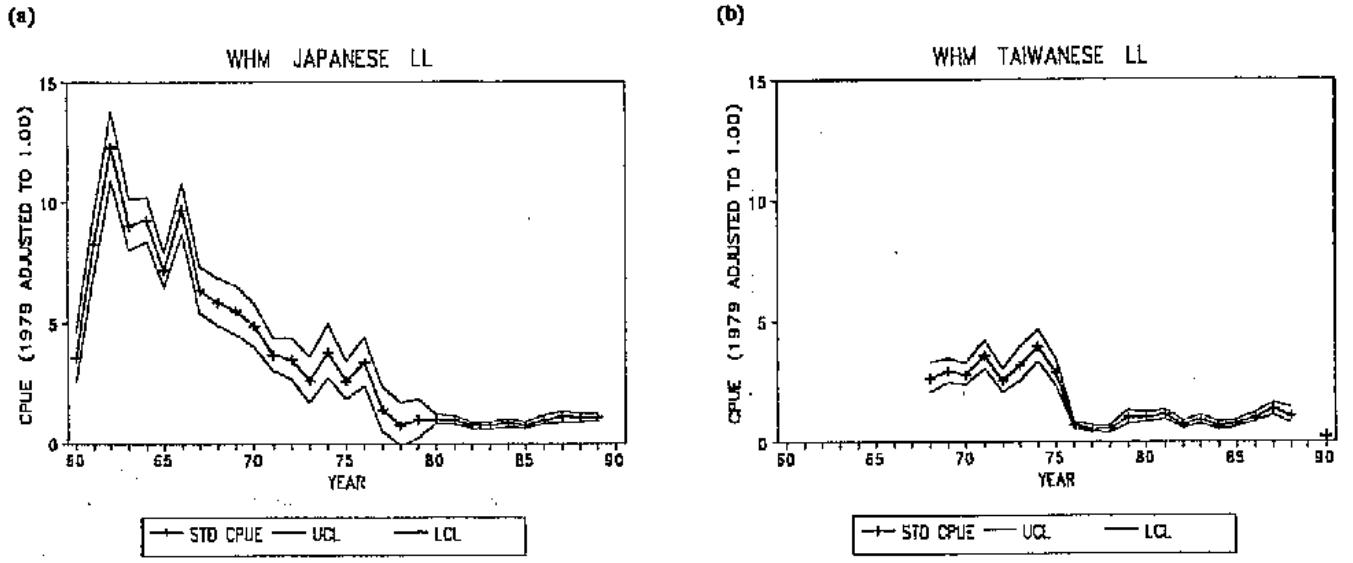
BIL-Fig. 7. Blue marlin estimated trajectory of F/F_{MSY} for the (a) total Atlantic, (b) north Atlantic and (c) south Atlantic.



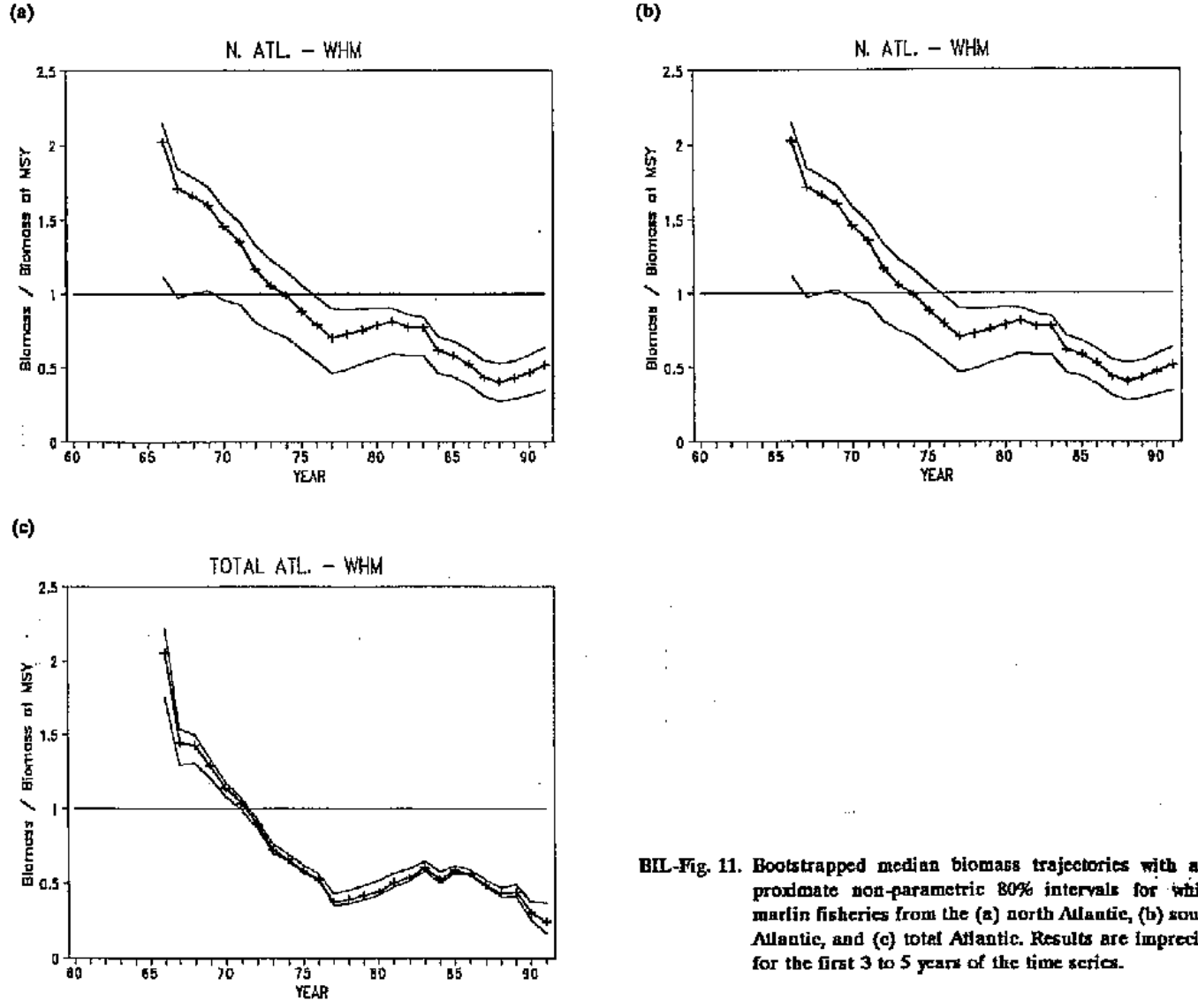
BIL-Fig. 8. Annual standardized mean CPUH's for white marlin from (a) the Japanese longline fishery, (b) the Taiwanese longline fishery, (c) the Venezuelan recreational fishery, and (d) the U.S. recreational fishery for the north Atlantic, with associated approximate 90% confidence bounds. Values are adjusted to 1.00 in 1979 and 1980 in (a) and (b), and to 1.00 in 1973 in (c) and (d).



BIL-Fig. 9. Annual standardized mean CPUE's for white marlin from (a) Japanese, (b) Taiwanese and (c) Brazilian longline fisheries for the South Atlantic, with associated approximate 90% confidence bounds. Values are adjusted to 1.00 in 1979 and 1980 in (a) and to 1.00 in 1979 only for (b) and (c).

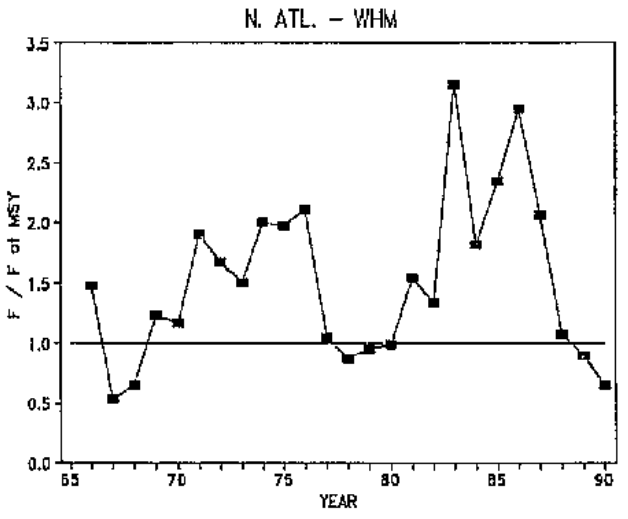


BIL-Fig. 10. Annual standardized mean CPUE's for white marlin from the Japanese (a) and Taiwanese (b) longline fisheries for the total Atlantic, with associated approximate 90% confidence bounds. Values are adjusted to 1.00 in 1979 and 1980.

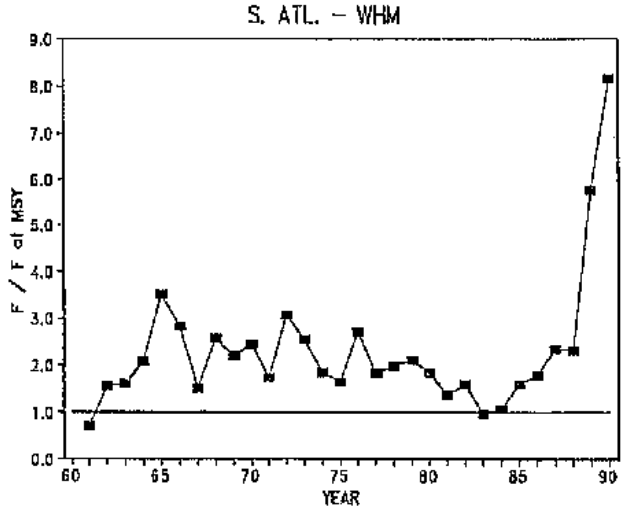


BIL-Fig. 11. Bootstrapped median biomass trajectories with approximate non-parametric 80% intervals for white marlin fisheries from the (a) north Atlantic, (b) south Atlantic, and (c) total Atlantic. Results are imprecise for the first 3 to 5 years of the time series.

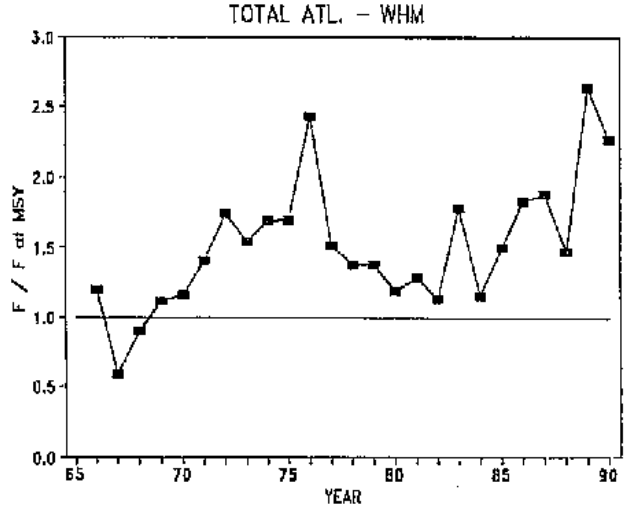
(a)



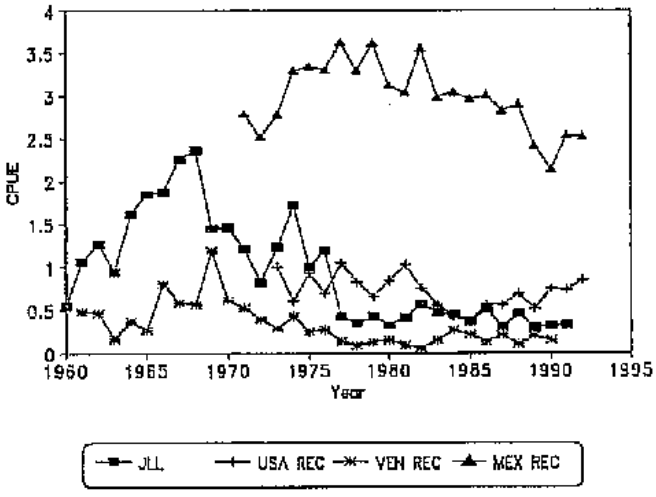
(b)



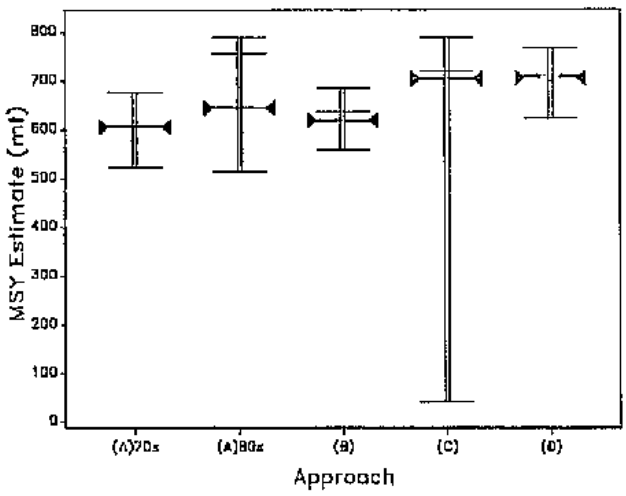
(c)



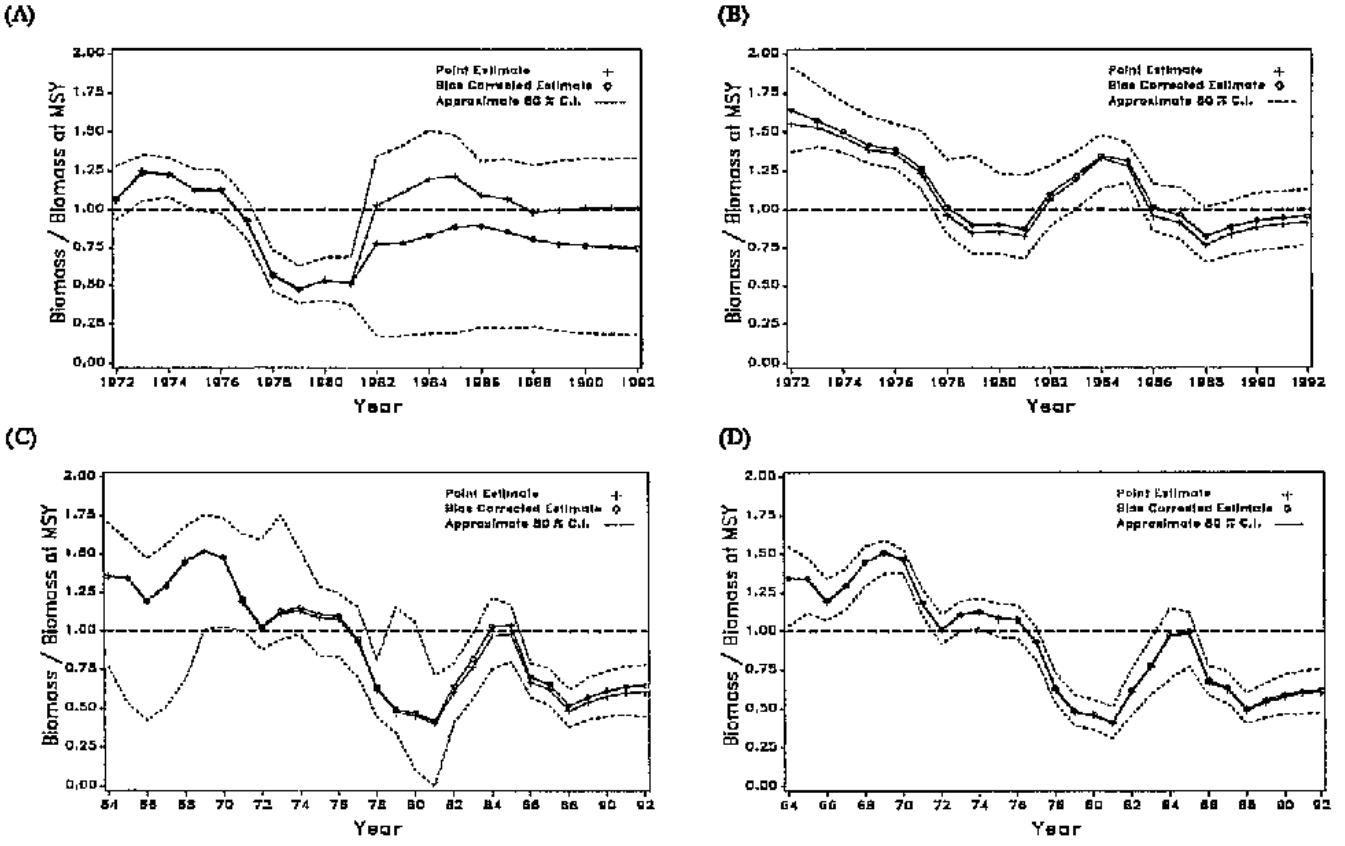
BIL-Fig. 12. Relative fishing mortality trajectories for white marlin from the (a) north Atlantic, (b) south Atlantic, and (c) total Atlantic.



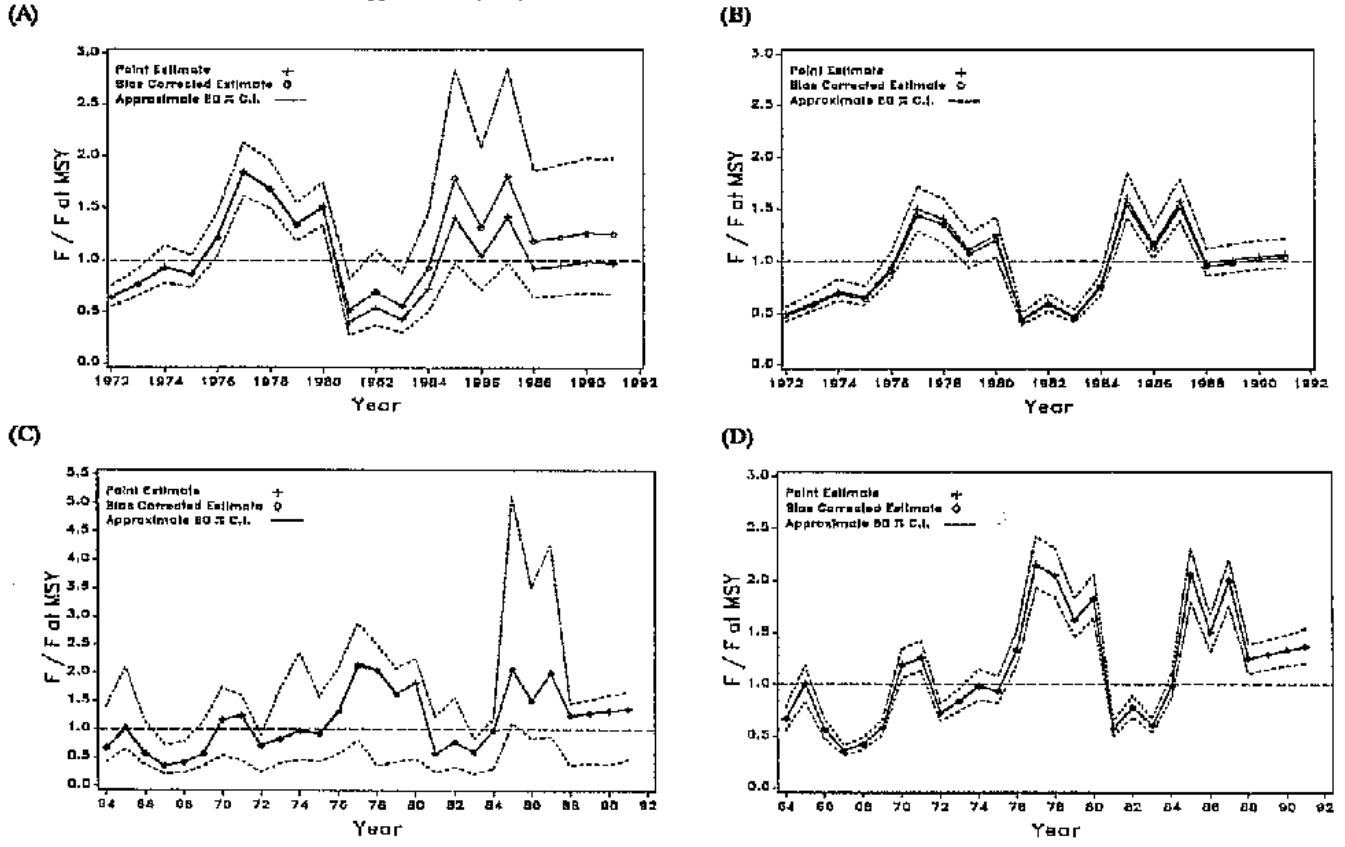
BIL-Fig. 13. Available CPUE trajectories used for west Atlantic sailfish. JLL is Japanese longline standardized CPUE. USA REC is the United States rod and reel fishery standardized CPUE. VEN REC is the Venezuelan recreational fishery standardized CPUE. MEX REC is the Mexican recreational fishery CPUE in nominal units.



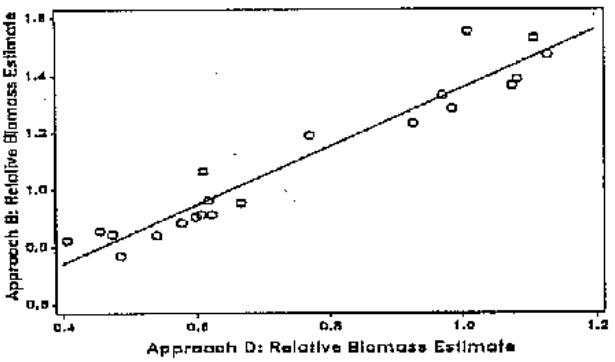
BIL-Fig. 14. Estimated values of MSY for the west Atlantic sailfish. Horizontal lines are point estimates and approximate 80% non-parametric confidence limits (from 1000 bootstraps). Lines with pointers are bias corrected point estimates. An explanation of the four approaches (A-D) used in these analyses is given in the text.



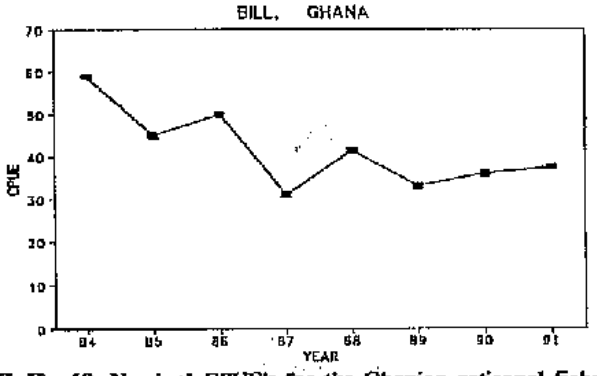
BIL-Fig. 15. Bootstrapped annual relative biomass (= B_t/B_{MSY}) from the ASPIC models fitted to west Atlantic sailfish catch and effort information. Confidence intervals are based on 1000 trials. Annual values for the first two years are omitted due to extreme imprecision. The four approaches (A-D) are described in the text.



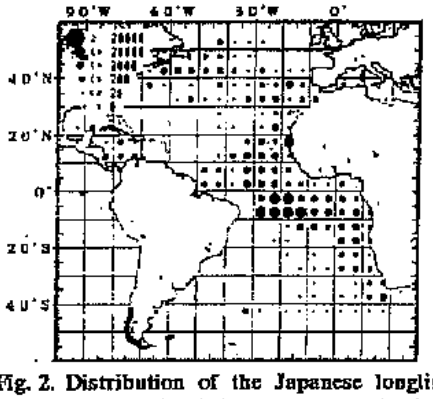
BIL-Fig. 16. Bootstrapped annual relative fishing mortality (= F_t/F_{MSY}) from the ASPIC models fitted to west Atlantic sailfish catch and effort information. Confidence intervals are based on 1000 trials. Annual values for the first two years are omitted due to extreme imprecision. The four approaches (A-D) are described in the text.



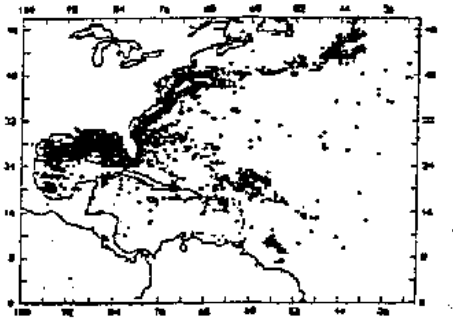
BIL-Fig. 17. Relative west Atlantic sailfish biomass estimates for approaches (B) and (D) (see BIL-Fig. 14) for the years 1972-1992. The correlation coefficient is $r = 0.96$. The slope of the fitted line is 1.02 with a y-intercept of 0.33.



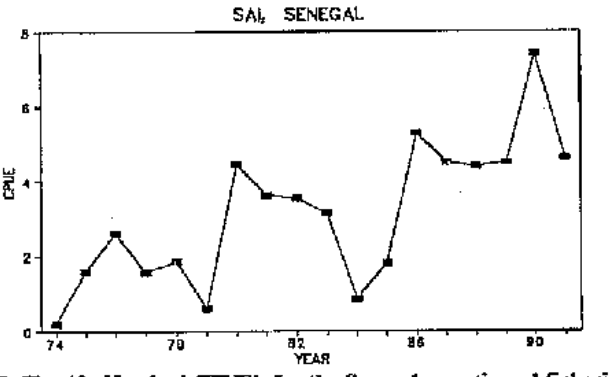
BIL-Fig. 19. Nominal CPUE's for the Ghanian artisanal fisheries for billfish (1984-1991). Sailfish represent over 80% of the billfish catch.



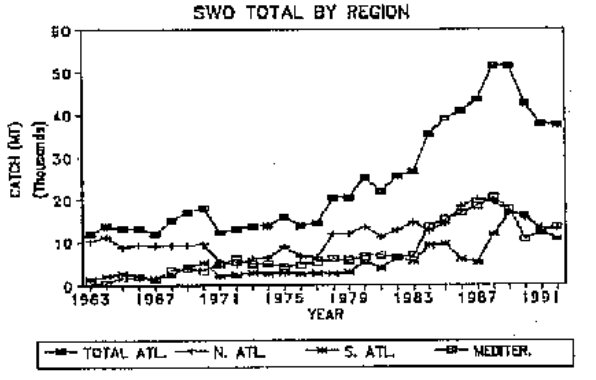
SWO-Fig. 2. Distribution of the Japanese longline landings (in number) by 5x5 degree rectangles in 1992. Data are provisional and presented as catch rather than effort as this is a by-catch fishery.



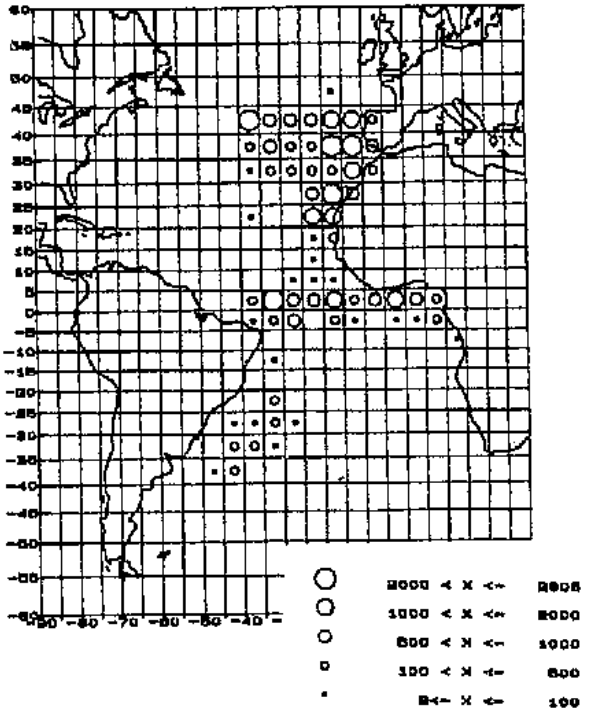
SWO-Fig. 4. The U.S. swordfish longline set positions, 1992.



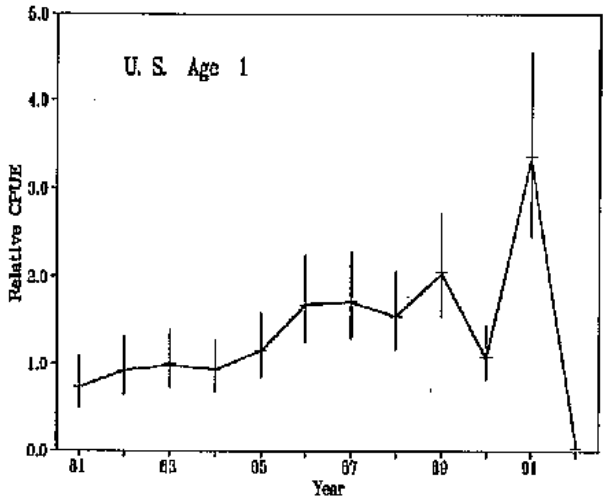
BIL-Fig. 18. Nominal CPUE's for the Senegalese artisanal fisheries for sailfish (1974-1991).

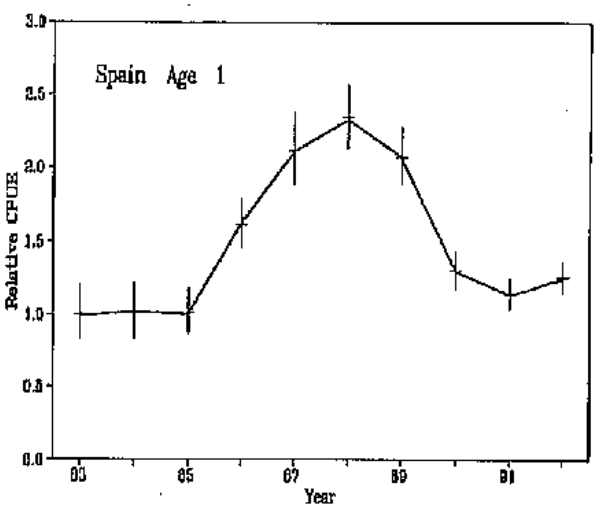


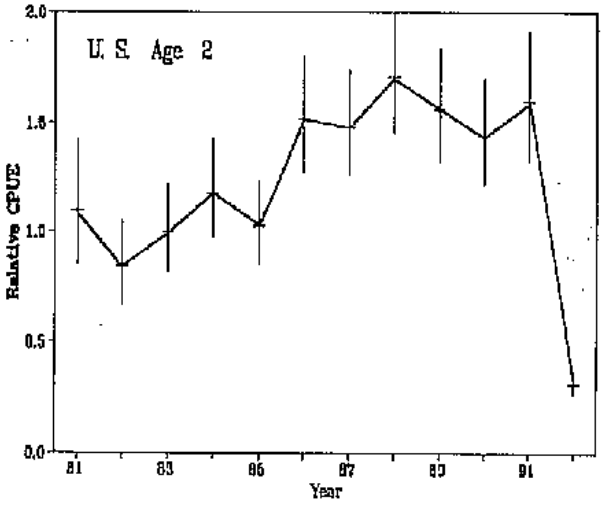
SWO-Fig. 1. Annual landings (in 1000 MT) of swordfish in the Atlantic Ocean and Mediterranean Sea.

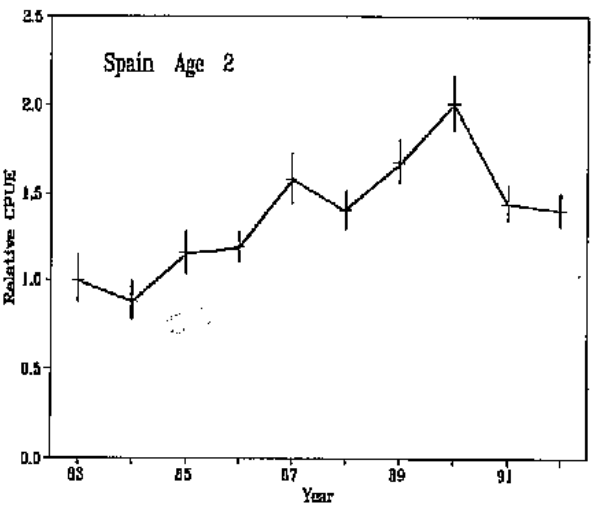


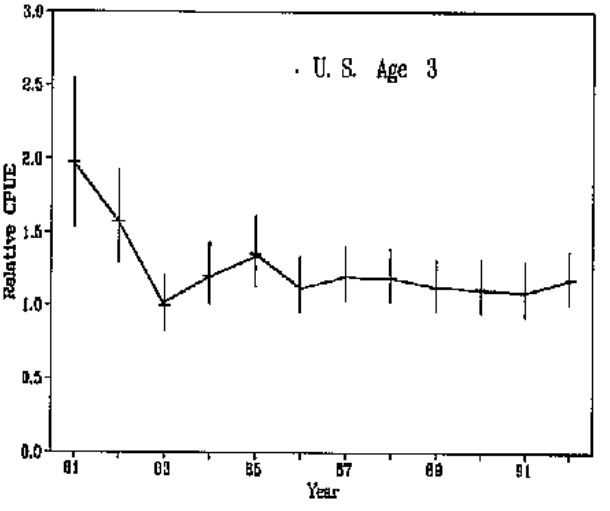
SWO-Fig. 3. Fishing effort by 5x5 degree rectangles (in 1000 of hooks) by the Spanish fleet in the Atlantic for the 1988-1991 period.

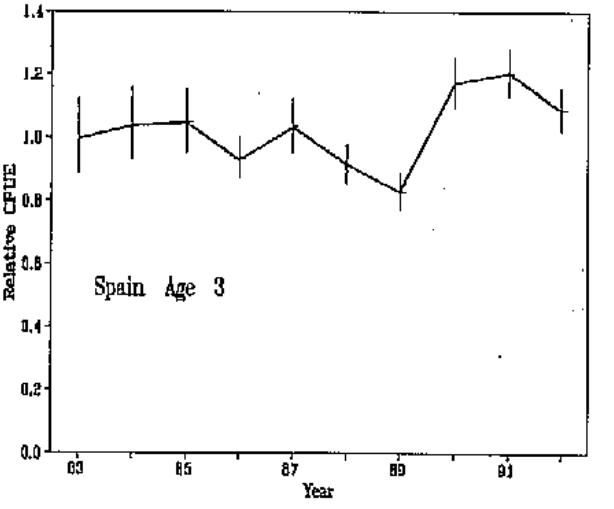




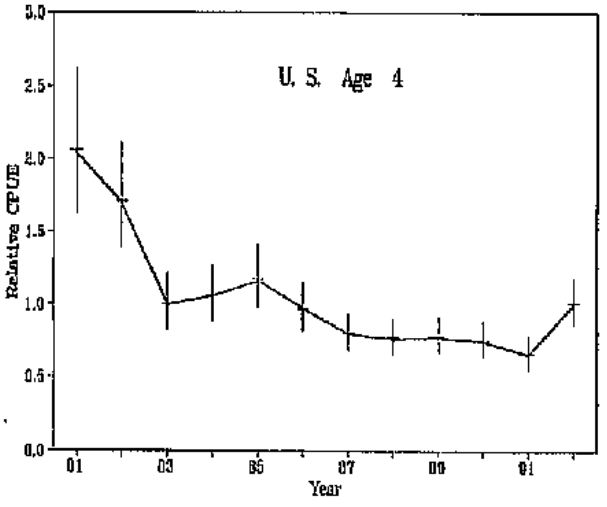


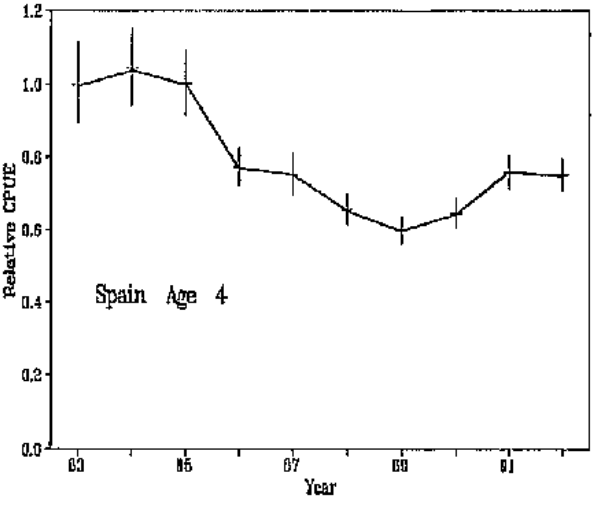


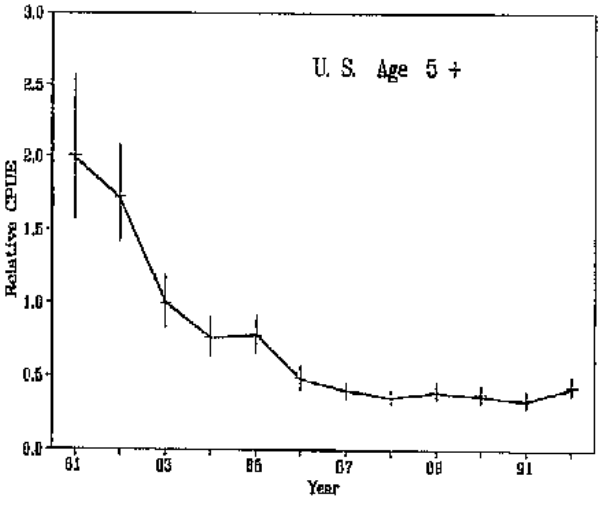


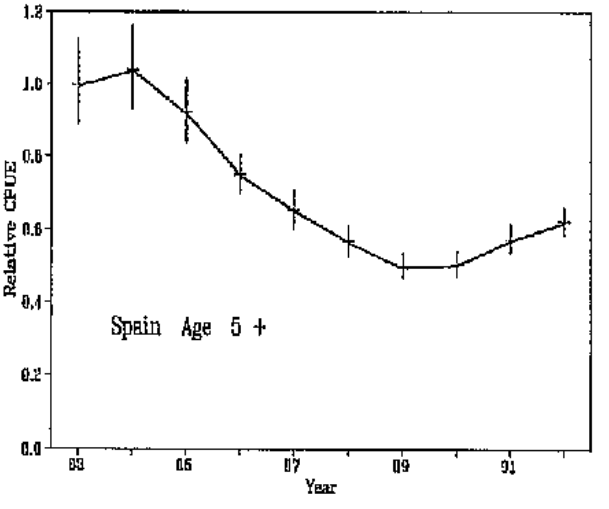


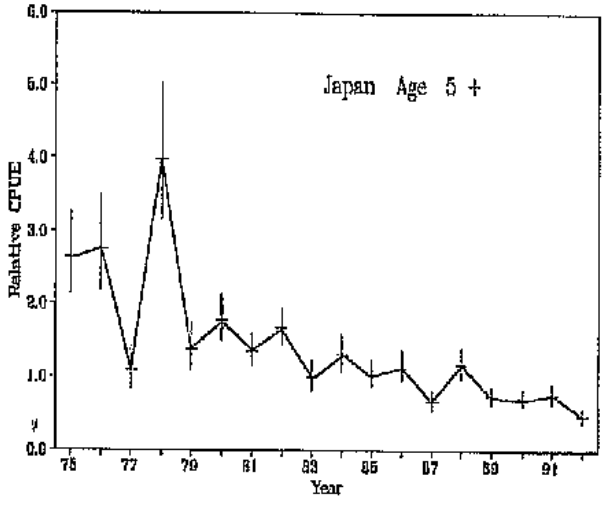
SWO-Fig. 5a. Age-specific catch rates assumed as abundance indices for the north Atlantic swordfish stock (1983=1.00). Data of age 1 and age 2 of the U.S. fleets are affected by discards not included in the analyses.



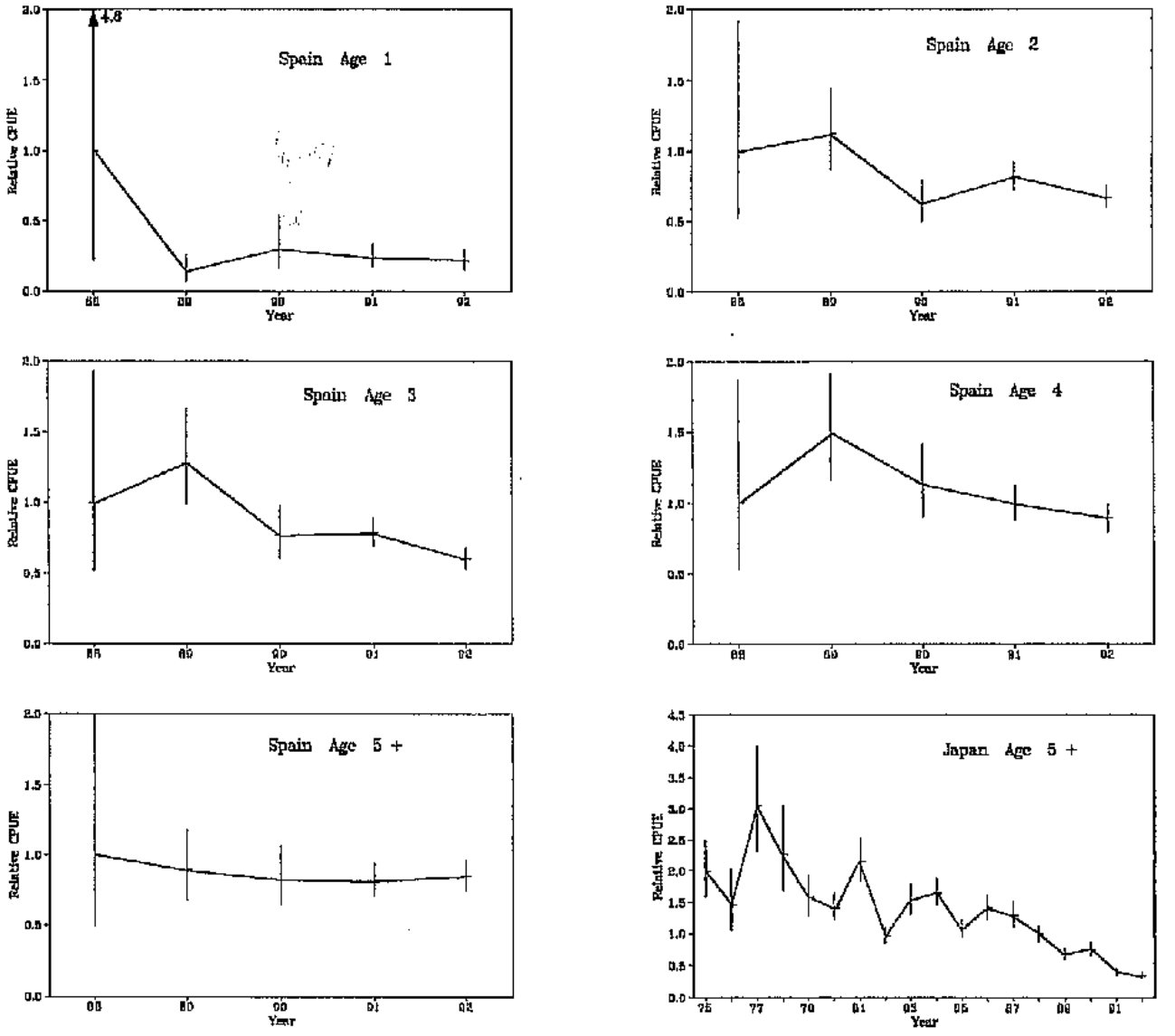




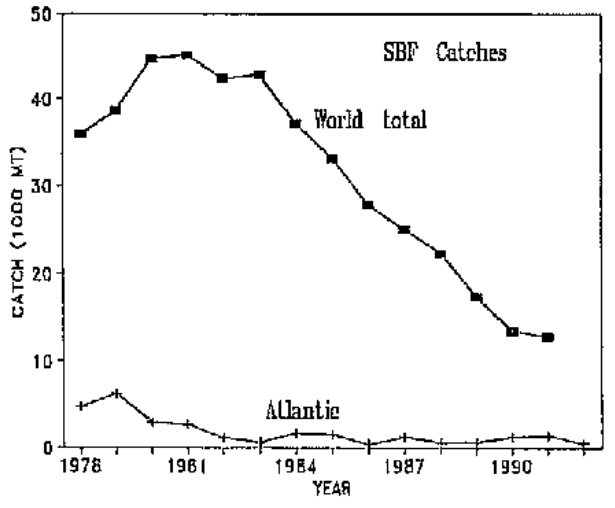




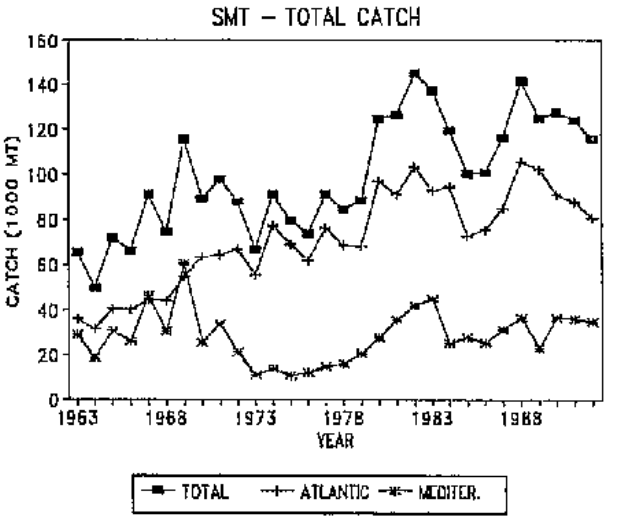
SWO-Fig. 5a. Continued..



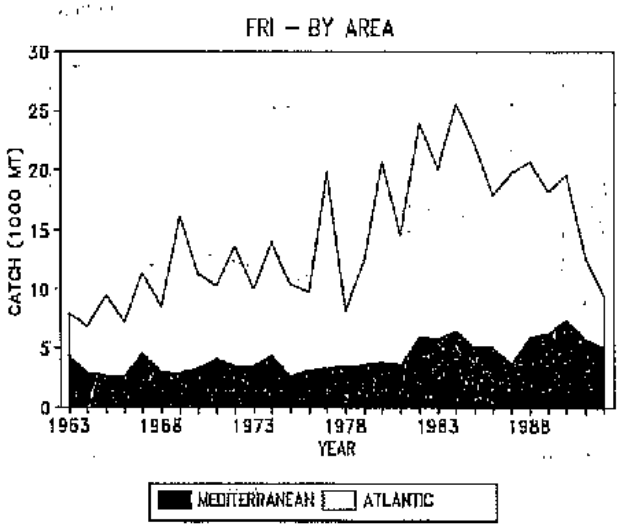
SWO-Fig. 5b. Age-specific abundance indices for the south Atlantic swordfish stock (1988 = 1.00).



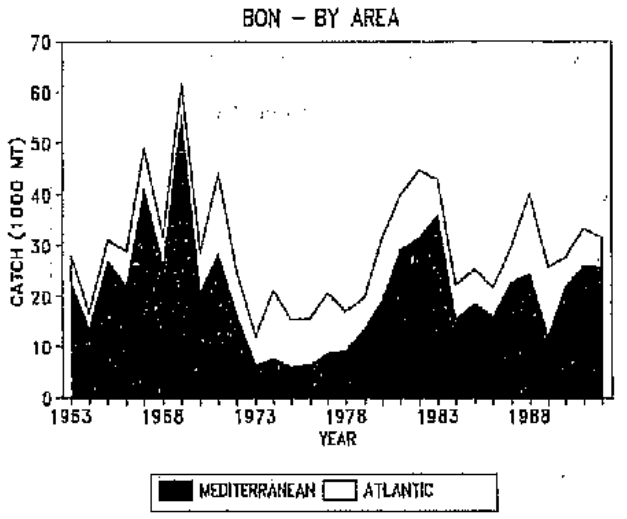
SBF-Fig. 1. World and Atlantic catches (in 1000 MT) of southern bluefin tuna.



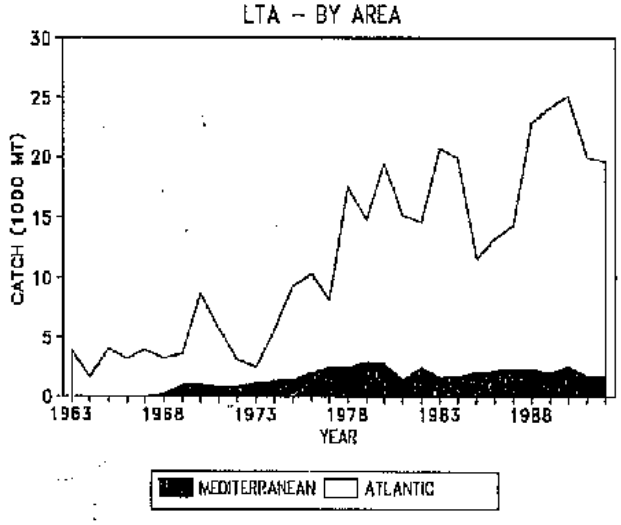
SMT-Fig. 1. Total Atlantic and Mediterranean small tuna landings (in 1000 MT).



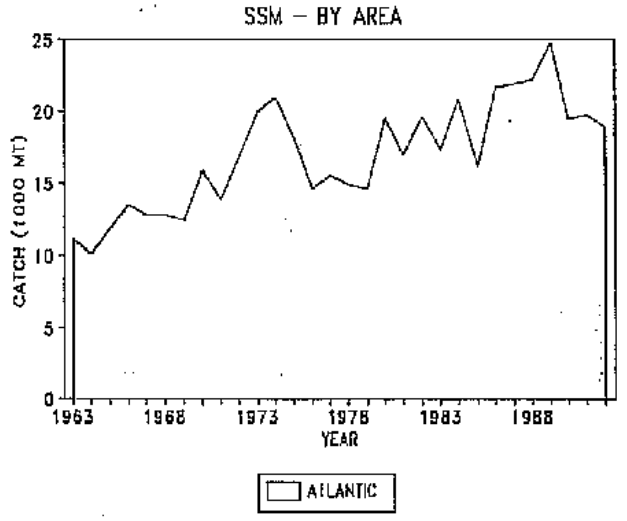
SMT-Fig. 2. Total Atlantic and Mediterranean frigate tuna (Auxis thazard) landings (in 1000 MT).



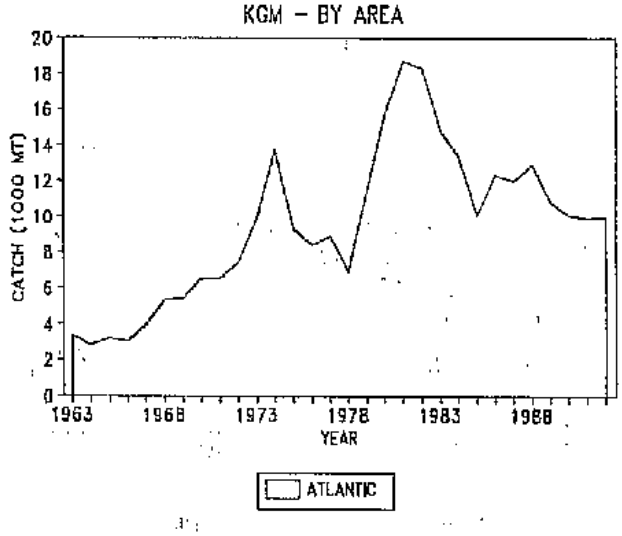
SMT-Fig. 3. Total Atlantic and Mediterranean bonito (Sarda) landings in (1000 MT).



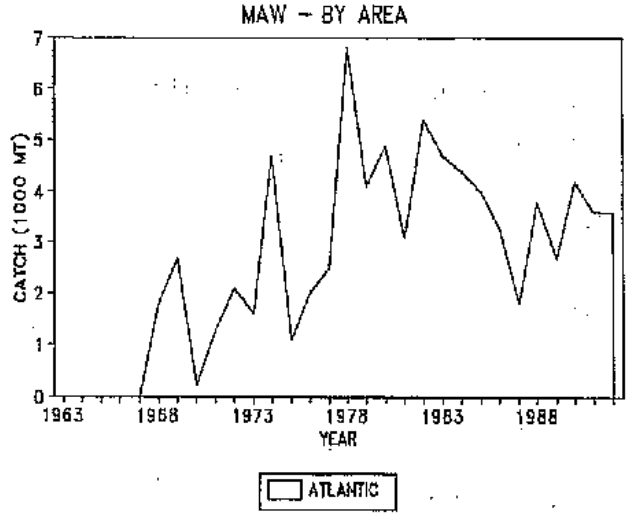
SMT-Fig. 4. Total Atlantic and Mediterranean black skipjack (Euthynnus alletteratus) landings (in 1000 MT).



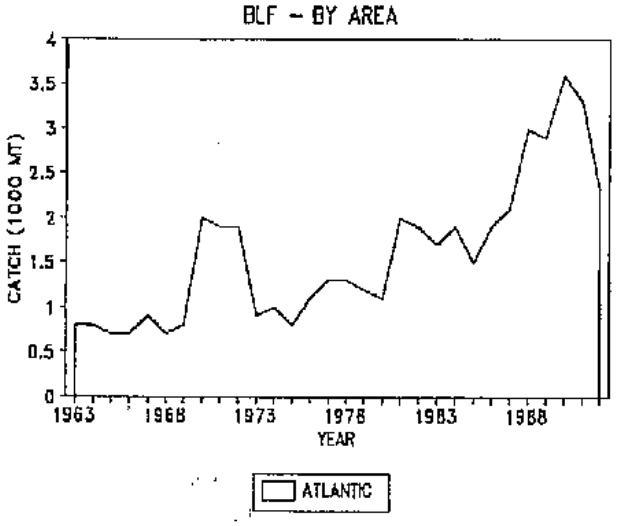
SMT-Fig. 5. Total Atlantic and Mediterranean Spanish mackerel (Scomberomorus maculatus) landings (in 1000 MT).



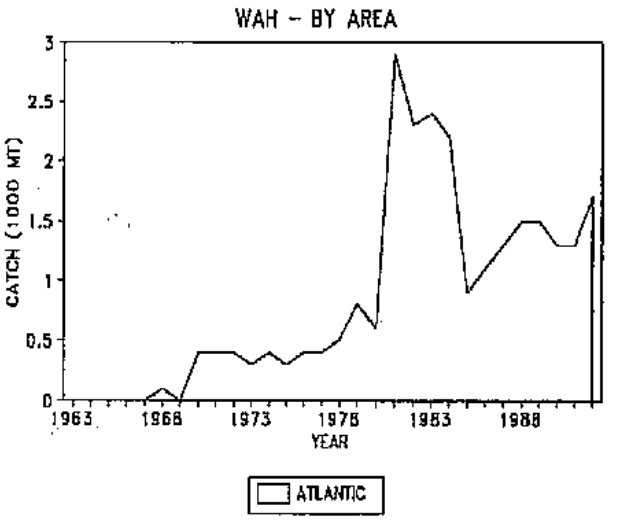
SMT-Fig. 6. Total Atlantic and Mediterranean king mackerel (Scomberomorus cavalla) landings (in 1000 MT).



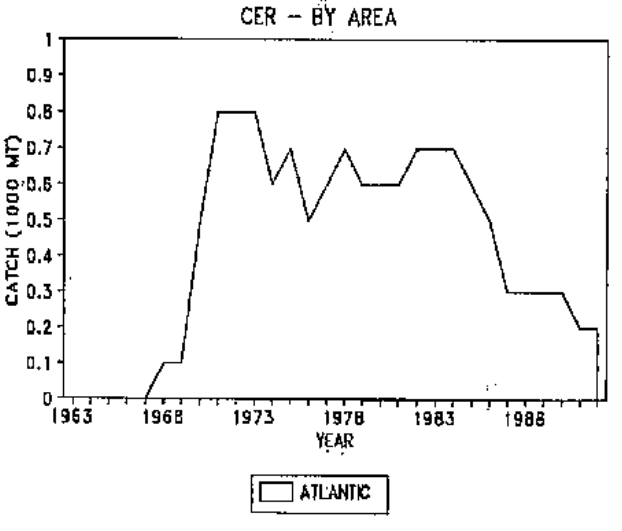
SMT-Fig. 7. Total west African Spanish mackerel (Scomberomorus tritor) landings (in 1000 MT).



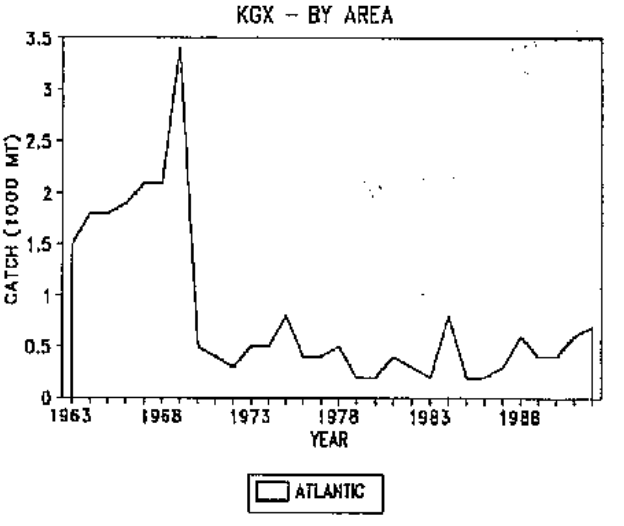
SMT-Fig. 8. Total Atlantic blackfin tuna (Thunnus atlanticus) landings (in 1000 MT).



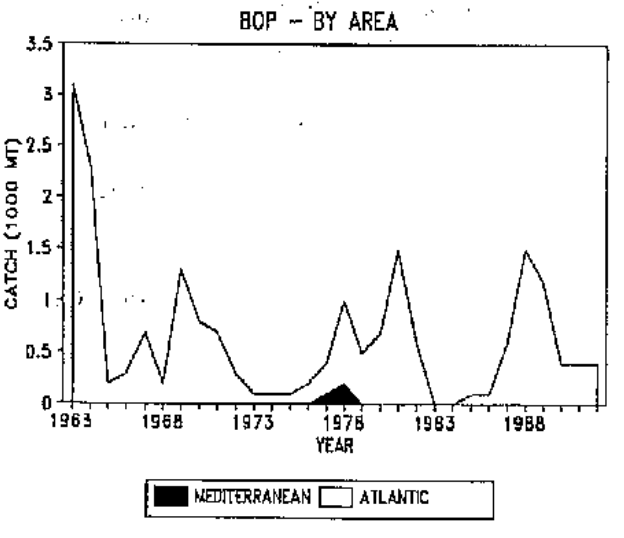
SMT-Fig. 9. Total Atlantic wahoo (Acanthocybium solandri) landings (in 1000 MT).



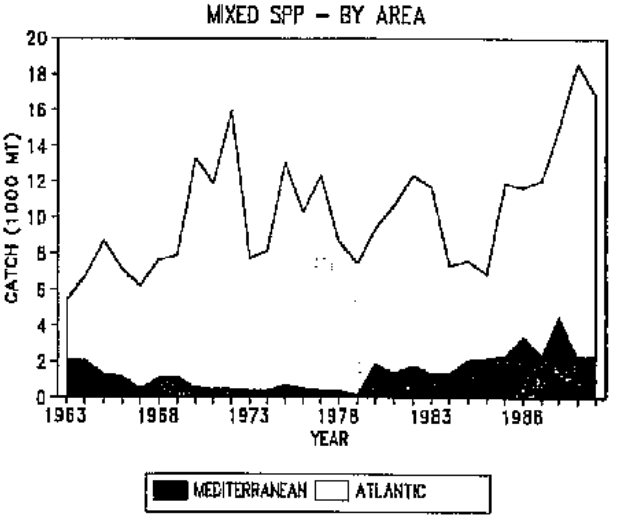
SMT-Fig. 10. Total Atlantic and cero mackerel (Scomberomorus regalis) landings (in 1000 MT).



SMT-Fig. 11. Total Atlantic unclassified (Scomberomorus spp.) landings in (1000 MT).



SMT-Fig. 12. Total Atlantic and Mediterranean plain bonito (Orcynopsis unicolor) landings (in 1000 MT).



SMT-Fig. 13. Total Atlantic and Mediterranean landings (in 1000 MT) of mixed species of small tunas.

Appendix 1 to Annex 23

AGENDA OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS (SCRS)

1. Opening of the meeting
2. Adoption of Agenda and arrangements for the meeting
3. Introduction of delegations
4. Admission of observers
5. Admission of scientific documents
6. Review of national fisheries and research programs
7. Reports of 1993 inter-sessional scientific meetings
   - -- Working Group on the Evaluation of Atlantic Yellowfin Tuna (Tenerife, Canary Islands, Spain, - June 3-9, 1993)
   - -- ICCAT Workshop on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age (St. Andrews, New Brunswick, Canada, July 6-10, 1993)
   - -- Other meetings
8. Review of the progress made by the Program of Enhanced Research for Billfish
9. Review of the progress made by the Bluefin Year Program
10. Review of conditions of stocks:

    YFT-Yellowfin
    BET-Bigeye
    SKJ-Skipjack
    ALB-Albacore
    BFT-Bluefin
    BIL-Billfishes
    SWO-Swordfish
    SBF-Southern Bluefin
    SMT-Small Tunas

11. Report of Sub-Committee on Environment
    - -- Anomalies in oceanic conditions in recent years
    - -- Ecology of tunas (association with floating objects, with other marine animals, gear selectivity, species interactions, by-catches, etc.)
    - -- Review of studies on the effect of the environment on tuna ecology and the conclusions of various international meetings on the environment
12. Report of the Sub-Committee on Statistics and review of Atlantic tuna statistics and data management system
    - -- Review of national statistics
    - -- The Secretariat's statistical work in 1993
    - -- Problems of unreported catches by non-Contracting Parties
    - -- Progress made on recommendations for statistics (as contained in the 1992 SCRS Report), and future plans
13. Progress made in the collection of information on sharks
14. Review of ICCAT publications
15. Draft of the scientific opinions to be submitted, if necessary, at the 1994 CITES Conference
16. Review of future SCRS activities
    - -- Organization of the SCRS sessions
    - -- Inter-sessional scientific meetings in 1994
    - -- Other matters
17. Cooperation with non-Contracting Parties and other organizations
18. Election of SCRS Chairman
19. Date and place of the next meeting of the SCRS
20. Other matters
21. Adoption of Report
22. Adjournment

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SCRS/93/5 Organization of the 1993 Meeting of the SCRS - Secretariat

SCRS/93/6 Guidelines for the presentation of Documents to the 1993 SCRS - Secretariat

SCRS/93/7 Procedures adopted in preparing data on west atlantic bluefin tuna catch at size for 1993 SCRS meeting - Miyake, P. M., P. Kebe

SCRS/93/8 Procedures adopted in updating the Albacore catch-at-size data for the 1993 stock assessment - Miyake, P. M., P. Kebe

SCRS/93/9 Data preparation done by the Secretariat for 1993 SCRS Meeting for swordfish catch-at-size - Miyake, P. M., P. Kebe

SCRS/93/10 Summary of the survey on tuna fisheries by-catches, 1993 - Secretariat

SCRS/93/11 Proposed logbook form for Tema-based purse seiners - Miyake, P. M.

SCRS/93/12 Report on statistics and coordination of research in 1993

SCRS/93/13 Report of the 1993 Meeting of the Standing Committee on Research and Statistics (SCRS)

SCRS/93/14 Report of the contributions/ expenditures of the ICCAT Enhanced Billfish Research Program in 1993

SCRS/93/15 Review of the progress made in the Bluefin Year Program (BYP) - Suzuki, Z., B. Liorzou

SCRS/93/16 Meeting of the ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna (Tenerife, Canary Islands, Spain, June 3-9, 1993)

SCRS/93/17 ICCAT Workshop on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age (St. Andrews, New Brunswick, Canada, July 6-10, 1993)

SCRS/93/18 Convention for the Conservation of Southern Bluefin Tuna

SCRS/93/19 Collection of information on tuna fisheries by-catches

SCRS/93/20 United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, July 12-30, 1993)

SCRS/93/21 Information relative to high seas driftnet fishing

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SCRS/93/23 Development of new criteria for listing species in the CITES Appendices

SCRS/93/24 Informe al SCRS de la LI Reunión de la Comisión Interamericana del Atún Tropical - Ariz, J.

SCRS/93/25 Informe de la Reunión de Expertos de Túnidos del Océano Indico - Cort, J. L.

SCRS/93/26 National Report of South Africa - Penney, A. J.

SCRS/93/27 National Report of the United States: 1993 - NOAA/NMFS

SCRS/93/28 National Report of Russia, 1992-93 - Gaikov, V. Z., M. E. Grudtsev

SCRS/93/29 National Report of Trinidad & Tobago - Fisheries Division, Ministry of Agriculture, Land and Marine Resources

SCRS/93/30 Report of the CARICOM Fisheries Resource Assessment and Management Program (GFRAMP) - Pelagic and Reef Fishes Resource Assessment Unit, St. Vincent and the Grenadines

SCRS/93/31 Updated standardized catch rates of Yellowfin Tuna (*Thunnus albacares*), from the U.S. longline fishery in the Atlantic Ocean - Prager, M. H., G. P. Scott

SCRS/93/32 Standardized abundance indices for western north Atlantic yellowfin tuna from the U.S. recreational fishery from Virginia to New York: An update - Browder, J. A., J. Cramer

SCRS/93/33 Evaluación analítica del stock de rabil del Atlántico este, 1979-91 - Pallares, P., J. Ariz, A. Delgado de Molina, J. C. Santana, J. A. Pereiro

SCRS/93/34 Muestreo multiespecifico: efectos sobre el tamaño muestral y las distribuciones de tallas resultantes - Pallares, P., A. Delgado de Molina, J. C. Santana, J. Ariz

SCRS/93/35 Composición por edades del rabil capturado por embarcaciones de cebo vivo en el área de las Islas Canarias - Ariz, J., A. Delgado de Molina, P. Pallares, J. C. Santana, J. A. Pereiro

SCRS/93/36 Pesquerías españolas de rabil (*Thunnus albacares*, Bonnaterre 1788) en el Océano Atlántico - Santana, J. C., J. Ariz, A. Delgado de Molina, R. Delgado de Molina, P. Pallares

SCRS/93/37 Relación LD1-LF del rabil (*Thunnus albacares*, Bonnaterre 1788) en el Océano Atlántico este - Delgado de Molina, A., P. Pallares, J. Ariz, J. C. Santana, F. Gonzalez

SCRS/93/38 Estudio de algunos parámetros biológicos del rabil (*Thunnus albacares*, Bonnaterre 1788) del Atlántico este - Delgado de Molina, A., J. C. Santana, J. Ariz, R. Delgado de Molina, P. Pallares

SCRS/93/39 Data preparation done by the Secretariat for the ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna - Miyake, P. M., P. Kebe

SCRS/93/40 Yellowfin tuna catch and effort data from Barbados, Grenada, St. Lucia and St. Vincent and the Grenadines - Mahon, R., S. Singh-Renton, S. Jennings-Clarke, J. Rennie, R. Ryan, S. Willoughby

SCRS/93/41 Structure de stock de l'albacore (*Thunnus albacares*) atlantique d'après les marquages comparés aux lieux de ponte - Bard, F. X., A. Hervé

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SCRS/93/47 Proposal of some important researches on the Atlantic bluefin tuna - Suzuki, Z.

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SCRS/93/49 Description of the Japanese longline fishery operating in the central north Atlantic - Miyabe, N., K. Hiramatsu

SCRS/93/50 A mark-recapture experiment on bluefin tuna (*Thunnus thynnus* L.) from the Browns-Georges Banks region of the Canadian Atlantic: 1993 update - Porter, J. M., M. J. W. Stokesbury, C. A. Dickson, W. E. Hogans

SCRS/93/51 Length-based Separable Sequential Population Analysis as applied to swordfish (*Xiphias gladius*) - Kimura, D. K., G. P. Scott

SCRS/93/52 A review of the recent information on size at age and the calculation of age from size for Atlantic bluefin tuna - Turner, S. C.

SCRS/93/53 National Report of Canada - Porter, J. M.

SCRS/93/54 Review of swordfish age and growth data and methodologies - Porter, J. M.

SCRS/93/55 Application of length at age distributions to derive age composition of Georges Bank Haddock from length frequencies - Gavaris, S., L. Van Eckhaute

SCRS/93/56 A comparison of three methods to convert catch at length data into catch at age - Mohn, R.

SCRS/93/57 Notes on biological and biometric data of the swordfish (*Xiphias gladius* L.) in areas off Madeira - Gouveia, L., J. Mejuto

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SCRS/93/60 A new approach to age-length keys: using last year's and this year's data to estimate age composition - Hoenig, J. M., D. M. Heisey, R. C. Hanamura

SCRS/93/61 Une méthode simple d'ajustement des clés taille/âge: Application aux captures d'albacores (*Thunnus albacares*) de l'Atlantique est - Gascuel, D.

SCRS/93/62 Determination of stock structure in bluefin tuna at the NMFS Laboratory, Charleston South Carolina - Woodley, C. M.

SCRS/93/63 Large bluefin tuna (*Thunnus thynnus*) indices of abundance from the rod and reel and handline fishery off the northeast United States - Cramer, J., S. C. Turner

SCRS/93/64 Indices of abundance for large bluefin tuna (*Thunnus thynnus*) from the U.S. mandatory pelagic longline fishery in the Gulf of Mexico and off the Florida east coast - Cramer, J., G. P. Scott

SCRS/93/65 A review of the growth rate of west Atlantic bluefin tuna (*Thunnus thynnus*), estimated from marked and recaptured fish - Turner, S. C., V. R. Restrepo

SCRS/93/66 Estimation of west Atlantic bluefin tuna (*Thunnus thynnus*) age composition with length composition analysis - Turner, S. C., M. Terceiro

SCRS/93/67 Standardized catch rates of small bluefin tuna in the Virginia-Rhode Island (U.S.) rod and reel fishery - Brown, C. A., J. A. Browder

SCRS/93/68 The robustness of estimates of stock status for the western north Atlantic bluefin tuna population to violations of the assumptions underlying the associated assessment models - Butterworth, D. S., A. E. Punt

SCRS/93/69 An updated index of west Atlantic bluefin spawning biomass based on larval surveys in the Gulf of Mexico - Scott, G. P., S. C. Turner

SCRS/93/70 Assessment of south Atlantic albacore resource by adopting production models on Taiwanese 1968-91 longline data - Yeh, S. Y., C. L. Wu, H. C. Liu

SCRS/93/71 Non-equilibrium production models of bluefin tuna in the western north Atlantic Ocean - Prager, M. H., G. P. Scott

SCRS/93/72 Combination of spawner-recruit, spawning biomass-per-recruit and yield-per-recruit computations for the estimation of the long term potential for west Atlantic bluefin tuna - Restrepo, V. R., C. E. Porch, S. C. Turner, G. P. Scott, A. A. Rosenberg

SCRS/93/73 GLM analysis of medium bluefin tuna relative abundance in the western north Atlantic based on rod and reel CPUE - Browder, J. A.

SCRS/93/74 Estimates of the abundance and mortality of west Atlantic bluefin tuna using the stock synthesis model - Porch, C. E., S. C. Turner, R. D. Methot

SCRS/93/75 A numerical evaluation of GLM methods for estimating indices of abundance from west Atlantic bluefin tuna catch per trip data when a high proportion of the trips are unsuccessful - Porch, C. E., G. P. Scott

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SCRS/93/77 A reexamination of the stock structure hypotheses for Atlantic bluefin tuna - Hester, F.

SCRS/93/78 Analisis preliminar de la pesquería artesanal de peces de pico en la región nororiental de Venezuela - Marcano, L. A., J. J. Alio, X. Gutierrez, R. A. Guzman, F. Barrios, A. Carrion, D. Rodriguez, G. Gomez

SCRS/93/79 Analisis de la captura y el esfuerzo de la pesquería atunera de pequeños palangreros en el Caribe Venezolano: 1983-1991 - Guzman, R. A., H. Salazar, L. Astudillo

SCRS/93/80 Rapport d'activités sur les pêcheries d'istiophoridés au Sénégal (mai-juillet 93) - Diouf, T.

SCRS/93/81 Revisión de los datos de marcado/recaptura de atún rojo (*Thunnus thynnus*, L.) en el Atlántico Este y Mediterráneo - Cort, J. L., J. M. de la Serna

SCRS/93/82 Mise en évidence de conditions favorisant l'abondance des albacores (*Thunnus albacares*) et des listaos (*Katsuwonus pelamis*), dans l'Atlantique équatorial est - Roger, C., E. Marchal

SCRS/93/83 Stock assessment and risk analysis for the south Atlantic population of albacore (*Thunnus alalunga*) - Punt, A. E., D. S. Butterworth, A. J. Penney

SCRS/93/84 An update of Japanese longline standardizes CPUE for the Atlantic swordfish - Nakano, H.

SCRS/93/85 Swordfish by-catch by the Japanese longline fishery in the recent years - Uozumi, Y.

SCRS/93/86 The standardized longline CPUE of north and south Atlantic albacore - K. Uosaki

SCRS/93/87 La pêche au germon pratiquée par les marins de la côte ionienne-sicilienne, années 1990-92 - Potoschi, A., P. Sturiale, G. Cavallaro, G. lo Duca

SCRS/93/88 Distribution géographiques des captures et des fréquences de taille de l'espadon dans la Méditerranée, années 1991-92 - Potoschi, A., P. Sturiale, G. Cavallaro, G. lo Duca

SCRS/93/89 Assessment of hard parts of blackfin tuna (*Thunnus atlanticus*) for determining age and growth - Neilson, J. D., S. Manickhand-Heileman, S. Singh-Renton

SCRS/93/90 PUE et effort de pêche local des thoniers senneurs dans les pêcheries de l'Atlantique tropical est - Foucher, E.

SCRS/93/91 Quantification des bilans migratoires de l'albacore (*Thunnus albacares*) et du listao (*Katsuwonus pelamis*) dans l'Atlantique tropical est: méthodes et résultats préliminaires - Foucher, E.

SCRS/93/92 Morphometric relationships, annual catches and catch at size for South African caught South Atlantic albacore (*Thunnus alalunga*) - Penney, A. J.

SCRS/93/93 Age-specific standardized catch rates for albacore (*Thunnus alalunga*) from the Spanish surface fleets in the north Atlantic, years 1983-92 - Mejuto, J., B. Garcia

SCRS/93/94 Brief note on some aspects of the Spanish surface longline fishery in the Atlantic Ocean from 1988-1992 - Mejuto, J., J. M. de la Serna

SCRS/93/95 Catch-at-age estimation in north atlantic albacore - Ortiz de Zarate, V., J. Santiago

SCRS/93/96 Preliminary analysis of albacore tag-return observations from surface fleets in north Atlantic - Ortiz de Zarate, V., N. Cummings-Parrack

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SCRS/93/98 First observations on reproductive biology of billfishes (*Tetrapturus albidus*, *Istiophorus albicans* and *Tetrapturus pfluegeri*) in the southwestern equatorial Atlantic (Brazil) - Souza, R. C., R. Lessa, F. Hazin

SCRS/93/99 An exploratory stock-production model analysis of sailfish (*Istiophorus platypterus*) in the western Atlantic Ocean - Jones, C. D., M. I. Farber

SCRS/93/100 Standardization of U.S. recreational fishing success for sailfish (*Istiophorus platypterus*) 1973-92, using General Linear Model techniques - Farber, M. I.

SCRS/93/101 Summary of a 1992-93 volunteer survey of billfish landings from the Florida east coast and Keys - Carter, R. L., M. I. Farber

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SCRS/93/103 Estimates of the catch of undersized swordfish by the U.S. large pelagic fleet based on logbook reports and scientific observations - Cramer, J., A. R. Bertolino, G. P. Scott

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to retrospective patterns in historical stock size estimates - Turner, S. C., C. E. Porch, V. R. Restrepo

SCRS/93/122 Comments on draft of 1993 SCRS bluefin species report - Broadhead, G.

SCRS/93/123 Statistiques de la pêche thonière açorienne, années 1979-92 - Pereira, J.

SCRS/93/124 Analyse de l'état du stock de patudo de l'Atlantique - Pereira, J.

SCRS/93/125 National Report of Japan - National Research Institute of Far Seas Fisheries

SCRS/93/126 National Report of Korea - National Fisheries Research and Development Agency

SCRS/93/127 Application du bootstrap bayésien en biologie des pêches - Gaertner, D.

SCRS/93/128 Análisis de la estructura del stock de atún aleta amarilla por medio de las frecuencias de tallas - Gaertner, D., M. Medina-Gaertner

SCRS/93/129 Distribuciones de tallas del listado capturado en el Océano Atlántico en el periodo de 1986 a 1991 - Ariz, J., A. Delgado de Molina, J. C. Santana, R. Delgado de Molina

SCRS/93/130 Relaciones biometricas del atún aleta amarilla (*Thunnus albacares*) desembarcado por la flota atunera palangrera venezolana - Marcano, J. S., H. D. Salazar, L. Astudillo

SCRS/93/131 Variación espacio-temporal de las capturas de atunes aleta amarilla y listado, realizadas por la flota venezolana de superficie en el Mar Caribe, entre 1988 y 1992 - Pagavino, M., D. Gaertner

SCRS/93/132 La pesca de tiburones en Venezuela / Shark fishery in Venezuela: Nota informativa - Alió, J. J., L. A. Marcano, X. Gutierrez

SCRS/93/133 By area comparison of abacore catch rates obtained from the longline fisheries in the south Atlantic - Yeh, S. Y., H. C. Liu, Y. Uozumi

SCRS/93/134 Premiers résultats de la campagne de pêche au thon en Algérie pour l'année 1992 - Chalabi, A.

SCRS/93/135 Rapport National du Portugal - Pereira, J.

SCRS/93/136 Rapport National de la France

SCRS/93/137 Exploitation des thons et espèces voisines au Maroc - Lahlou, A., A. Srour

SCRS/93/138 Some preliminary observations on the biological characteristics of the concentrations of bluefin tuna in the northwestern and central north Atlantic Ocean - Suda, A.

SCRS/93/139 National Report of Italy

SCRS/93/140 Rapport National du Maroc - Srour, A.

SCRS/93/141 National Report of Ghana, 1992

Appendix 4 to Annex 23

REPORT OF THE SUB-COMMITTEE ON STATISTICS

1. Opening of the Meeting

The 1993 meeting of the ICCAT Sub-Committee on Statistics was held in Madrid, Spain, at the Hotel Pintor on November 3 and 5. Dr. S. Turner (U.S.A.), Convener of the Sub-Committee, welcomed all the participants.

2. Adoption of Agenda and Arrangements for the Meeting

The Tentative Agenda was adopted and is attached as **Addendum 1** to this Report. Dr. P. M. Miyake (Secretariat) served as rapporteur.

3. Review of National Statistics

3.a Data collection and reporting

The Secretariat Report on Statistics and Coordination of Research (COM-SCRS/93/12) was reviewed, as regards the data collection and reporting by the national offices. The attached **Table 1** shows the updated status on the availability of 1992 data at the time of the meeting.

3.b Improvements to be made

-- Catch at size

The reporting of Task II size, catch and effort as well as catch-at-size data for major species was more timely during 1993, which made it possible for the Secretariat to update the catch-at-size data base before the stock assessment for western bluefin and albacore. However, this was not possible for swordfish, which was completed during the meeting.

-- Mediterranean data

There still remains a major problem in the reporting of Mediterranean fisheries statistics, even though significant progress has been made. The Sub-Committee strongly recommended that the Ad-Hoc GFCM/ICCAT Working Group on large pelagic fish (SCRS/93/22) hold its first meeting during 1994, together with the ICCAT stock assessment session of east Atlantic bluefin and/or swordfish. The FAO Representative commented that GFCM is considering to modify its STATLANT form for the Mediterranean, so that the data collected through this form would be useful for the scientists. A meeting possibly sponsored by EEC may be held which might be incorporated with the Ad-Hoc Working Group. The Sub-Committee recognized that the STATLANT form is to be used for reporting all the species and the Ad-Hoc Working Group should at least have some input for the modification in respect to reporting the large pelagic fish statistics.

-- Improvement in abundance indices for South Atlantic tuna fisheries

The lack of series of standardized catch per unit of effort, which is essential for stock assessment, was noted for many areas (particularly for the Mediterranean and the South Atlantic in general). The SCRS recommended (see Section SWO-10.4.b) that a Workshop be held in South America to develop reliable abundance indices for swordfish. The Sub-Committee recommended that such a meeting should extend its terms of reference not only to include swordfish but also other species of tuna, particularly albacore.

On the other hand, the Sub-Committee noted that holding such a meeting would not be warranted unless the basic data are available. It was noted that the data

are available for the historic period for Taiwanese and Japanese longliners, as well as for Brazilian longliners. While the Taiwanese and Japanese scientists would have the expertise to standardize the CPUE series, the Brazilian data have been dispersed and scientists from various laboratories should get together and work with the assistance of experts to create a series of standardized stock indices. The Secretariat was asked to inform South American scientists of the interest of the SCRS in holding such a meeting and the types of data needed to develop standardized CPUE for use in assessments.

A small working group composed of the swordfish and bluefin rapporteurs, Spanish, Japanese and United States scientists, Secretariat staff and the Sub-Committee Convener was formed to draft guidelines (a manual) for developing proper abundance index series and report to the SCRS. The Group met for the first time and decided to continue their work through correspondence. The draft of the manual should be made available for the pertinent experts to review by early spring, 1994 and sent to all the scientists involved in developing stock abundance indices. Secondly, the Secretariat is requested to contact with the scientists working on tuna fisheries in the south Atlantic and investigate as to which basic data are available for the south Atlantic fisheries. The results should be reported to the SCRS Chairman and the Sub-Committee Convener, by April, 1994, in order to decide if holding a workshop is warranted or not. If it were agreed to hold a workshop, the Secretariat should work out the logistics and call a meeting, in consultation with the SCRS Chairman.

-- Submission of Task I data

The Sub-Committee reiterated its previous decision that Task I catch data are very basic information and therefore all the national offices should report them independently from other statistics (such as logbook summary or size data). Also, every time a piece of information is reported, it should be reported together with other data in its entirety.

Currently, the landings tables for each species section of the SCRS Report are often updated after the stock assessments have ended. This causes constant changes in the text and figures that refer to landings, and after all the analysis presented in the text might not agree with the table presented. The Sub-Committee recommended that any up-dating of the catch and/or landing data after the stock assessments have ended should be incorporated into the ICCAT data base but not into the Tables in the Report so that the text is consistent with the Table.

-- Tagging data base

The Sub-Committee noted the extensive progress made in improving the tagging files during the past year and recommended that the Secretariat complete the reorganization of those files. The tagging files are now species specific and contain all the recovery information together with releases. The files were used for yellowfin and bluefin analysis and proved to be very useful. On the other hand, it was noted that release data for tags which had not been recovered are not complete for all species, particularly for tropical species. Another potential problem is that the data base is tag specific rather than fish specific, (i.e. double tags may cause some identity problem).

The Sub-Committee recommended that the national scientists submit release information for current years as well as for the historic period to complete this base. Particularly, the release files created during the ICCAT International Skipjack Year Program and Yellowfin Year Program should be made available to the Secretariat. The Sub-Committee also recommended that the Secretariat consider obtaining or developing improved software for organizing and managing the tagging data files, in collaboration with national scientists, which should also make it possible to identify fish which have double tags, and for easier data management.

-- International purse seine logbook

The Secretariat presented a draft logbook to be used by the captains (mostly Korean or Japanese) of the international purse seiners (often with a flag of convenience) operating from Tema and Abidjan bases (SCRS/93/11), following the recommendation made by the Sub-Committee at the 1992 meeting. A few comments on the form were made and a small group was formed to study the form. A final form was agreed upon and later presented. The Sub-Committee requested that Korean and Japanese scientists collaborate with the Secretariat to complete the form in their languages. As soon as this is done, the

Secretariat was requested to print the necessary copies of the logbooks and distribute them at landing ports where these vessels unload their catches. The small group's report is attached as **Addendum 2** to this Report.

4. Examination of the Secretariat's Statistical Work in 1993

4.a Data processing carried out in 1993

Details of the data processing carried out by the Secretariat during 1993 are contained in Document COM-SCRS/93/12. The Sub-Committee recognized the progressive increase in the volume of data to be processed by the Secretariat, particularly to comply with the mandate to prepare the data files needed for the various stock assessment sessions and inter-sessional scientific meetings.

4.b Port sampling program

The Secretariat reported that sampling activities at the transshipment ports were again minimal in 1993, mostly due to less landings of Oriental longliners at Atlantic ports. The Sub-Committee recognized that while full implementation of port sampling is very costly, if the scheme were to be abandoned, it would be very difficult to reconstruct when needed. Being aware of increasing activities of fleets flying flags of convenience of non-Contracting Parties, it was agreed to maintain a minimum level of port sampling, particularly aimed at collecting statistics of those non-Contracting Parties' fleets.

The Sub-Committee expressed its appreciation to South Africa for sampling the transshipments of Asian longliners at Cape Town. The high quality data submitted are very effective for checking the albacore size data measured by fishermen at sea.

4.c Secretariat data management policy

The Sub-Committee reiterated that the first data management priority of the Secretariat was to keep the basic data base updated, complete and error-free. The possibility of utilizing PC's for future data management was briefly discussed. It was felt that maintaining the present Micro-VAX System was costly (because of maintenance costs and updating software) and that the computer was slow. Also, the scientists no longer use the VAX which was originally prepared for multi-users. On the other hand, the Sub-Committee noted that the reliability of the system is one of the important factors. The Secretariat was asked to prepare a feasibility study of switching from the VAX to a PC-based system, including cost savings, advantages and disadvantages of both systems, etc.. Details to be considered should include: system backup, software for multiple tasks as well as for data base management and the necessary compilers; a back-up system to guard against computer failure at critical times; and storage devices. This study should also include a review of the Secretariat's whole computer system in terms of its efficiency and cost, including the possibility of establishing a network for the Secretariat computer system. The Secretariat was asked to report the results at the next SCRS meeting.

4.d Data dissemination and publication of data

The Commission's statistical publications were reviewed. The possibility of not publishing detailed data but only the catalog in "Data Record" was discussed. It was noted that the present summary statistics included in the "Data Record" are useful as a quick reference guide to information on the Atlantic tuna fisheries. The Sub-Committee reiterated its agreement with the publication policy currently in effect.

Some discrepancies in the paging of the "Collective Volume of Scientific Papers Vol. XL (2)" were mentioned. Since the scientists need to refer to this publication to review the studies that have been carried out before starting their analytical work for the coming year, the Sub-Committee strongly recommended that the publication of the "Collective Volume" series should be given a very high priority.

4.e Other Matters

The Sub-Committee discussed whether the vacancy in the programmer's position at the Secretariat should be filled. It was noted that at the 1992 meeting, the Sub-Committee recommended that an experienced biostatistician be hired to the permanent staff of the Secretariat. However, the Executive Secretary pointed out that because of the lack of cash flow, this recommendation could not be carried out.

A small group was formed to evaluate the need for a biostatistician, and this group later reported that an urgent need still exists. In reiterating the recommendations made at the 1992 Sub-Committee concerning the qualifications required to fill this position, the Sub-Committee added that a person with solid biological, mathematical and analytical capabilities is preferred over one with only statistical capabilities. The Sub-Committee noted that if an adequately qualified person is recruited, this person can also work on the problem of reorganization of the sampling strategy from the tropical surface fisheries, which are now concentrating on fishing with floating objects. In that case, a short-term contract with an outside biostatistician might then not be needed for this purpose.

The Sub-Committee urged very strongly that the Commission provide sufficient funding in 1994 budget to hire a biostatistician with such expertise, as recommended at the 1992 meeting.

5. Examination of the Problem of Unreported Catches by Non-Contracting Parties

The Sub-Committee reiterated its past concern on the catches by tuna fishing boats of non-Contracting Parties, as such catches have been increasing over the past several years. The Sub-Committee was informed of the series of the meetings organized by the FAO and the U.N. on this subject and on the involvement of ICCAT in these meetings (SCRS/93/12 and 20). Such ICCAT involvement included the developing the "Draft Agreement to Promote Compliance with Internationally Agreed Conservation and Management Measures by Fishing Vessels on the High Seas", which sets conditions on the flagging of fishing vessels and obliges the flag state to issue the license for fishing vessels to fish on the high seas, only after confirming that the boat has never violated conservation measures.

The U.N. Conference on Highly Migratory Fish Stocks and Straddling Fish Stocks (SCRS/93/20) will hold its second session in March, 1994. The Negotiating Text prepared by the Chairman of the Conference included the minimum data requirements for the conservation and management of straddling fish stocks and highly migratory fish stocks. The FAO is planning to hold an Ad-Hoc Consultation on the Role of Regional Fishery Agencies in Relation to High Seas Fisheries Statistic, scheduled on 13-16, December, 1993, in La Jolla, California. The Sub-Committee thanked FAO for inviting and paying the trip expenses of the Assistant Executive Secretary to attend this meeting and indicated that ICCAT's contribution to this meeting would be valuable, given its considerable past experiences of collecting statistics from high seas fleets.

The Sub-Committee recognized that estimates of such catches were made by the bluefin species group based on import statistics. It also recognized that the ICCAT Bluefin Tuna Statistical Document Program went into effect on September 1, 1993, and this will hopefully contribute towards improving the collection of these statistics. Also more non-member countries are becoming aware of the problem through these conferences.

The Sub-Committee expressed its satisfaction on all these new developments and world recognition of the problem, and stressed the increasing importance of collecting statistics from these fleets.

6. Review of the Progress Made on Recommendations for Statistics (as contained in the 1993 SCRS Report)

6.a Improvement of Mediterranean statistics

Section 3b of this Report for the recommendation concerning the first meeting of the Ad Hoc GFCM/ICCAT Working Group to be held in 1994.

6.b Collection of information on by-catches

Documents SCRS/93/10 and SCRS/93/19, both dealing with information on tuna fisheries by-catches, were presented to the Sub-Committee. Noting that this subject has now been placed on the SCRS Agenda, and that the SCRS is even considering the possibility of establishing a "sub-committee on by-catches", the Sub-Committee on Statistics decided to review only the statistical aspects of by-catches. From the responses to the questionnaire circulated by the Secretariat earlier this year, it seems difficult to collect information on by-catches from many major tuna fisheries, unless the logbook reporting system is basically changed.

6.c Expansion of computer facilities

The purchase of a 486 DX personal computer and a laser printer, and the replacement of a power

stabilizer for the Micro-VAX, were reported by the Secretariat. The Sub-Committee considered these were essential needs. Since there are a series of inter-sessional meetings outside Madrid under consideration, in which data processing by the Secretariat would be essential, the purchase of a powerful "notebook" type computer (486 with at least 120 MB memory) was solicited by the Secretariat and supported by the Sub-Committee.

The Secretariat reported that the system currently used at the Secretariat is getting quite old and needs up-grading in order to be able to use new software programs and to work more efficiently. The Secretariat was asked to include the feasibility and cost of up-grading the present Secretariat system in its study on switching from the VAX to a PC system of the data management (see Sect 4.c). However, to find an immediate solution, the Sub-Committee created a small group to study the short-term needs and priorities of the Secretariat computer facilities and software. The Report of the group, which was later adopted, is attached as **Addendum 3.**

The Sub-Committee also recognized the recommendations made by the Sub-Committee on Environment to purchase a CD ROM and a data set on environment on CD.

6.d Restructure the sampling strategy for the surface fishery

This subject was discussed under the Agenda Item 4e.

7. Date and Place of the Next Meeting of the Sub-Committee on Statistics

The Sub-Committee decided to meet during the 1994 SCRS Session and at the same place.

8. Other Matters

Cooperation with other organizations

The Commission approved to host the next meeting of the Coordinating Working Party on the Atlantic Fisheries Statistics (CWP) in Madrid in 1994. An Agenda was presented to the Sub-Committee. The Sub-Committee recommended that the ICCAT Secretariat be represented by the Assistant Executive Secretary and additional staff as appropriate, and due to the importance of some Agenda Items for the coming meeting, the Sub-Committee encouraged that a scientist from one or two of the eastern Atlantic countries also participate in the session representing ICCAT and requested the Secretariat to take the necessary steps for this.

The representative from FAO expressed his appreciation to the ICCAT Secretariat for its efforts to improve the tuna catch data base of his organization. The Sub-Committee thanked FAO for providing ICCAT with data for those countries for which the ICCAT has no data.

The Sub-Committee also thanked IATTC for providing biological sampling data on the Venezuelan surface fleet catches in the Atlantic.

9. Adoption of Report

The Sub-Committee adopted the Report.

10. Adjournment

The 1993 meeting of the Sub-Committee on Statistics was adjourned.

Table 1. Progress made in data collection (As of October 28, 1993)

SPECIES, GEAR & COUNTRY		TASK I CATCH DATE REC'D 1992	1993	BOAT	TASK II CATCH & EFFO DATE REC'D 1992	1993	BIOLOGICAL (SIZE) DATE REC'D 1992	1993	REMARKS
YFT, BET, SKJ - Surface Fl									
BAITBOAT									
Angola		Apr 24	Mar 9	X		Mar 9			
			Sep 1	X					Preliminary Task I for 1993
Brazil		Jul 7	Aug 11	X	Oct 8	Sep 14	Oct 8	Sep 14	
		Sep 8		X			Sep 14		
Brazil-Japan		Jul 7	Aug 11		Oct 8	Sep 14	Sep 14	Sep 14	Bras.Jpn fleet until nationalized in Oct. '92
		Sep 8		X			Oct 8		
Cape Verde		Jun 2	Jun 1	X	Jun 2	Jun 1			Task I & C/E for 1989-91
Cuba		May 6							
FIS		Jun 29	Apr 23		Jun 29	Apr 23	Jun 29	May 6	
Ghana		Jun 23	Aug 17	X		Aug 17		Aug 17	Data for 1991-92
			Sep 13						Quick estimates for 1993
Portugal	(Azores)	Jul 14	Jul 16		Jul 14	Jul 16		Jun 9	Size data for BET & SKJ 1989-91
	(Madeira)	Oct 26	Aug 31	X	Jul 1	Aug 31	Oct 8	Aug 31	
							Oct 27		
	(Mainland)								
South Africa		Aug 20	May 18	X	Aug 20	Aug 25			
		Aug 31	Oct 26		Aug 31	Oct 26			Data for 1980 - 92
Spain	(Canary Islands)	May 11	May 11	X	May 11	May 11	May 11	May 18	
	(Tropical)	Jul 24			Jul 24	Mar 1	Jul 24	Mar 1	
			May 4	X		May 4		May 4	Supplemental C/E and Size data
U.S.A.							Jan 16		
Venezuela	(incl. For.)	Sep 14			Apr 7	Jun 11	Apr 7	Jun 11	
		Nov 2							
PURSE SEINE									
Benin									
Cape Verde									
Cuba		May 6							
FIS		Jun 29	Apr 23		Jun 29	Apr 23	Jun 29	May 6	
Japan		May 25			Feb 20	Jun 9		Jun 9	
					May 26				
						Jun 9		Jun 9	Task II data for 1984-92 rec'd from C.R.O.
Morocco		Jul 29	May 4						
Portugal	(Mainland)	May 21	Aug 6		May 21	Aug 6			
Russia		Jun 25	Oct 1	X				Sep 14	Prel. Task I for 1992 & 1st half of '93
								Oct 5	
South Africa			Oct 26			Oct 26			Data for 1980 - 92
Spain	(Tropical)	Jun 17	May 11	X	Sep 23	May 18	Sep 23	May 18	C/E for 1992;Size for 1986-92
		Jun 25			Sep 29	Jul 12			
U.S.A.			May 31				Feb 20	May 26	YFT Catch by size '91.T.I '91 rev. ,92 prel.
							Jan 16	May 31	YFT Catch by size prel. for 1992
		Aug 6			Aug 19	Jul 9	Aug 19		C/E '91 rev. & '92 prel.
			Jul 22			Jul 22		Jul 22	Preliminary Task I for 1992
			Aug 9					Aug 9	Revised data for 1991
Venezuela	(incl. For.)	Sep 14			Apr 7	Jun 11	Apr 7	Jun 11	
		Nov 2					**		
NEI-1		Jul 24	Apr 23	X					
			May 12	X					Data for 1982 - 91
UNCL & OTHERS									
Angola		Apr 24	Sep 1						Preliminary Task I for 1993
Argentina									
Barbados									
Benin									
Bermuda		Mar 20							
		Mar 30							
Brazil		Jul 7	Aug 11						
		Sep 8							
Brazil-Japan			Aug 11						Bras.Jpn fleet until nationalized in Oct.'92
Canada			May 5	X		May 5			
Cape Verde			Jun 1	X		Jun 1	Jun 2	Jun 1	Task I & C/E for 1989-90; YFT size for 1988-92
China (Taiwan)		Jan 30							
Colombia			Apr 6						
Cuba									
Cape Verde									

Table 1. Continued (As of October 28, 1993)

SPECIES, GEAR & COUNTRY		TASK I CATCH DATE REC'D 1992	1993	BOAT	TASK II CATCH & EFFO DATE REC'D 1992	1993	BIOLOGICAL (SIZE) DATE REC'D 1992	1993	REMARKS
Ghana									
Mexico									
Morocco		Jul 29	May 4						
Portugal	(Madeira)		Aug 6			Aug 6			
	(Mainland)	May 21			May 21				
St. Helena		Jun 10		X	Jun 10				
St. Lucia				X					
Senegal			Apr 26						Data for 1981-91
South Africa		Aug 20	May 18	X	Aug 20	Aug 25			
		Aug 31	Oct 26		Aug 31	Oct 26			Data for 1980 - 92
Spain	(Peninsula)								
U.S.A.			May 31				Feb 20	May 26	YFT Catch by size '91.T.I '91 rev., '92 prel.
					Jun 22		Jun 22	May 31	YFT Catch by size prel. for 1992
		Aug 6			Aug 19	Jul 9	Aug 19		C/E '91 rev. & '92 prel.
			Jul 22			Jul 22		Jul 22	Preliminary Task I for 1992
			Aug 9					Aug 9	Revised data for 1991
Russia									
Venezuela									
Venezuela-Foreign									
ALB - SURF									
BAITBOAT									
Brazil		Jul 7	Aug 11						
		Sep 8		X					
Brazil-Japan			Aug 11						Bras.Jpn fleet until nationalized in Oct. '92
France									
Italy							Sep 17		
Portugal	(Azores)	Jul 14	Jul 16		Jul 14	Jul 16		Jun 9	Size data for 1989-91
								Sep 22	ALB catch by size data
	(Madeira)	Oct 26	Aug 31	X	Jul 1	Aug 31		Sep 29	
South Africa		Aug 31	Sep 20	X	Aug 31	Aug 25		Oct 14	Revised Task I & catch by size 1985-92
			Oct 26			Oct 26			Data for 1980 - 92
Spain	(Canary Islands)	May 11	May 11	X	May 11	May 11	May 11	May 18	
	(Peninsula)	Jun 8	Jun 8		Jun 8	Aug 23	Jun 8	Aug 23	
							Jun 15		
Venezuela		Sep 14		X	Apr 7		Apr 7		
PURSE SEINE									
FIS									
France			Oct 14			Oct 14			Preliminary data
Japan						Jun 9		Jun 9	Task II data for 1984-92 rec'd from C.R.O.
Italy									
Portugal	(Mainland)	May 21			May 21				
South Africa			Oct 26			Oct 26			Data for 1980-1992
Spain		Jun 17	May 11	X					
Venezuela					Apr 7		Apr 7		
NEI-1		Jul 24	May 11	X					
TROL									
France									
Greece									
Spain	(Peninsula)	Jun 8	Jun 8		Jun 8	Jul 6	Jun 8	Jul 6	
U.S.A.		Aug 6			Aug 19	Jul 9	Aug 19		C/E '91 rev. & '92 prel.
			Jul 22			Jul 22		Jul 22	Preliminary Task I for 1992
			Aug 9					Aug 9	Revised data for 1991
UNCL & OTHERS									
Argentina									
Brazil			Aug 11						
China (Taiwan)		Jan 30							
France	(Bay of Biscay)	Jul 24	Aug 2		Jul 24	Aug 2	Jul 24	Aug 2	
	(Mediterranean)		Oct 14						Preliminary data
Greece									
Italy			Aug 10				Sep 23		Data for 1990-92
Portugal	(Azores)								
	(Madeira)								
	(Mainland)	May 21	Aug 6		May 21	Aug 6			
St Helena		Jun 10		X	Jun 10				

Table 1. Continued (As of October 28, 1993)

SPECIES, GEAR & COUNTRY		TASK I CATCH DATE REC'D 1992	1993	BOAT	TASK II CATCH & EFFO DATE REC'D 1992	1993	BIOLOGICAL (SIZE) DATE REC'D 1992	1993	REMARKS
South Africa		Apr 23	Sep 14	X		Aug 25			
			Oct 26			Oct 26			Data for 1980 - 92
Spain	(Peninsula)								
	(Mediterranean)		Sep 21			Sep 21		Sep 21	
U.S.A.		Aug 6			Aug 19	Jul 9	Aug 19		C/E '91 rev. & '92 prel.
			Jul 22		Jun 22	Jul 22		Jul 22	Preliminary Task I for 1992
			Aug 9					Aug 9	Revised data for 1991
Venezuela									
Venezuela-Foreign									
BLUEFIN - SURF									
BAITBOAT									
France	(Bay of Biscay)	Oct 27							
Portugal	(Azores)								
	(Madeira)		Aug 31	X		Aug 31			
	(Mainland)								
Spain	(Canary Islands)	May 11	May 11	X	May 11	May 11	May 11	May 18	
	(Bay of Biscay)	Mar 17	Mar 22		Mar 17	May 18	Mar 17	Mar 22	
	(Malaga)		Oct 27					Oct 27	
	(Mediterranean)		Oct 27					Oct 27	
PURSE SEINE									
Croatia		Jul 27	Apr 2	X	Jul 27	Apr 2			
France	(Mediterranean)	Sep 7	Oct 14		Sep 10	Oct 14	Sep 10	Oct 14	Preliminary data
Italy			Aug 10						Data for 1990-92
Libya		Nov 6		X			Nov 6		
Morocco		Jul 29	May 4						
Norway			Jul 20						
Portugal	(Azores)								
	(Mainland)								
Spain		Aug 26	Sep 21		Aug 26	Sep 21		Sep 21	
Tunisie		Sep 23							
U.S.A.		Oct 26	Aug 9			Jul 9	Oct 30		C/E '91 rev. Task I & C/E '92 prel.
								Aug 20	Size and Catch by size
NEI-2		Sep 23							
TRAP									
Canada			May 5			May 5		Sep 6	Size and Catch by size for 1991-92
Italy			Aug 10						Data for 1990-92
Libya		Nov 6		X					
Morocco		Jul 29	May 4						
Spain	(Mediterranean)	Aug 26	Sep 21		Aug 26	Sep 21		Sep 21	
	(Peninsula)	Aug 26			Aug 26		Aug 26		
Tunisie		Sep 23							
UNCL & OTHERS									
Argentina									
Canada		Jun 12	May 5	X		May 5			
			Jun 16	X		Jun 16			Final BFT data for 1991
								Sep 6	Size and Catch by size for 1991-92
France	(Mediterranean)	Sep 7	Oct 14						Preliminary data
	(Bay of Biscay)	Oct 27							
Greece		Jul 21							
Italy		Sep 23	Aug 10				Sep 23		Data for 1990-92
Morocco		Jul 29							
Portugal	(Azores)								
	(Madeira)								
	(Mainland)	May 21	Aug 6		May 21	Aug 6			
St. Lucia				X					
Spain	(Mediterranean)	Aug 26	Sep 21		Aug 26	Sep 21	Aug 26	Sep 21	
	(Peninsula)								
Tunisie		Sep 23							
U.S.A.		Oct 26	Aug 9		Jun 22	Jul 9	Oct 30		C/E '91 rev. Task I & C/E '92 prel.
								Aug 20	Size and Catch by size
BILLFISH (incl. SWO)									
SURFACE									

Table 1. Continued (As of October 28, 1993)

SPECIES, GEAR & COUNTRY		TASK I CATCH DATE REC'D 1992	1993	BOAT	TASK II CATCH & EFFO DATE REC'D 1992	1993	BIOLOGICAL (SIZE) DATE REC'D 1992	1993	REMARKS
Argentina									
Benin									
Bermuda		Mar 20							
		Mar 30		X					
Brazil		Jul 7	Aug 11						
		Sep 8		X					
Canada		Jun 23	May 5	X	Jun 23	May 5	Jun 23	Aug 3	SWO size and Catch by size
		Oct 8							
		Dec 2			Dec 2		Dec 2		SWO data revised for 1988
China (Taiwan)		Jan 30							
Cyprus									
France	(Bay Biscay)								
Ghana									
Italy		Sep 23	Aug 10				Sep 23		Data for 1990-92
Malta		Sep 23							
Morocco		Jul 29	May 4						
Portugal	(Madeira)	Oct 26	Aug 31	X	Jul 1	Aug 31	Oct 27		
	(Mainland)	May 21	Aug 6		May 21	Aug 6			
Senegal			Apr 26			Apr 26		Apr 26	Data for 1981-91. Raised size data.
South Africa		Aug 20	May 18	X					
		Aug 31	Oct 26						Data for 1980 - 92
Spain	(Canary Islands)	May 11	May 11	X	May 11	May 11			
	(Mediterranean)	Aug 26	Sep 21		Aug 26	Sep 21	Aug 26	Sep 21	
	(Peninsula)	Aug 26			Aug 26		Aug 26		
U.S.A.		Jun 25	Jul 9		Aug 19	Jul 9	Aug 19	Jul 9	Task I & Task II '91 rev. & '92 prel. incl. size and catch by size.
			Jul 22		Jun 22	Jul 22	Jun 22	Jul 22	Preliminary Task I for 1992
		Jul 3	Aug 9		Jul 3		Jul 3	Aug 9	Revised data for 1991
Russia									
Venezuela							**		
SMALL TUNAS - SURF									
Angola		Apr 24	Mar 9			Mar 9			
			Sep 1	X					Preliminary data for 1993
Barbados									
Benin									
Bermuda		Mar 20							
		Mar 30		X					
Brazil		Jul 7	Aug 11	X	Jun 2	Sep 14	Jul 1		
		Sep 8		X	Oct 8		Oct 8		
Cape Verde			Jun 1	X		Jun 1			Task I & C/E for 1989-91
Croatia									
Cuba		May 6							
FIS									
France			Oct 14			Oct 14			Preliminary data
Ghana			Aug 17	X		Aug 17			Data for 1991-92
			Sep 13						Quick estimates for 1993
Greece		Sep 23							
Libya		Nov 6							
Malta		Mar 31	Mar 8						
Libya		Nov 6		X					
Mexico									
Morocco		Jul 29	May 4						
Portugal	(Azores)	Jul 14	Jul 16		Jul 14	Jul 16		Jun 9	Size data for BON for 1989-91
	(Madeira)	Oct 26	Aug 31	X	Jul 1	Aug 31			
	(Mainland)	May 21	Aug 6		May 21	Aug 6			
Russia		Jun 25	Oct 1	X				Sep 14	Prel. Task I for 1992 & 1st half of '93
Senegal			Apr 26			Apr 26			
South Africa			Oct 26			Oct 26			Data for 1980 - 92
St. Lucia									
Spain	(Canary Islands)	May 11	May 11	X	May 11	May 11			
	(Mediterranean)	Aug 26	Sep 21		Aug 26	Sep 21		Sep 21	
	(Peninsula)	Aug 26			Aug 26		Aug 26		
	(Tropical)	Jun 17	May 11	X		Jul 12			
		Jun 25							
U.S.A.		Aug 6	May 31		Aug 19		Aug 19		Task I 1991 rev. for RR
						Jul 9			C/E '91 rev. & '92 prel.
			Jul 22			Jul 22		Jul 22	Task I 1991 rev. & '92 prel.

Table 1. Continued (As of October 28, 1993)

SPECIES, GEAR & COUNTRY	TASK I CATCH DATE REC'D 1992	1993	BOAT	TASK II CATCH & EFFO DATE REC'D 1992	1993	BIOLOGICAL (SIZE) DATE REC'D 1992	1993	REMARKS
		Aug 9					Aug 9	Revised data for 1991
Venezuela	Sep 14			Apr 7	Jun 11	Apr 7	Jun 11	
	Nov 2							
NEI-1	Sep 23	May 11	X					
NEI 2	Sep 23	May 11	X					
LONGLINE - ALL SPP.								
Algerie	Sep 23		X		Sep 14			
Brazil	Jul 7	Aug 11				Jul 1		
	Sep 8	Sep 23				Sep 1		Task I data 1988-90 (Santos fleet)
						Sep 11		
						Oct 8		
						Oct 21		
Brazil-Japan	Jul 7	Aug 11	X		Sep 14			
	Sep 8			Aug 27		Aug 27		
				Sep 11				
				Oct 8		Sep 11		
						Sep 30		
Brazil-Honduras	Oct 8	Aug 11	X	Oct 8		Oct 8		
Brazil-Taiwan	Jul 7	Aug 11	X	Sep 11	Sep 14		Sep 14	
	Sep 8			Dec 10				
Canada	Jun 12	May 5	X		May 5		Aug 3	SWO size and catch by size
	Jun 23	Jun 16	X	Jun 23	Jun 16	Jun 23		Final BFT data for 1991
	Sep 18						Sep 6	BFT Size and catch by size for 1991-92
	Oct 8							
	Dec 2			Dec 2		Dec 2		SWO data revised for 1988
China (Taiwan)	Jan 30			Jan 30	May 5		May 5	C/E for 1989;Size YFT, BET 1981-91
	Jul 21	Jun 8	X				May 10	Size ALB 1981-91;Prel. Task I for 1992
						Sep 10	May 14	Size ALB 1981-91
					Sep 24		Sep 24	Data for '92 - size data for YFT,BET,ALB only
Cuba	May 6							
Cyprus	Jul 16		X	Jul 16				
Greece	Jul 21			Sep 23		Jul 21		
Italy	Sep 23	Aug 10				Sep 23		Data for 1990-92
Japan	Sep 16			Sep 16	May 21	May 21		Prel. 1991 C/E data (except SKJ)
	Oct 21					Sep 16	Sep 14	Size data for 1991
	Oct 23					Sep 23	Sep 16	Catch by size for BFT for 1992
							Oct 1	BFT & ALB catch at size for '91
						Oct 21	Oct 15	SWO catch by size '91 rev, '92 prel.
Japan-Canada-Observer								
Japan-S.Helena-Observer	Jun 10			Jun 10				
Japan-U.S.-Observer								
Korea	Sep 2	Sep 13	X	Sep 2	Sep 13	Sep 2	Sep 13	
Libya	Nov 6		X					
Malta	Mar 31	Mar 8	X					
		Jul 22						
Mexico								
Morocco	Jul 29	May 4						
Panama								
Portugal (Azores)	Jul 14	Jul 16		Jul 14	Jul 16		Sep 20	SWO catch by size for 1991-92
(Madeira)	Oct 26	Aug 31	X	Jul 1	Aug 31		Sep 29	SWO size data
		Sep 29						Additional Task I data for 1991-92
(Mainland)	Jun 22	Aug 6		Jun 22	Aug 6			
South Africa	Aug 31	Oct 26			Oct 26			Data for 1980 - 92
Spain (Mediterranean)	Aug 26	Sep 21		Aug 26	Sep 21	Aug 26	Sep 21	
(Peninsula)	Aug 19	Oct 26		Aug 19	Oct 20	Aug 19	Oct 20	SWO C/E & catch by size data
Uruguay	Jul 2		X					
U.S.A.		May 31				Feb 20	May 26	YFT Catch by size '91, T.I. '91 rev., '92 prel.
		Jul 9		Jan 16	Jul 9		Jul 9	SWO 1991 rev. & '92 prel.
	Jun 26			Jun 22		Jun 22	May 31	YFT Catch by size 1992 prel.
	Jul 3	Jul 22		Jul 3	Jul 22	Jul 3	Jul 22	Rev. data for '91 and prel. for '92
	Aug 6	Aug 9		Aug 19		Aug 19	Aug 9	Prel. data for '92. Rev. data for '91
	Oct 26					Oct 30	Aug 20	BFT Size and catch by size
Russia								
Venezuela	Sep 14		X			**		
Venezuela-Foreign						**		
NEI-1	Sep 23							
NEI-2	Sep 23							

Table 1. Continued (As of October 28, 1993)

SPECIES, GEAR & COUNTRY	TASK I CATCH DATE REC'D 1992	1993	BOAT	TASK II CATCH & EFFO DATE REC'D 1992	1993	BIOLOGICAL (SIZE) DATE REC'D 1992	1993	REMARKS
VARIOUS:								
FAO	Mar 11	Aug 3						
	May 21	Aug 20						
	Aug 7	Aug 31						
	Sep 9	Sep 6						
	Sep 17	Sep 20						
	Sep 30	Oct 15						
	Oct 9	Oct 27						
U.S.A. Tournament data						Aug 3		
						Oct 26		

** Field reports periodically.

Addendum 1 to Appendix 4 to Annex 23

AGENDA OF THE SUB-COMMITTEE ON STATISTICS

1. Opening of the meeting
2. Adoption of Agenda and arrangements for the meeting
3. Review of national statistics
   - 3.a Data collection and reporting
   - 3.b Improvements to be made
4. Examination of the Secretariat's statistical work in 1993
   - 4.a Data processing carried out in 1993
   - 4.b Port sampling program
   - 4.c Secretariat data management policy
   - 4.d Dissemination and publication of data
   - 4.e Other matters
5. Examination of the problem of unreported catches by non-Contracting Parties
6. Review of the progress made on recommendations for statistics (as contained in the 1992 SCRS Report), and future plans
   - 6.a Improvement of Mediterranean statistics
   - 6.b Collection of information on sharks
   - 6.c Expansion of computer facilities and software
   - 6.d Restructure the sampling strategy for the surface fishery
7. Date and place of the next meeting of the Sub-Committee on Statistics
8. Other matters
9. Adoption of Report
10. Adjournment

Addendum 2 to Appendix 4 to Annex 23

REPORT OF THE SMALL GROUP ON NEW ICCAT LOGBOOK FOR TEMA-BASED PURSE SEINERS

The number of purse seiners of various non-member countries operating in the eastern tropical Atlantic is growing. These purse seiners operate generally with an Asian crew and reporting daily catches in a specifically designed logbook would be much easier for the captains of such boats.

These purse seiners can unload either at Tema or in Abidjan, according to the prices obtained at the canneries. However, commercial classification of landings differs from Abidjan (SOVETCO classification) to Tema (US classification). As it is very important to obtain this classification used in the processing of Task II data, the logbook must include both classifications in the landing reporting sheets for each trip.

The daily catch reporting sheet should be simple with appropriate "boxes" for reporting catch in tons and mean weight for each major species (yellowfin, skipjack, bigeye, others).

The logbook should include a first sheet requesting data on ship characteristics (carrying capacity), call sign identification, number of crew, features of the net.

The logbook should also include an example of filling the landing sheet and the daily reporting sheets.

The logbook should be in English, Japanese, and Korean.

Addendum 3 to Appendix 4 to Annex 23

REPORT OF THE SMALL GROUP ON SHORT-TERM COMPUTER NEEDS

A small group met to review the short-term computer needs of the secretariat in the near term. It was reported that several needs existed including (1) a portable computer and printer for use by the Secretariat to prepare documents, reports, and data bases at the multiple meetings attended outside of Madrid each year, (2) an upgrade of the Assistant Executive Secretary's computer so that it can display several programs commonly used by SCRS scientists (including Harvard Graphics and STAATS among several) more suitable for document preparation and publication, as well as other programs which would facilitate and/or improve the quality of the Secretariat's work, (3) upgrade the Systems Analyst's computer to (a) substantially reduce the amount of time spent moving files on and off the VAX (often 4-8 hours at a time for some files) and (b) to prepare for a possible conversion to a PC based data base management system from the expensive MICRO-VAX system, and (4) to at least expand the very limited data storage capacity of two computers which are used extensively for spreadsheeting, financial accounting and/or statistical work. The Sub-Committee on Environment recommended that a CD ROM drive and some specific data on CD be purchased to facilitate the access of those data bases during meetings.

After considering numerous alternatives the following recommendations were considered to meet the objectives most economically. They are listed in order of priority.

-- Hardware needs:

1) Purchase two portable PC's with external monitors (SVGA) and keyboards so that they can also serve as a desktop PC's for Systems Analyst and the Assistant Executive Secretary, with capability for use of PMCIA.3 cards and sufficient additional equipment (such as a docking station) to permit the addition of 3-5 cards at least for use in the office to ensure functionality in the future. The Systems Analyst's PC should be fast (486 or 586) and at least 33 mhz with sufficient RAM to perform large sorts (16 MB or more) and its hard drive should be as large as possible (330 MB or more). The Assistant Executive Secretary's PC should be a 486 DX with at least 4 MB of RAM and a hard drive of 200 MB or more.

One portable printer (ink-jet type or similar quality).

2) Upgrade the monitor and video card (SVGA with 1 MB of RAM) of the PC currently used by the Assistant Executive Secretary so that various types of software (including accounting, financial, graphics, and/or statistical software can be run.

3) Purchase a less expensive 386 PC or preferably a 486 with at least 4 MB of RAM with SVGA monitor and video card (with 1 MB RAM) with at least a 120 MB hard drive capable of handling accounting, financial graphics, and/or statistical tasks.

4) Purchase of a CD ROM drive and environmental data set on CD recommended by the Sub-Committee on Environment.

-- Software needs:

The small group noted that the following software was essential (using that equipment as planned:

1) MS DOS version 6.0 or later (usually comes with PC).

2) OS/2 version 2.1 or later to permit rapid file transfer without having to interrupt other work in process on the PC.

3) Lahey 32 bit FORTRAN (F77L/EM-32) to permit the Systems Analyst to use the PC for tasks such as sorting which require substantial amounts of memory.

In addition, the following software is also needed and is listed in order of priority:

1) Windows (often comes with a PC purchase). This is especially useful during scientific meetings to be able to print extensive graphic files and other files without interrupting on-going work.

2) QUATTRO PRO spreadsheet program with graphics for figures.

3) HARVARD graphics for figures, production models, etc.

4) SAS, a statistical, data management, graphic package, which is needed very much, but given lowest priority because of the high cost.

In view of the increasing work at the Secretariat in data processing, data management, preparation of graphics, desktop editing, etc., the small group recommended to the Sub-Committee on Statistics that the above "shopping list" of computer needs be purchased as soon as feasible. The group also suggested that the balance of funds in sub-chapter 8.e of the 1993 Budget be applied for these purchases.

Appendix 5 to Annex 23

REPORT OF THE CONTRIBUTIONS/EXPENDITURES OF THE ICCAT ENHANCED BILLFISH RESEARCH PROGRAM IN 1993
(COM-SCRS/93/14, revised)

The ICCAT Enhanced Research Program for Billfish, which began in 1987, continued in 1993. The Secretariat served as the coordinator for transferring funds and distributing tags, information, and data. The billfish data base is maintained at the NMFS Southeast Fisheries Center (Miami, Florida) and at the ICCAT Secretariat. This report represents a summary of the contributions and expenditures for the ICCAT Enhanced Billfish Research Program for Billfish during 1993.

The General Coordinator of the Program is Dr. B. Brown; the East Atlantic Coordinators are Mr. T. Diouf (Senegal) and Mr. M. Mensah (Ghana), while the West Atlantic Coordinator is Dr. E. Prince.

Contributions to the Billfish Fund in 1993 were relatively slow in arriving during the first two quarters of this year. This resulted in delays in the disbursement of funds for some research activities, particularly during the first part of the year. However, a significant contribution from the U.S. National Marine Fisheries Service was received in the third quarter. These funds are intended to support research activities for the 1994 and 1995 sampling seasons. In addition, two additional grants (the combined amount is comparable to the NMFS grant) were received from the private sector in the third quarter of the year and were transferred to the ICCAT Billfish Fund before the end of 1993. Overall, the Program Plan for 1993 was successfully carried out in a timely manner.

The Second ICCAT Billfish Workshop, held at the NMFS Southeast Fisheries Center (Miami, Florida, U.S.A.), July 19-22, 1992, resulted in a large amount of information being obtained (27 documents were submitted to the Workshop and another 13 documents were presented to the 1992 SCRS). As a result of the Workshop, considerable progress was achieved, including the first assessments of Atlantic marlins and west Atlantic sailfish made in over a decade (SCRS/92/129, SCRS/92/128 and SCRS/93/99). The Report of the Workshop, the documents submitted at the Workshop, and the documents submitted to the 1992 SCRS, will be published in the "Collective Volume of Scientific Papers" series in upgraded format, including a hardcover binding.

Table 1 shows the Billfish Budget and expenditures as of December 31, 1993. **Table 2** shows the income received at the Secretariat for the Billfish Program as of December 31, 1993, and the balance of the Program funds. It should be noted that due to delays in disbursement of funds related to some research activities in the first part of the year, final quarter expenditures for 1993 were higher than in past years.

Research carried out during 1993 in the west Atlantic is described in SCRS/93/102, while that for the east Atlantic is described in SCRS/93/80, as provided by the Coordinators of the respective areas.

Table 1. Budget & Expenditures of the Enhanced Billfish Research Program (as of Dec. 31, 1993) (US$)

Budget Chapters	*Amount Budgeted*	*Total Expenditures*
SPECIES IDENTIFICATION KITS:	0.00	0.00
AGE AND GROWTH: Purchase of hard parts	500.00	0.00
TAGGING:		
Tag rewards	750.00	0.00
Lottery rewards	500.00	500.00
Hard part rewards	500.00	0.00
Printing posters in Japanese/Chinese	2,500.00	0.00
Purchase of tags	0.00	0.00
STATISTICS & SAMPLING ENHANCEMENT		
-- *West Atlantic shore-based sampling:*		
Cumaná, Venezuela	320.00	320.00
Puerto La Cruz, Venezuela	160.00	160.00
Margarita Island, Venezuela	864.00	*830.00*
La Guaira, Venezuela	1,152.00	1,152.00
Caracas, Venezuela	1,200.00	1,200.00
Grenada	1,500.00	1,000.00
Jamaica	1,000.00	0.00
Trinidad and Tobago	2,000.00	0.00
St. Maarten, Netherlands Antilles	1,000.00	0.00
Mexico	1,000.00	0.00
-- *West Atlantic at-sea sampling:*		
Venezuela (Cumaná, Puerta La Cruz and Carupano)	16,072.00	17,382.65
St. Vincent and Grenada	1,000.00	0.00
Telemetry studies	0.00	0.00
Brazil	1,000.00	0.00
-- *East Atlantic shore-based sampling:*		
Dakar, Senegal	1,500.00	0.00
Côte d'Ivoire	1,500.00	1,500.00
Ghana	1,500.00	1,500.00
Canary Islands	400.00	0.00

Table 1. (Continued)

Budget Chapters	*Amount Budgeted*	*Total Expenditures*
COORDINATION:		
Travel by Coordinators	12,000.00	1,054.00
Mailing & miscellaneous--East Atlantic	100.00	0.00
Secretariat support (data management, mailing, etc.)	2,000.00	2,000.00
Bank charges on Billfish account, DHL mailing,etc.	0.00	253.58
Publication of Workshop Report (hard binding) *	0.00	8,000.00
GRAND TOTAL	52,018.00	36,852.23

* These expenses were not included in the 1993 Budget, but were approved by the Coordinator.

Table 2. Funds received in 1993 for Billfish Program (up to Dec. 31, 1993)

Source	*Amount (in $US)*
The Billfish Foundation	7,000.00
The Billfish Foundation	5,000.00
National Marine Fisheries Service	63,472.00
TOTAL CONTRIBUTIONS (1993)	$75,472.00
Starting Balance (1993)	6,005.04
TOTAL FUNDS AVAILABLE	81,477.04
EXPENDITURES FOR 1993 (from Table 1)	36,852.23
BALANCE IN BILLFISH FUND (as of December 31, 1993)	$44,624.81

Appendix 6 to Annex 23

1994 PROGRAM PLAN FOR THE ICCAT ENHANCED RESEARCH PROGRAM BILLFISH

The original plan for the Enhanced Research Program for Billfish (SCRS 1986) included the following specific objectives: (1) To provide more detailed catch and effort statistics, and particularly size frequency data; (2) To initiate the ICCAT tagging program for billfish; and (3) To assist in collecting data for age and growth studies. The plan was initially formulated with the intention of developing the data necessary to assess the status of the billfish stocks. This goal was at least partially fulfilled with the exploratory stock assessments for blue marlin (SCRS/92/69) accomplished at the Second ICCAT Billfish Workshop in July, 1992, and later with refined blue marlin and white marlin assessments submitted to the 1992 SCRS (SCRS/92/128 and SCRS/92/129). In addition, further progress was made at the 1993 SCRS meeting with the submission of the assessment for west Atlantic sailfish (SCRS/93/99). However, many of the data acquisition problems remain and maintenance of important elements of the billfish data bases to insure uninterrupted time series requires the Enhanced Billfish Research Program to be continued and expanded in critical areas as recommended by the Workshop (SCRS/92/16).

It was confirmed that Drs. Bradford Brown and Eric Prince (U.S.A.) will continue to function as the General Coordinator and West Atlantic Coordinator, respectively. Drs. Taib Diouf (Senegal) and Martin Mensah (Ghana) will continue to be the Co-Coordinators for the east Atlantic Ocean. Research results (SCRS/93/80 and 93/102) as well as a financial summary for 1993 (COM-SCRS/93/14) were presented to the 1993 SCRS and Commission meetings.

The summary of the 1994 proposed budget is attached as Table 1. Quarterly highlight reports of research activities will continue to be provided to interested parties. In addition, names and addressees of individuals receiving the reports and those involved or interested in the research program will continue to be available upon request. Projected funds for future research activities will be available in subsequent annual plans.

All agencies and/or personnel receiving ICCAT funding from the Billfish Program are required to summarize annual expenditures of funds to the Commission and research activities either in the form of a working document to the SCRS or a report to the Program Coordinators. In addition, all funded participating cooperators in this Program will be required to request the release of funds (via FAX) from the General Program Coordinator and to submit data collected in previous years either to area Coordinators or directly to the ICCAT Secretariat.

a) Species identification kits

The research team from Florida Atlantic University is concluding its work on the development of field species identification kits for billfish. The work for Atlantic sailfish has been completed and a quick bead assay test, which is highly sensitive for this species, has been completed. A number of these assay kits will be used on sailfish in the Florida Keys before the end of the year to test for false positive readings. Work on Atlantic blue marlin and white marlin kit development will continue due to the instability of clones for these species. Kits for the marlins are expected to be available by the beginning of next year. Funds from the Enhanced Research Program for Billfish will not be required to complete the research but $1000 is required to purchase the field kits when they are available.

b) Shore-based sampling

Cumaná, Playa Verde, Puerto La Cruz, and Juangriego, Venezuela. Shore-based sampling of size frequency data for billfish carcasses off-loaded from industrialized longline boats at the port of Cumaná will be continued in 1994. Funding will be $300 since some of this activity occurs on weekends and after normal working hours. Sampling industrialized longline boats

and artisanal fisheries in Puerto La Cruz, Juangriego, and Playa Verde will be conducted in 1994 and the requested funding for these segments is as follows: Puerto La Cruz $240; Juangriego $864; and Playa Verde $500. Several trips by the West Atlantic Coordinator or his designee (Mr. Freddy Arocha, U.D.O. now studying in Miami, Florida) will be necessary to organize sampling, collect data, and transport biological samples to Miami in 1994. An additional $800 will be required in 1994 to repair the freezer truck used to transport frozen biological samples (swordfish gonads) from Puerto La Cruz to Cumaná. Also, a total of $600 will be contributed in 1994 towards the purchase of a copying machine for the Cumaná laboratory. The remaining amount will be matched by FONAIAP (ratio of 3 to 1) in order to purchase a copying machine with an estimated cost of about $1,800. The amount of $750 will be required in 1994 for tag recapture rewards that are made by FONAIAP staff (see Section d, Billfish Tagging).

Caracas, Venezuela. Shore-based sampling and detailed analysis of the recreational fishery (centered in La Guaira, Venezuela) will be continued in 1994. This sampling includes coverage of four recreational billfish tournaments held in Puerto Cabello and Falcon. Requested funding for this activity in 1994 is $760 since much of this sampling is conducted on weekends. Also, shore-based sampling, including documentation of the catch and effort statistics for the central Venezuelan coast, such as the important fishery at Playa Grande Marina, will be accomplished by contracting a technician on a part-time basis for 12 months. Funding for this activity in 1994 is $1,680. Shore-based sampling in all Venezuelan locations, as well as at-sea sampling (see next section) in Venezuela will be coordinated by Mr. Louis Marcano of FONAIAP.

Grenada. Shore-based sampling of size frequency and total landings from the artisanal and recreational fishery for billfish will be continued by the Ministry of Agriculture, Lands, Forestry, and Fisheries (Mr. Crofton Isaac and Mr. Paul Phillip) in 1994. Shore-based sampling activities will start in early November, 1993, to coincide with the start of the pelagic fishery at this location. At-sea sampling on the new longline vessels are discussed in the next section. Requested funding for 1994 is $1900.

Jamaica. Shore-based sampling of the size frequency, total landings, and catch and effort statistics from the recreational fishery will continue in 1994. Efforts will also be made to obtain these data from the artisanal canoe fishery as well. Requested funding for 1994 is $1000.

St. Maarten, Netherlands Antilles. Shore-based sampling of size frequency data for off-loaded billfish carcasses from longline vessels will be continued in 1994 through the Nichirei Carib Corporation. Requested funding for this in 1994 is $1500. Shore-based sampling of the annual recreational billfish tournament, initiated in 1992, maybe continued in 1994 by the West Atlantic Coordinator. Since this tournament will contribute air fare and hotel accommodations for the week of the tournament, the West Atlantic Coordinator may also assist Nichirei Carib employees in sampling during his stay on the island. Thus, funds for this latter activity will not be required from the Program.

Trinidad and Tobago. Shore-based sampling of size frequency data for off-loaded billfish carcasses from China-Taiwan and Trinidadian longline vessels will be continued in 1994. This work is being supervised by Ms. Christine Chan A Shing of the Ministry of Food Production and Marine Exploitation (Fisheries Division). At least one trip by the West Atlantic Coordinator will be necessary to review the research plan and organize field research activities. Requested funding for 1994 is $2000.

Dakar, Senegal. Shore-based sampling of the Senegalese artisanal, recreational and industrial fisheries for size frequency, sex determination, and catch and effort data will be continued in 1994 by Dr. Taib Diouf, the East Atlantic Coordinator. Requested funding for 1994 will be $1500. The West Atlantic Coordinator will travel to Senegal to discuss data collection procedures and to give slide presentations on tagging techniques for the recreational fishery (see Travel/Coordination).

Côte d'Ivoire. Abidjan shore-based sampling of the artisanal and recreational fisheries for billfish will be continued and directed by CRO staff in 1994. Standardized indices of abundance for blue marlin and sailfish will be developed for the time series 1984-1992 and a report will be submitted on these analyses. The West Atlantic Coordinator will travel to Côte d'Ivoire to review past data files, discards, sex determination

procedures, and give presentations on tagging techniques for the recreational fishery (see Travel/Coordination). Funding for 1994 will be $1500.

Ghana. Shore-based sampling of size frequency and sex determination, and catch and effort of the artisanal gillnet fisheries for billfish will be continued in 1994 by Dr. Martin Mensah. Standardized CPUE's for sailfish will be developed for the time series, 1984-1992. Funding for 1994 will be $1500.

Canary Islands. Shore-based sampling of size frequency of off-loaded billfish carcasses from Taiwanese longline vessels will be continued in 1994. Requested funding for 1994 is $400.

c) At-sea sampling

Venezuela. At-sea sampling out of the port of Cumaná, Puerto La Cruz, Carúpano, and Juangriego will be continued in 1993. A total of 15 tuna trips ($9,000), 15 swordfish trips ($9,000), 2 long-range trips on large Korean-owned, Venezuelan-flagged vessels ($2,300), and 8 trips on smaller longline vessels ($2,000) will be made in 1994. Insurance will be $1,250 and the total funding for 1994 will be $23,550.

Brazil. At-sea sampling on Brazilian and Taiwanese longliners fishing out of Rio Grande do Sul, as well as other ports will be initiated in 1994. Dr. Alberto Amorim from the Instituto de Pesca and Mr. José Nelson Antero da Silva from IBAMA will direct these research activities. Requested funding for 1994 will be $1000.

Telemetry and Hook Timing Studies. Proposals for telemetry studies to evaluate the survival of marlin caught and released off longline vessels were not received in 1993. However, a proposal to evaluate possible avoidance of billfish catches on longline gear, through the use of hook timing devices to document the time and depth of billfish catches, was funded by the U.S Government. This project will be conducted by staff at the Mote Marine Laboratory in Sarasota, Florida, during 1994 and 1995. Data on the short-term survival of billfish caught on longline gear will also be obtained. To insure that this study will have a sufficient sample size of billfish in the longline catch, the Western Atlantic Coordinator has agreed to arrange for at least one longline trip to be made in November, 1994, from Cumaná, Venezuela, where the by-catch rate of billfish is sufficiently high for sampling. Most of the funding for this project is already covered but travel costs of $2,000 for a Mote Laboratory scientist will be required for 1994 to test the hooktimers on a Venezuelan longline vessel.

d) Billfish Tagging Program

An inventory of tagging supplies will have to be ordered for the 1994 tagging season and the funding required for 1994 will be $3,000. In order to further encourage the return of tagged billfish, two types of tagging posters will be printed in Japanese, Chinese, and Portuguese and distributed to longline vessels from these countries. In addition, the florescent orange tag-recapture cards now distributed by the U.S. National Marine Fisheries Service will be printed in the three ICCAT languages (English, French and Spanish) and distributed to participants of the tagging program. Requested funding for printing the new posters and cards is $2500 for 1994 and $1000 are required for various tag rewards for 1994.

Grenada and St. Vincent. A joint study to intensively tag and release west Atlantic sailfish will be conducted between CARICOM and ICCAT on Grenada and St.Vincent in 1994. New longline vessels obtained from Japan, with live bait holding capabilities, will be used to maximize catch rates on both islands to tag and release sailfish caught by longline gear. The funding allocated for this portion of the study will be $2,000 for 1994 and this amount will likely be matched by CARICOM. This funding could provide from 10 to 20 trips during the year.

e) Age and growth

Requested funding for biological samples from juvenile and very large billfish, as well as tag-recaptured billfish, is $500 for 1994.

f) Coordination

f-1 Travel/Coordination

Experience in the west Atlantic (SCRS/90/20, SCRS/91/18, SCRS/92/24, and SCRS/93/102)

continues to indicate that it will be necessary to make a series of trips in specific Caribbean island locations to maintain quality control of on-going research. The purpose of this travel will be to train samplers in data collection, pick up data, assist in data analysis, hand-carry frozen biological samples back to Miami, monitor the rapidly changing pelagic fisheries, and maintain contacts with project cooperatives. In addition, travel will also be necessary from Miami, Florida, to west Africa and Brazil to assist the East Atlantic Coordinators in refining sampling programs, particularly to encourage tag release and recapture activities. Funding for 1994 will be $12,000. Travel may include the following areas:

- Cumaná, Margarita Island, and La Guaira, Venezuela
- Grenada
- St. Maarten, Netherlands Antilles
- Trinidad and Tobago
- Cancún and Cozumel, Mexico
- Dakar, Senegal
- Abidjan, Côte d'Ivoire
- Santos and Recife, Brazil
- St. Vincent
- Other west African and Caribbean countries

f-2 Miscellaneous /Mailing

The requested funding for 1994 for east Atlantic miscellaneous and mailing is $100. Similar needs for the West Atlantic Coordinator are covered by the U.S. domestic budget.

f-3 Secretariat

Funding for mailing and shipment of materials, data management, and samples ($1000) and for miscellaneous expenses and contingencies ($1000) for 1994 are included. Requested funding for 1994 is $2000.

Because of unforseen changes in the fisheries and opportunities for sampling, it may be necessary for the General Coordinator to make adjustments in budgeted program priorities. These changes, if any, will be duly transmitted to the area Coordinators and to the ICCAT Secretariat. Also, the implementation of the proposed budget (**Table 1**) is contingent upon receipt of sufficient funds. The expansion or reduction of expenses will depend, to a large degree, on the available funds.

Table 1. 1994 Budget of the Enhanced Billfish Research Program (US$)

Budget Chapters	*Budgeted Amounts*
SPECIES IDENTIFICATION KIT:	1,000.00
AGE AND GROWTH:	
Purchase of hard parts	500.00
TAGGING:	
Tag rewards	750.00
Lottery rewards	500.00
Hard part rewards	500.00
Printing posters and recapture cards in Japanese/Chinese/Portuguese	2,500.00
Tags and tagging equipment	3,000.00
STATISTICS & SAMPLING	
-- West Atlantic shore-based sampling:	
Cumaná, Venezuela	300.00
Puerto La Cruz, Venezuela	240.00
Juangriego, Venezuela	864.00
Playa Verde, Venezuela	500.00
Playa Grande Marina, Venezuela	1,680.00
Venezuela tournaments in Puerto Cabello and Falcon	760.00
Grenada	1,900.00
Jamaica	1,000.00
Trinidad & Tobago	2,000.00
St. Maarten, Netherlands Antilles	1,500.00
– West Atlantic at-sea sampling:	
Venezuela (Cumaná, Puerto La Cruz, Carúpano, Juangriego)	22,300.00
Insurance for Venezuelan Observers	1,250.00
St. Vincent and Grenada	2,000.00
Telemetry / Hook Timer studies (Travel only)	2,000.00
Brazil	1,000.00
-- East Atlantic shore-based sampling:	
Dakar, Senegal	1,500.00
Côte d'Ivoire	1,500.00
Ghana	1,500.00
Canary Islands	400.00
COORDINATION:	
Travel by Coordinators	12,000.00
Mailing & miscellaneous-East Atlantic	100.00
Secretariat support (data management, mailing, etc.)	2000.00
Repair freezer truck for biological sampling	800.00
Matching funds for purchase of copy machine	600.00
GRAND TOTAL:	**$68,444.00**

Appendix 7 to Annex 23

REVIEW OF THE PROGRESS MADE IN THE BLUEFIN YEAR PROGRAM (BYP)

(COM-SCRS/93/15, revised)

1. Background

The year 1993 marks the second year of the ICCAT Bluefin Year Program (BYP) that was initiated in 1992 within the framework of the SCRS. The objectives of this Program are the improvement of statistics and a better understanding of the basic biology, ecology and population dynamics of Atlantic bluefin tuna to meet with the need for more accurate and precise management of this heavily exploited stock.

As stated in the previous review, this Program depends entirely on national research activities of the ICCAT member countries (and non-members). However, promising research cooperation has been established recently among ICCAT, GFCM, and the EEC, especially regarding studies on Mediterranean bluefin. At present, two scientists are serving as Coordinators of the BYP (Z. Suzuki for the western Atlantic, and B. Liorzou for the eastern Atlantic including the Mediterranean).

Studies on reproductive biology, fecundity and size at first maturity, as well as improvement in growth studies are thought to have a relatively high prospect of obtaining positive results, in spite of limited time constraints, if there is good coordination among the ICCAT, GFCM and EEC research projects on bluefin tuna. Accordingly, it was agreed that the "Instituto Español de Oceanografía" (IEO), under the leadership of Dr. J. L. Cort, will act as the core for these studies, as regards the eastern Atlantic and Mediterranean, in carrying out and coordinating the actual research projects. A similar arrangement for the western Atlantic has been made with Dr. Z. Suzuki serving as coordinator.

In addition, and for the convenience of all the concerned scientists of the BYP and Atlantic bluefin studies, a BYP circular has been distributed since July, 1991.

2. Review of national research activities

Summaries of national research activities, carried out according to the BYP, were received by the BYP Coordinator, Dr. Z. Suzuki, from Canada, France, Greece, Spain, and Japan. Although a specific summary was not provided by the U.S., comprehensive efforts on various aspects of bluefin research, described in the previous year's report, have been continued by the U.S.

Specific new research and developments regarding national research activities in 1993 are summarized as follows:

-- **Canada** plans an analysis of feeding habitats of bluefin tuna with relation to sea surface temperature and oceanographic currents, based on data collected in Hell Hole during 1992.

-- **France**, as part of EEC research projects, carried out several research activities, such as the collection of catch and effort statistics of the French purse seine fishery in more detailed stratum, i.e., boat/day/area, seasonal growth of juveniles for the first 3 age groups caught by the purse seine fishery, and biological sampling for genetic studies.

-- **Greece**, as part of EEC research projects, started an experimental plankton survey in the south Aegean Sea in July, 1993, although only half of the scheduled samples was completed due to bad weather conditions. Sampling of the entire Aegean Sea is planned according to the schedule discussed. (see section 3.b).

-- As regards ageing and reproductive biology studies, **Japan** has collected biological samples from the Japanese longline fishery that operated within the Canadian 200 mile zone during the period of October, 1992, to January, 1993, with the cooperation of Canadian observers on-board the Japanese boats. Length,

weight, sex, ovaries, spines, and vertebrae were collected from a total of 445 fish, ranging in size from about 120 cm to 250 cm. In addition, samples taken from U.S. coastal waters are now being analyzed as part of the genetic studies on stock structure.

-- Important progress is being made in **Spanish** research, as part of EEC research projects, on Atlantic bluefin tuna, especially in fecundity, growth, and tagging experiments. For reproductive biology, 44 gonads were collected from bluefin tuna measures between 130 cm and 257 cm that were caught in the traps and by longline in the Spanish fisheries in the Atlantic and Mediterranean. Histological studies are underway in order to have improved information on reproductive biology, and these studies will be completed in 1994.

-- As previously mentioned, a validation study on growth based on spines will be carried out using samples collected in the fall and winter fisheries of **Turkey**. During three tagging cruises carried out in 1990, 1991 and 1992, about 3,300 bluefin tuna less than one year old were tagged, of which 23 have been recovered. In the fall of 1993, another tagging cruise is planned in the Mediterranean.

3. Review of international research activities

a) EEC research projects for large pelagic fishes in the Mediterranean Sea have continued in 1993. Also, a research workshop, sponsored by the University of Istanbul, was held in 1993 in Istanbul. This workshop provided a unique opportunity to obtain more information on pelagic fisheries and on the basic statistics of Turkey, with input information from Italian, Spanish and French scientists, as well as the participation of the ICCAT Secretariat. Specific action derived from the workshop includes, collection of spines of bluefin caught in the fall and winter fisheries of Turkey and the initiation sampling of bluefin tuna.

b. Larval survey plan for Atlantic bluefin tuna in 1994;

Two workshops were held in 1993 to coordinate an international project concerning a bluefin tuna larval survey in the Atlantic and the Mediterranean Sea for 1994, one at the NMFS Lab in Miami, U.S.A. on April 6-7, and another at the University of Bari, Italy, on May 20-21. These were for surveys in the Gulf of Mexico and in the Mediterranean Sea, respectively.

The result of the two workshops merged into a single project for 1994, as follows:

A Japanese research boat will be used in the survey as a medium to bridge information between the western and eastern Atlantic. Research boats from the U.S (in the Gulf of Mexico) and those funded by the EEC (in the entire Mediterranean) will constitute the counterparts of the Japanese boats. In addition, supplemental surveys are also planned by Italy (central Mediterranean), Greece (Aegean Sea and the eastern Mediterranean), and Turkey (Aegean Sea, possibly the Sea of Marmara and Black Sea) to maximize time and coverage as wide as possible. Messrs. S. Tsuji (Japan), S. Turner (USA), and C. Piccinetti (Italy) will coordinate the larval survey in 1994. The proposal of the Atlantic bluefin tuna larval survey by Japan is included in the "Collective Volume of Scientific Papers, Vol. XLII (1)".

Appendix 8 to Annex 23

REPORT OF THE SUB-COMMITTEE ON ENVIRONMENT

1. Opening

The meeting of the Sub-Committee on Environment was held on November 3, 1993, at the Hotel Pintor in Madrid. Mr. J. Pereira (Portugal), Convener of the Sub-Committee, presided over the sessions and welcomed all the participants.

2. Adoption of Agenda and Arrangements for the meeting

The Tentative Agenda was adopted and is attached to this Report as **Addendum** 1. Dr. F. M. Stretta (France) served as rapporteur.

3. Review of the documents presented

Only five documents presented this year to the SCRS dealt with subjects concerning the Sub-Committee on Environment. These documents are as follows: SCRS/93/82, 111, 112, 116 and 118.

Two of these documents (SCRS/93/82 and SCRS/93/112) deal with an area situated in the eastern equatorial Atlantic (1°N-5°N and 8°W-17°W). The regular presence of important concentrations of tunas in this area is currently not explained. French inter-disciplinary teams have already undertaken the first exploratory cruises and are preparing an important international research program. The collaboration of new oceanographic teams has been requested.

Document SCRS/93/111 presents a summary of the new type of fishing adopted by the Dakar-based baitboats. The baitboat plays the role of the FAD (Fish Aggregating Device) maintaining the tuna schools under the boat for several months. This type of fishing has allowed the baitboats to maintain the tuna catches in spite of the reduction in their number. The yields are important and oscillate around 10 MT per day. This type of fishing has been adopted by three baitboats from the Canary Islands. This type of fishing poses the following question: Will the increase in catches be proportional to the increase in fishing effort?

A research program should be started shortly in Dakar in order to study the dynamics of the association of tunas with baitboats.

Document SCRS/93/116 deals with the strange behavior of tunas along the coasts of Côte d'Ivoire and Ghana which "do not feed on" the sardinella available in the neritic area.

Document SCRS/93/118 deals with the significant increase in the landings of minor species of tunas and small tunas (*Auxis*) relative to the development of fishing with floating objects by large purse seiners.

4. Examination of possible access to existing data bases on the environment

Following the recommendations made in 1991 and 1992 by the Sub-Committee on Environment, the ICCAT Secretariat has written to the institutions that have environmental data bases. These contacts were established with a certain delay, and the Secretariat has not yet received any responses from these institutions. Information has been requested from South Africa, Canada, France, Kenya, U.S.A., and Senegal.

The Secretariat has been requested to circulate the responses from these institutions as they are received. At present, the NODC data base has two CD-ROM, and the Secretariat has also been requested to acquire a CD-ROM scanner and this data base at a reasonable cost.

5. Anomalies in oceanic conditions in recent years

In the Azores Islands, the fluctuations in environmental conditions have a direct influence on the catches of tunas as can be seen in the catches of skipjack and bigeye. It would be convenient to carry out historical studies of the fluctuations of the environmental conditions in order to acquire knowledge

on the phenomena of the migration of juvenile bluefin tuna from the west to the east Atlantic, particularly in 1967 and 1993 (it seems that the percentage of fish migrating has been stable for about the last 30 years), and from the Mediterranean towards the Bay of Biscay in 1993.

6. Ecology of tunas (association with floating objects, with other animals, gear selectivity, species interactions, incidental catches, etc.)

6.1 Tunas /environment

The Delegate of France informed the Sub-Committee on the development of studies concerning behavior of tunas in relation to environment data , using computer technologies. These studies, which comprise a doctoral dissertation, could be presented next year.

6.2 Tunas /dolphins relation

6.2.1 Tropical tunas

Following a request made to the EEC program to improve knowledge on the effect of fishing activities on the environment, and in particular, on marine species which are not specifically targeted (marine mammals, turtles, birds, etc.) teams of French and Spanish scientists have presented a draft program on the species associated with the tropical tuna fisheries in the Atlantic and Indian Oceans. This project has been accepted by the EEC for a period of 30 months and should be initiated before the end of 1993. The objective of the program is not to explain the association between tunas and dolphins, but to determine with total transparency the reality of this association in the two oceans.

6.3 Albacore

Provisional results were presented on the French research program concerning the incidental catches of cetaceans by the French gillnet vessels (SCRS/93/10). Based on a sample representing 40% of the fishing operations during the 1992 fishing season, on the exempted fleet (use of 5 km nets), it is observed that the average of the incidental catches of cetaceans per kilometer of net is 0.11. These incidental catches represent 0.17% of the total tuna catches in number. The main cetaceans that are found in these catches are: *Stenella coeruleoalba* (69%) and *Delphins delphis* (24%). For these two species, the juveniles represent almost half of the catches. These preliminary studies were also presented at the ICES Statutory Meeting in 1993.

The Observer from Ireland informed the Sub-Committee of a similar research program carried out with Irish gillnet vessels during the 1993 fishing season. Five observers participated in the fishing operations in which nine marine mammals were caught incidentally.

6.4 Association with fish aggregating devices (FAD)

This association is discussed in the report on tropical tunas.

6.5 Incidental catches

Document SCRS/93/118, mentioned earlier, deals with the increase in incidental catches with the development of fishing using artificial FADs.

The representative from the European Union, in referring to Document SCRS/93/20, stated that the SCRS and the Sub-Committee on Environment dealt with the problems of gear selectivity with tunas, in order to minimize incidental catches.

7. Review of studies on the effect of the environment on tuna ecology and the conclusions of any international meetings on the environment

The Delegate of Spain presented, in general terms, a multi-disciplinary study to analyze the dynamics of the surface layers of the ocean, particularly surface temperature changes (temperature scenarios) in relation to albacore catches in the Bay of Biscay. From this study, it should be pointed out that there is a response by tunas to oceanic phenomena on a large scale (seasonal variations in surface temperature) and on a small scale (high atmospheric pressure).

The Sub-Committee requested the Secretariat to keep informed of and circulate information on the international meetings that deal with problems on the environment. Also, the Executive Secretary pointed out that he could authorize members of the SCRS (who

should solicit such authorization) who, for professional reasons, attend these meetings, to represent ICCAT at such meetings. He reminded the Sub-Committee that this official ICCAT accreditation does not imply that ICCAT will finance this type of mission. He asked these people to submit their report to the SCRS.

8. Working plan for the Sub-Committee

-- Short-term plan
-- Long-term plan

The Sub-Committee noted the proposal made by the representative from the European Union concerning the development of studies on gear selectivity.

The Sub-Committee on Environment stated that it was confident that studies would be carried out on the trophic relation between yellowfin and minor tuna species under floating objects, as well as studies on the association of tunas with baitboats in waters off Senegal and the Canary Islands.

Over the short-term, the Sub-Committee requested the it be informed of the activities that are carried out in other international organizations concerning the environment (particularly ICES).

9. Date and place of the next meeting of the Sub-Committee on Environment

The Sub-Committee will meet at the same time and place as the next meeting of the SCRS.

10. Other matters

No other matters were discussed.

11. Adoption of Report

The Report was adopted by the Sub-Committee.

12. Adjournment

The 1993 Meeting of the Sub-Committee on Environment was adjourned.

Addendum 1 to Appendix 8 to Annex 23

AGENDA OF THE SUB-COMMITTEE ON ENVIRONMENT

1. Opening of the meeting
2. Adoption of Agenda and arrangements for the meeting
3. Review of contribution papers
4. Examination of possible access to existing data bases on the environment
5. Anomalies in oceanic conditions in recent years
6. Ecology of tunas (association with floating objects, with other marine animals, gear selectivity, species interactions, by-catches, etc.)
7. Review of studies on the effect of the environment on tuna ecology and the conclusions of any international meetings on the environment
8. Working plan for the Sub-Committee
   -- Short-term plan
   -- Long-term plan
9. Date and place of the next meeting of the Sub-Committee on Environment
10. Other matters
11. Adoption of Report
12. Adjournment

CHAPTER III

NATIONAL REPORTS

NATIONAL REPORT OF ANGOLA*

1. The Fishery

1.1 The fishing fleet

During the 1991-1992 period, catches of tunas declined due to the decrease in the tuna fishing vessels.

1.2 Species

The abundant species in Angola are yellowfin tuna, skipjack tuna, Atlantic bonito, and other species that are taken in very small quantities.

Yellowfin tuna constitute one of the most important species, and comprise more than 60% of the total catches.

1.3 The catches

In 1991, the catches of tunas amounted to 927 MT. In 1992, on the other hand, the catches declined to 500 MT.

2. Research

Scientific research is carried out by the only institute. Research was carried out mainly on the tuna biology and oceanography.

3. Application of ICCAT Recommendations

An effort has been deployed with a view towards organizing all the conditions for the application of the ICCAT Recommendations in many aspects.

* Original report in French.

NATIONAL REPORT OF CANADA*

by

J. M. Porter**

1. Introduction

The Canadian Department of Fisheries and Oceans has responsibility for Canadian fisheries management and statistics, and for research on Atlantic large pelagic species fished in Canadian waters in support of the ICCAT Convention. Canadian research programs are conducted for swordfish and tunas at the Biological Station, St. Andrews, New Brunswick, and for large pelagic sharks at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia. In 1993, the responsibility for statistical submission (Task I, Task II landings) was transferred from the Biological Station to Atlantic Operations, Ottawa.

2. Status of the Fisheries

2.1 Bluefin tuna

The Canadian nominal landings of Atlantic bluefin tuna in 1992 were 443.5 MT (round) (**Table 1**), leaving 587.5 MT of the combined 1992-93 quota (1,031 MT) uncaught. The major fisheries took place off southwest Nova Scotia (Hell Hole between Browns and Georges banks, and the Bay of Fundy), approximately 289 MT (65% of the Canadian catch). Sixty-one MT of bluefin were caught in the Gulf of St. Lawrence, 56 MT were caught off Newfoundland (tail of Grand Banks and Virgin Rocks), and about 29 MT were harvested off northeastern Nova Scotia. Only 1.4 MT were caught as by-catch in the St. Margaret's Bay fish trap fishery. In the 1992-93 fishing season the Canadian offshore longline vessel fishery which directs towards non-regulated tuna species within Canada's 200-mile fisheries zone caught 1.2 MT of its 35 MT bluefin by-catch limit (**Table 2**), though a total of 8.9 MT were caught in the 1992 calendar year.

2.2 Swordfish

The Canadian nominal landings of swordfish in 1992 were 1546.5 MT (round), taken mainly by longline (96%), with smaller landings by the harpoon fishery (**Table 3**). The mean weight (round) by longlined and harpooned swordfish caught in the Canadian fishery was 57 kg and 67 kg, respectively (**Table 3**). Sixteen percent of the Canadian landings by number in 1992 constituted small fish as defined by the ICCAT swordfish recommendations for regulatory measures (< 25 kg round, **Table 3**).

2.3 Sharks and unregulated tunas

Historically, blue shark, porbeagle and shortfin mako have been a bycatch of the Canadian swordfish and groundfish longline fisheries. The pelagic longline fishery also takes other shark species. A directed porbeagle fishery by the Faeroese in Canadian waters was also permitted under a 1981 Fisheries Agreement. Since 1991, however, Canadian interest in sharks has increased. Several boats have been directing for the mackerel sharks, including about 700 MT of porbeagle landed by a single vessel in 1992. The 1992 reported landings of 984 MT are summarized by species in **Table 1**; the catch of sharks in Canadian waters is believed to be higher than is currently reported because of discarding and no previous requirement to identify as to species. These problems are being

*Original report in English.

** Pelagic Fisheries Section, Biological Station, Department of Fisheries and Oceans, St. Andrews, New Brunswick E0G 2X0 Canada.

addressed through regulatory amendments planned for 1994.

Albacore, bigeye and yellowfin tuna were targeted by one Canadian offshore longline vessel (**Table 2**), as well as by the swordfish longline fleet (**Table 1**).

3. Research studies

3.1 Bluefin tuna

1) The tagging portion of the multiple mark-recapture tagging study was completed in the Hell Hole fishery with 154 fish tagged. Ten of 62 fish tagged in 1990 and 6 of 69 fish tagged in 1991 were recaptured by the end of 1992. The purpose of this study is to estimate the size of the Hell Hole school of fish, estimate exploitation rates, and study fish movements (SCRS/92/29). Analyses will follow the 1993 harvest.

2) Sampling of the inshore bluefin fishery consisted of numbers and dressed weights of all fish harvested. There was also sampling carried out on the Canadian offshore and Japanese longline fisheries within the Canadian 200-mile fisheries zone by the Canadian Observer Program. Extensive sampling (morphometrics, tissue, hardparts) of fish caught on the Japanese vessels was made in collaboration with Japanese scientists for Bluefin Year Program studies.

3) The field collection portion of a 2-year histological study of gonad anatomy and maturity was completed (cooperative study between the Department of Fisheries and Oceans and Acadia University, Wolfville, Nova Scotia). Fish were sampled from Canadian and U.S. fisheries.

4) The field collection portion of a bluefin tuna stomach content analysis study was completed in the Hell Hole. Fifty-five stomachs were collected during the commercial fishery for later analysis. The purpose is to determine the diet of bluefin in the Hell Hole.

3.2 Swordfish

1) A cooperative study with the Pacific Biological Station (DFO) was undertaken to examine the analytical methods used to estimate age composition of the catch for stock assessment (SCRS/92/27).

2) Historical swordfish longline log records (1961-91) were coded and analyzed for use in the CPUE index for the stock biomass production model used for stock assessment (cooperative with Japan, Spain, U.S.: SCRS/92/28).

3) Port sampling for lengths and weights was conducted to make more direct conversions from size (length) to age (and thus reduce the variance associated with weight to age conversions; SCRS/92/27), and to calculate revised weight to length conversions.

4) At-sea sampling by the Canadian Observer Program was conducted on Japanese longline vessels while in the Canadian 200-mile fisheries zone.

3.3 Sharks and unregulated tunas

Biological sampling was carried out on the Canadian offshore, and Faeroese and Japanese longline fisheries within the Canadian 200-mile fisheries zone. There has been no sampling of the remainder of the domestic fleet.

4. Management

4.1 Bluefin tuna

In response to new ICCAT regulatory recommendations, Canada implemented a two-year (1992-93) Atlantic bluefin tuna fishery management plan. The bluefin tuna fishery on the Atlantic coast was subject to the following measures in 1992:

1) *Quota:* A quota of 573 MT was allocated among seven inshore management units and the offshore fishery (including trip limits);

2) *Consultation:* Fishing seasons and quotas for each management area were made in consultation with industry and strictly monitored by DFO;

3) *Limited Entry:* The number of regular directed bluefin tuna licenses was limited to 719, plus 38 restricted activity licenses, 4 fish trap licenses in St.

Margaret's Bay (bycatch of bluefin), and one offshore license (by-catch of 35 MT of bluefin);

4) *Restrictions:* Strict vessel replacement, management fishing areas and license transfer requirements were enforced;

5) *Gear:* Gear restrictions were as follows: commercial fishery limited to rod and real and/or tended line (must be attached to vessel; maximum of two lines, each with one hook fished at one time); charter limited to rod and reel; pelagic longline in offshore fishery. Electric harpoons were permitted on a one-year experimental basis;

6) *Tags:* A strict tagging program was conducted: each bluefin caught was tagged with a uniquely numbered identification tag. This was used in conjunction with logbooks for the purpose of catch monitoring.

In 1992, 413 licensed fishermen actually participated in the directed bluefin tuna fishery (**Table 4**). One offshore license was issued for non-regulated tunas with a bycatch of 35 MT of bluefin. A further 4 fish trap licenses in St. Margaret's Bay were re-issued, allowing a by-catch of bluefin (**Table 4**).

4.2 Swordfish

The 1992 Atlantic Swordfish Fishing Plan contained the following management measures:

1) *Quota:* A quota of 2000 MT was assigned for 1992 and broken down as follows:

Total Quota	2,000
By-catch for Canadian offshore tuna vessels	120
Canadian longline and harpoon quota	1,880

2) *Bycatch:* (i) Longline vessels directing for swordfish were permitted to direct for tuna other than bluefin; (ii) A 60 MT (maximum) swordfish bycatch quota was established for each (two) offshore Canadian tuna licenses (only one active).

3) *Area:* A condition of license appeared on all swordfish licenses: "Valid for NAFO Convention Sub-areas 3, 4 and 5 only, excluding Fishing Zones 1 and 2 of Canada" (Gulf of St. Lawrence and Bay of Fundy).

4) *Limited Entry:* Swordfish longline licenses and swordfish harpoon licenses were available only to fishermen who held such licenses in 1991.

5) *Drift Nets:* The ban on Canadian vessels using high seas drift nets for fishing large pelagic species was continued.

6) *Small Fish:* A prohibition on the taking and landing of swordfish less than 25 kg (live weight) was continued. A length equivalent for this measure was 125 cm from the fork of the tail to the tip of the lower jaw. Vessels were limited to 15% tolerance of the number of fish per landing.

7) *Opening Date:* The opening date for swordfish fishing was May 1 for the 1992 season.

Forty-six licensed swordfish longline fishermen (directed fishery) were active in the 1992 fishery on the edge of the Scotian Shelf and the Grand Banks of Newfoundland. Participation remained relatively unchanged since 1988 (**Table 3**). Harpoon licenses were issued to 1,421 fishermen (some also have longline licenses) though only 72 were active (**Table 3**). In addition, one offshore license was issued for non-regulated tunas (bigeye, albacore, yellowfin) with a swordfish bycatch provision of 60 MT.

4.3 Sharks and unregulated tunas

In 1992, there were no management plans for sharks or tunas other than bluefin.

5. Preliminary information for 1993

In March, 1993, a research program for large pelagic sharks was initiated at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia (P. Hurley).

In July 1993, the ICCAT Workshop on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age (COM-SCRS/93/17) was hosted by the Biological Station, St. Andrews, New Brunswick, and convened by J.M. Porter. Twenty-two people attended, representing six countries or organizations.

In August 1993, the large pelagics program in St. Andrews acquired an assessment biologist (H. Stone).

5.1 Bluefin tuna

In response to new ICCAT regulatory recommendations, Canada implemented a two-year (1992-93) Atlantic bluefin tuna fishery management plan (Section 4.1). Points relevant to 1993 are as follows:

1) *Quota:* A quota of 587 MT, assigned in accordance with the provision that uncaught 1992 quota was made available for the 1993 fishery. The combined total for both years (1,031) represents an overall reduction of 10% as per the ICCAT measures. This quota provides for fishing allocations for the seven inshore management units and the offshore longline fishery;

5) *Gear:* Experimental use of the electric harpoon was extended on an Atlantic-wide basis for 1 year.

Other elements of the 1992 management plan remained unchanged (Section 4.1).

The nominal Canadian landings as of 7 October 1993 were 307 MT from the inshore fishery. To date, no bluefin landings have been made by the offshore longline fishery although an allocation of 35 MT is still available. Some incidental fish were caught in herring weirs around Grand Manan Island, New Brunswick (Bay of Fundy); 6 MT were landed and about 75 fish were released alive. The fish traps in St. Margaret's Bay have caught 12 MT to date. Reported sightings of small to medium tuna have been frequent during 1990-93; this may imply some improvement in the western bluefin stock as a result of the restrictive management measures in place since 1982.

The scientific research program at the Biological Station, St. Andrews, New Brunswick, was as follows:

1) Preliminary analysis of effort using existing log records for the Canadian Hell Hole fishery was attempted, but logs were determined to be inadequate both in design and completion by the fishermen. New log record forms were designed to capture the effort information and implemented for the 1993 fishery.

2) Implementation of a Dockside Monitoring Program in southwest Nova Scotia in 1993 has resulted in more complete coverage of dressed weights and dressed lengths of all fish landed in that area. In addition, 10% of the vessels of the fleets fishing in the Hell Hole were required to carry observers. Observer coverage of Bay of Fundy fishing activities was also undertaken. Observers measured fork length and dressed length for each fish.

3) Tag recoveries from the 1990-92 Hell Hole tagging were received. To date, there have been 20 of the 154 tags recovered, either from the Hell Hole or New England fisheries (SCRS/93/50).

4) Preliminary histological analyses were undertaken of the bluefin gonads sampled from the Canadian and USA fisheries in 1991-92 (cooperative between DFO and Acadia University).

5.2 Swordfish

The nominal Canadian landings as of 1 October 1993 were 1,001 MT and the fishery is still in progress.

The scientific research program at the Biological Station, St. Andrews, New Brunswick, was as follows:

1) The Fisheries Act was implemented to require fishermen to submit individual weights of all swordfish landed (tally sheets), providing more complete size information for the Canadian swordfish landings.

2) Further analysis of the CPUE data (1961-92) was conducted.

3) Port sampling for swordfish lengths and weights continued.

4) At-sea sampling by the Canadian Observer Program will be conducted on Japanese longline vessels while in the Canadian 200-mile fisheries zone.

5.3 Sharks and unregulated tunas

Regulatory amendments and a shark fishery management program are planned for 1994. The proposed Management Plan will include gear

restrictions, a finning prohibition, and a comprehensive fishing and biological data collection and reporting system for porbeagle, shortfin mako and blue shark. Scientific advice was reviewed (May 1993) and the results will be presented in the 'Stock Status Report on Pelagic Stocks in Atlantic Canada.

The scientific research program for pelagic sharks initiated at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia, was as follows:

1) Initiated analysis of CPUE and at-sea sampling data collected by the Canadian Observer Program on Faeroese longline vessels directing for porbeagle shark in the Canadian 200-mile fisheries zone (1979-92).

2) Initiated analysis of the shark bycatch of Japanese longline vessels directing for tunas in the Canadian 200-mile fisheries zone (1977-92).

3) At-sea sampling by the Canadian Observer Program will be conducted on Faeroese and Japanese longline vessels while in the Canadian 200-mile fisheries zone and on Canadian offshore longline vessels directing for non-regulated tunas.

4) Conducted port sampling of sharks landed by the recreational fishery.

Table 1. Summary of Canadian landings (MT round weight) of large pelagic fish species, 1992

	Species 1992 landings
Swordfish	1546.5
Bluefin tuna	433.5
Albacore tuna	1.0
Bigeye tuna	67.5
Yellowfin tuna	25.2
Unspecified tuna	3.2
Blue shark	101.1
Shortfin mako	115.8
Porbeagle	717.9
Unspecified sharks	49.0

Table 2. Catches (MT round weight) of the Canadian offshore large pelagic fishery which directs for non-regulated tunas, 1987-93 *

	1987-88	*1988-89*	*1989-90*	*1990-91*	*1991-92*	*1992-93*
ALB	21	47	22	21	+	+
BET	144	95	31	15	0	+
YFT	40	30	7	14	+	+
BFT **	33	104	53	28	13	1.2
SWO **	15	16	6	9	0	+

* Fishing year from 1 April to 31 March.
** Species regulated by Canadian quota regulations.
+ <1 MT.

Table 3. Summary of 1988-92 active licenses, swordfish landings (MT round weight), average weight of fish (kg round weight) and percentage of small fish*

	1988	*1989*	*1990*	*1991*	*1992*
Number of active licenses					
Longline	39	52	50	53	46
Harpoon	+	+	+	61	72
Catch (MT)					
Longline	887	1097	819	953	1486
Harpoon	24	146	92	73	60
Total	911	1243	911	1026	1546
Average weight (kg)					
Longline	50	52	61	61	57
(# sampled)	(1315)	(3902)	(10280)	(8111)	(5904)
Harpoon	--	129	138	78	67
(# sampled)	(0)	(637)	(164)	(146)	(136)
% of catch small fish* (by number)	9	16	11	11	16
% of catch sampled	7	23	71	49	23

* <25 kg round weight.
\+ Undetermined number, but <100.

Table 4. Distribution of bluefin tuna and swordfish fishing licenses by region and species* in 1992

	Number of licenses			
	Bluefin		*Swordfish longline*	
Region	*Total*	*Active*	*Total*	*Active*
Gulf	616	310	4	0
Newfoundland **	55	39	4	3
Scotia-Fundy	32	32	68	43
St. Margaret's Bay ***	4	4	--	--
Quebec	54	28	0	0
Total	761	413	76	46

* Only bluefin tuna and swordfish are regulated.
** 38 of the total bluefin licenses are subject to a reduced level of fishing activity and restricted to NAFO Division 3LNO.
*** Fish trap licenses with by-catch of bluefin tuna.

NATIONAL REPORT OF CAPE VERDE*

by

María Helena Santa Rita Vieira**

1. State of the fisheries

The data on tunas caught by the Cape Verde fleet in 1992 have not yet been published. An estimate is given in **Tables 1** and **3** for the industrial fishery and in **Tables 2** and **4** for the artisanal fishery. In accordance with this estimate the industrial catches have decreased in relation to those of 1991, whereas the industrial catches are higher than those for the same year. Twenty (20) baitboats operated during 1992. The data on the industrial fishery refers to 1993, according to the preliminary estimate, are on the order of 736 MT up to the end of September. The catch data on the artisanal fishery are not yet available.

2. Statistics and research

Since January, 1993, the organism responsible for the programs on statistics, research and development of the fishery is the "Institut National de Développement de la Pêche" (INDP), created in April, 1992, after restructuring the INIP and the IDEPE, the institutes that were previously in charge, respectively, for research and development of the artisanal fishery.

2.1 Statistics

As regards statistics, a project was carried out in 1992, financed by the "Centre International d'Exploitation des Océans" (CIEO) of Canada which permitted computerizing the statistics and improving the training of personnel involved in statistics. Within a short time, the publication of data will be up to date.

2.2 Research

Studies were continued in 1992 on reproduction, sizes and stomach contents of yellowfin tuna and have been initiated on wahoo. Size sampling on frigate tuna, bigeye and skipjack tunas also continued.

A division of physical oceanography has been created whose main objective in 1993 was the compilation and analysis of the work already carried out by the foreign vessels in the Cape Verde area. A research program will be developed for next year. An agreement is under consideration with the "Centre de Recherches Océanographiques de Dakar-Thiaroye" (CRODT) or with the "Centre Agrymet" in order to receive, on a regular basis, data on surface temperature and transmit them to the fishermen.

Six fish aggregating devices have been deployed in key fishing areas.

3. Future of the fishery

In recent years, although the fleet has increased, the fishery has not developed as expected.

An analysis of the situation indicates that this is due to difficulties of the international market, the lack of live bait, and the lack of duly qualified personnel.

Within the Third National Development Plan, which covers the 1992-1996 period, 20 polyvalent vessels measuring 6.5 m and 20 vessels measuring 10 and 11 m are planned for the artisanal fishery, whereas 10 polyvalent vessels of 20 m are planned for the industrial sector. A program is underway to train personnel and the creation of infrastructures for canning and transformation, with a view towards increasing the catches and improving the products.

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* Original report in French.

**Institut National Pour le Développement de la Pêche

Table 1. Catches (in MT) of the Cape Verde industrial fishery, 1988-1993

	1988	*1989*	*1990*	*1991*	*1992*	*1993*
Yellowfin	471	885	502	660	224	144
Skipjack	1350	934	767	1309	727	523
Bigeye	6	1	3	64	3	67
Tuna + frigate tuna[1]	0	3	2	41	4	--
Wahoo	13	31	78	20	12	2
Total	1840	1854	1352	2094	970[2]	736
Effort (days at sea)	1246	1464	1397	1870	394	

Source: Fisheries statistics.
[1] Tuna + frigate tuna.
[2] Preliminary estimate.
Gear: baitboat with live bait.

Table 2. Catches (in MT) of the Cape Verde artisanal fishery, 1988-1992

	1988	*1989*	*1990*	*1991*	*1992*
Yellowfin	1997	1985	1634	1272	2063
Skipjack	106	37	26	14	31
Bigeye	111	99	44	87	141
Tuna + frigate tuna[1]	1	15	63	33	144
Wahoo	327	600	380	331	536
Others				0	--
Total	2542	2736	2146	1737	2915[2]
Effort (Trips)	108284	145392	132672	126313	174373

Source: Fisheries statistics.
[1] Tuna + frigate tuna.
[2] Global estimate.
Gear: handline and troll.

Table 3. The industrial fishery in Cape Verde, 1988-1991

	1988	*1989*	*1990*	*1991*	*1992*
Skipjack	--		--	5	
Tuna + frigate tuna	--	6		6	Not available
Total	--	6	--	11	
Effort (hauls)	--	8	--	60[1]	

Gear: haul seine
1 Estimated.

Table 4. The artisanal fishery in Cape Verde, 1988-1991

	1988	*1989*	*1990*	*1991*	*1992*
Skipjack	--		14	5	
Tuna + frigate tuna	85	76	10	55	Not available
Total	85	76	24	60	
Effort (hauls)	4063	7644	5271	6701	

Gear: haul seine

NATIONAL REPORT OF FRANCE*

1. Status of the Fishery

1.1 General overview

French catches of tunas reached 71,800 MT in 1992, which is 12% less than the record catch reported for the decade, observed in 1991. This decrease is due to declines in yellowfin and skipjack catches, whereas the catches of bigeye tuna as well as the temperate species represent the maximum of the last ten years (Table 1).

1.2 Bluefin tuna

Bluefin tuna is caught mainly, in the Mediterranean. The 1992 season, with 28 purse seiners in operation, caught 5,970 MT of bluefin tuna, which is an increase of 31% over the previous year. The catches in the Atlantic in 1992 (894 MT) have been increasing since 1988. These catches are distributed among the baitboats (522 MT) and other gears whose the targeted species is albacore (driftnets and pelagic trawls), with 74 and 441 MT, respectively.

1.3 Albacore

In the Atlantic, albacore fishing was carried out during the summer of 1992 by 47 gillnet vessels and 23 paired pelagic trawlers, which landed 4,465 and 2,459 MT of albacore, respectively, the highest French catches since 1979. In the Mediterranean, the 28 purse seiners of the fishery, whose target species is bluefin tuna, incidentally caught the 6 MT of albacore in 1992 (compared to 600 MT in 1991), which reflects the low catches taken in the same year by the sport fishery.

1.4 Tropical tunas

Catches of tropical tunas in 1992 by French tuna vessels amounted to 58,800 MT (31,500 MT yellowfin tuna; 20,100 MT skipjack tuna; and 7,200 MT bigeye tuna), with decreased purse seine fishing effort (17 purse seiners, a decline of 5 vessels) and decreased baitboat effort (8 vessels, a decline of 2 vessels).

Purse seine catches of albacore have returned to their average level of 1991 and 1992, after the record level that was observed in 1989 and 1990.

2. Research

French research on tunas is carried out on the tropical tuna species by ORSTOM, and on the temperate species of the Atlantic and Mediterranean by the IFREMER.

2.1 Tropical tunas

As regards tropical tunas, fishery statistics and research are collected in close collaboration with the research institutes of the Côte d'Ivoire, Senegal, and Venezuela, countries where French scientists of ORSTOM are working.

The detailed fishery statistics of the French inter-tropical fleets have been submitted on a timely basis to ICCAT. The research carried out on tropical tunas involved, among other subjects, the following:

- analysis of the changes in fishing power of the inter-tropical purse seiners;
- analysis of tuna migrations from tag/recapture data and purse seine CPUE;

* Original report in French.

-- methodology to estimate the catch at age of yellowfin tuna from catch at size;

-- modeling of tuna migrations and methodology to assess the migratory stocks;

-- assessment of the state of the stock of yellowfin, within the framework of the Tenerife working group;

-- analysis of tuna fishing carried out by the purse seiners in association with floating objects;

All these research projects were the subject of diverse reports which have been submitted to the SCRS by the French scientists.

2.2 Temperate tunas

2.2.1 Bluefin tuna

Sampling of the landings of bluefin tuna from purse seiners operating in the Mediterranean continued. In 1992, this sampling was carried out based on commercial data obtained from fish dealers, and covered almost 81% of the total catch and 75 percent of the size composition. A program sponsored by the EC is underway and involves several Mediterranean member countries. This program is aimed at the improvement of knowledge on the statistics and biology of the species. Within its framework, France has participated in a mission in Turkey in early 1993.

2.2.2 Albacore

For the north Atlantic, albacore research was carried out the development of aging methods on large albacore, with a view towards improving the analytical stock assessments. In order to take in account the EC regulation on the use of driftnets, an observer program was carried out on board vessels equipped with driftnets. This program, which was initiated in 1992 and intends, among other objectives, to evaluate the ecological impact of this new fishing method, continued actively in 1993. Experiments have been conducted on the immersion of the driftnets, carried out in order to decrease the accidental catches of marine mammals. The results of this research will be presented to the SCRS in 1994.

In the Mediterranean, France tagged more than 3,000 albacore during five years of tagging cruises. The tag recoveries continued to be collected at a rate of about a dozen per year, bringing the recoveries to about 60. The recoveries have all been observed in the Mediterranean. The exploitation of the data from these cruises continued within the framework of the "Large Mediterranean Pelagics" Program, which is financed in part by the EC. This program involves notably the relations between the environmental factors and the concentrations of these species in the Mediterranean.

Table 1. French catches (in 1,000 MT) of tunas in 1982-1992

	1982	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*
YFT	29.2	31.9	5.8	9.8	16.6	16.6	21.6	30.6	43.8	34.2	31.5
SKJ	26.1	20.5	13.2	8.5	11.7	15.1	16.3	15.6	16.4	31.4	20.1
BET	3.0	6.0	2.1	4.4	4.6	3.4	3.8	2.8	4.9	6.6	7.2
ALB	3.6	3.0	2.9	2.2	1.2	2.0	2.8	3.7	3.4	4.2	6.1
BFT	5.0	4.1	4.2	5.6	3.8	4.9	6.2	4.9	5.2	5.1	6.9
TOTAL	66.9	65.5	28.2	30.5	37.9	42.0	50.7	57.6	73.7	81.5	71.8

NATIONAL REPORT OF GHANA*

1. The fleet

As usual, the Ghanaian tuna fishery continued to be dominated by a fleet of baitboats only. The number of baitboats which operated in 1992 was 28, and these vessels had a gross registered tonnage which ranged between 284 and 500. All the vessels were Ghanaian flag vessels.

In 1991, 29 tuna fishing vessels, all baitboats, operated as compared to 33 which operated in 1990. This trend in the reduction of the number of operational vessels is due to economic constraints which have affected the tuna fishing industry. Funds are lacking to replace aged vessels or to carry out their exhaustive rehabilitation. Breakdowns of vessels were more frequent in 1992, so fewer trips were made and, consequently, less tuna catches were made.

However, the Government of Ghana is taking serious action to revamp the tuna industry.

2. The fisheries

The fleet operated largely in the traditional ICCAT areas 1 and 4. As usual, skipjack tuna continued to be the dominant species caught, followed by yellowfin and bigeye tunas. The landings in 1992 are as provided in **Table 1.** The amounts are the adjusted values based on multi-species sampling.

3. Research and statistics

Normal port sampling for multispecies estimation and observation of biological parameters continued throughout the year. A total of 8,344 yellowfin, 16,371 skipjack and 2,203 bigeye were measured for length frequency distribution during the year. All these data and other information have already been submitted to ICCAT on the appropriate ICCAT forms.

4. Artisanal fishery for billfish; ICCAT Enhanced Research Program for Billfish

On-shore sampling of billfish landed by the artisanal fleet at four selected landing points continued throughout the 1992. The fishery and the existing catch data for the period 1989-1991 were presented at the Second ICCAT Billfish Workshop held at the Southeast Fisheries Center in Miami, U.S.A., from July 22 to 29, 1992.

Table 1. Landings by Ghana (in MT) of tunas and tuna-like species in 1992

Species	*Landings (in MT)*
Yellowfin tuna	7,192
Skipjack tuna	23,168
Bigeye tuna	108
Atlantic black skipjack tuna	309
Total	30,777

*Original report in English.

NATIONAL REPORT OF JAPAN*

by

National Research Institute of Far Seas Fisheries

1. Fisheries activities

Two types of fisheries, longline and purse seine, have recently been in operation by Japan in the Atlantic Ocean. The longline catch has contributed the major component of the total Japanese catch. The 1992 Japanese catch of Atlantic tunas and tuna-like fishes is estimated to be 47,365 MT, of which 94% (44,571 MT) was taken by the longline fishery (**Table 1**). The purse seine catch was slightly below 2,800 MT.

1.1 The longline fishery

The number of Japanese longliners which operated in the total Atlantic in 1992 was about 240. This is the same number as in 1991, which has been maintained since 1989 (**Table 2**). The total longline catch in 1992 was estimated to be about 44,571 MT, which resulted in a slight change (about a 5% decrease) from the 1991 catch (**Table 3**). Of the species caught, bigeye and bluefin tuna catches increased slightly (about 5%), while the catches of other species declined moderately (15-37%), except for southern bluefin tuna, sailfish and others, which showed a significant decrease (48-65%) in 1992. The catch of bigeye tuna was predominant in the total longline catch (70% in 1992), and which has been the case for more than a decade. Among other species, important catches were made of bluefin tuna and swordfish, followed by yellowfin tuna. In 1992, the operational pattern of the longline fleet was reported to be very similar to that of 1991.

1.2 The purse seine fishery

Two Japanese purse seiners operated in the Gulf of Guinea in 1992. The operational pattern of this fishery has been stable in recent years. The catch in 1992 was 2,794 MT, which was almost exclusively comprised of skipjack and yellowfin tunas (**Table 4**), which reflects the nature of the tropical tuna fishery. The catch of skipjack declined to 30% of the 1991 figure, while yellowfin catches remained at the same level. Since April, 1992, one of the purse seiners ceased fishing operations in the Atlantic.

2. ICCAT Regulations

Since the initiation of the fishery regulations established by ICCAT for bluefin, yellowfin and bigeye tunas, Japanese fishermen have been concurrently under national regulations. To comply with bluefin tuna regulations, an area closure has been in effect in the Mediterranean from May 21 to June 30 since 1975, and in the Gulf of Mexico throughout the year since 1982. These closures have been effective in reducing fishing mortality on the spawning stock. In recent years, the number of longliners permitted to fish in the northwestern Atlantic and Mediterranean Sea has been limited. Bluefin and swordfish catches have been strictly monitored through radio reporting in the Atlantic, including the Mediterranean Sea, and in the north Atlantic. To monitor the longline fleet closely, two governmental patrol boats were dispatched to the Atlantic Ocean, one to the Mediterranean Sea during the closure period, and the other to the northwestern Atlantic in the winter. The tropical purse seine fleet

* Original report in English.

has also been under national regulation in accordance with the ICCAT 3.2 kg minimum size limits for yellowfin and bigeye tunas.

3. Research activities

The National Research Institute of the Far Seas Fisheries (NRIFSF) has been in charge of the collection and compilation of Atlantic fishery data necessary for scientific research on Atlantic tuna and billfish stocks. All the statistical data have been routinely reported to the ICCAT Secretariat the results of scientific research have also been presented at the regular and intersessional workshops of the Standing Committee on Research and Statistics (SCRS).

3.1 Fishery data

The NRIFSF reported final 1991 catch, catch/effort and size frequency data (Task I, II and biological sampling) of the longline fishery to the ICCAT Secretariat. The compilation of the same data for 1992 is in progress. The preliminary 1992 catch estimates are given in this report. The size data for swordfish and bluefin tuna in 1992 were prepared and presented. The quick reporting system of logbooks and size data by on-board sampling at a port of call has been continued since its inception in April, 1984. The Task I and II data from the purse seine fishery for 1992 were finalized and reported to ICCAT.

3.2 Tuna biology and stock assessment

The biological and stock assessment studies carried out by the NRIFSF on Atlantic tunas and billfishes have been continued. Among them, Bluefin Year Program-related research is one of the major activities. During the last fishing season (November 1992-January 1993), gonad, vertebra and tissue samples were collected from about 400 fish caught by the longliners that operated in the northwestern Atlantic Ocean. A sampling program of juvenile bluefin tuna from mtDNA analysis is also on-going. The NRIFSF intends to carry out a research cruise for bluefin larvae in both the Gulf of Mexico and the Mediterranean Sea next year. A trip was made by NRIFSF scientists to discuss with specialists in those areas the design of that cruise in order to maximize the outcome of the cruise.

This year, the NRIFSF participated in various ICCAT meetings, i.e., the ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna, the ICCAT Workshops on the Technical Aspects of Methodologies which Account for Individual Growth Variability by Age, and the 1993 SCRS Stock Assessment Session on the western Atlantic bluefin tuna stock.

4. Documents presented by Japan to the 1993 SCRS

The scientific documents presented by Japan to the 1993 SCRS are included in the List of SCRS Documents (**Appendix 3 to Annex 23**) and/or are published in the "Collective Volume of Scientific Papers" series.

Table 1. Japanese catches (MT) of tunas and tuna-like fishes, by type of fisheries, in the Atlantic Ocean and Mediterranean Sea, 1987-1992

Type of fishery	*1987*	*1988*	*1989*	*1990*	*1991*	1992
Total	34,471	53,213	62,967	59,291	54,399	47,365*
Longline (Home-based)	29,300	47,326	58,514	54,930	46,883	44,571*
Purse seine	5,171	5,887	4,453	4,361	7,516	2,794

*Preliminary.

Table 2. Annual number of Japanese tuna boats that operated in the Atlantic Ocean and Mediterranean Sea, 1987-1992

Type of fishery	*1987*	*1988*	*1989*	*1990*	*1991*	1992
Longline (Home-based)	146	183	239	235	242	242*
Purse seine	2	2	1	1	2	2

*Preliminary.

Table 3. Catches (MT) of tunas and tuna-like fishes taken by the Japanese longline fishery, 1987-1992

	1987	*1988*	*1989*	*1990*	*1991*	*1992**
Atlantic						
Albacore	851	1,128	1,214	1,324	1,346	1,151
Bigeye tuna	18,575	31,664	39,419	35,024	29,487	31,243
Bluefin tuna	1,860	2,278	2,396	2,014	2,669	3,862
Southern bluefin	1,120	548	625	1,202	1,331	458
Yellowfin tuna	3,364	5,982	6,971	5,919	4,718	2,966
Swordfish	2,294	4,051	5,592	7,305	4,687	3,656
Blue marlin**	438	823	1,555	1,216	905	743
White marlin	134	144	146	126	121	97
Sailfish***	43	79	78	88	88	38
Others	341	366	390	538	443	232
Atlantic Sub-total	29,020	47,064	58,386	54,756	46,795	44,446
Mediterranean						
Bluefin tuna	280	258	127	172	85	123
Swordfish	3	4	1	2	1	2
Bigeye tuna--	--	--	--	2	--	
Mediterranean Sub-total	283	262	128	174	88	125
TOTAL	29,300	47,326	58,514	54,930	46,883	44,571

* Preliminary.
** Includes a minor amount (less than 30 MT) of black marlin.
*** Includes shortbill spearfish.

Table 4. Catches (MT) of tunas taken by the Japanese Atlantic purse seine fishery, 1987-1992

	1987	*1988*	*1989*	1990	1991	1992
TOTAL	5,171	5,887	4,453	4,361	7,516	2,794
Bigeye tuna	--	14	38	13	39	28
Yellowfin tuna	3,010	2,221	1,873	1,671	1,371	1,036
Skipjack tuna	2,161	3,652	2,542	2,677	5,752	1,731
Albacore	--	--	--	--	--	--

NATIONAL REPORT OF KOREA*

by

National Fisheries Research and Development Agency

1. Fisheries activities

Since 1977 when the Korean fleet of tuna longliners reached a peak at 120, there has been a declining trend in the number of vessels in the Atlantic Ocean (Table 1). As a result, only 8 Korean tuna longline vessels, of which 4 vessels have foreign bases, were fishing for tuna and tuna-like species in 1992. The total catches by the tuna longliners amounted to 1,147 MT, which correspond to about 61% of the 1991 catch. Korean tuna longliners have operated near the same fishing grounds (between 15°N-10°S and 10°-50°W) as in the past in this ocean. There were no notable changes in fishing technology in 1992.

1.1 Bigeye tuna

Of the 1992 catches, bigeye tuna was the dominant species, with 866 MT, comprising about 75% of the total catches, followed by yellowfin tuna. Bigeye tuna has been the major target species of the Korean longline fishery since 1980 when deep longline was introduced in the Atlantic.

1.2 Yellowfin tuna

Yellowfin, as one of the target species of the Korean tuna longline fishery, comprised about 19% of the total catch (219 MT). The catch of yellowfin tuna continued to decline, with some fluctuation, due to the decrease in the number of vessels.

1.3 Billfishes

According to statistical data, the Korean tuna longliners took an incidental catch of 57 MT of billfishes in 1992.

2. Research activities

The National Fisheries Research and Development Agency (NFRDA) monitors all the fishing carried out by the Korean tuna fishing vessels. The monitoring includes statistical research on catches, fish size by hook number and biological measurements such as body size, body weight, and sex determination. For this purpose, the NFRDA has maintained a special program to train tuna vessel captains, with a view to collecting the fishery data. As a result, 1992 fishery data on catch and effort by ICCAT statistical areas and size composition of bigeye and yellowfin tunas were submitted to ICCAT. On the other hand, in 1993 the NFRDA initiated a study of stomach contents of bigeye and yellowfin tuna to analyze their diet.

* Original report in English.

Table 1. Number of Korean longliners fishing tunas and tuna-like fishes and nominal catches (MT), by species, in the Atlantic Ocean, 1977-1992

Year	*Number of Boats*	*BFT*	*YFT*	*ALB*	*BET*	*SKJ*	*SWO*	*BUM*	*WHM*	*SAI*	*Other bill-fishes*	*Others*	*TOTAL*
1977	120	3	16,347	9,345	7,610	9	1,240	164	202	141	449	3,339	38,849
1978	47	-	11,512	4,418	9,182	42	1,333	177	79	29	111	2,211	29,094
1979	65	2	6,997	3,875	7,305	2	606	95	13	20	96	1,058	20,069
1980	54	-	5,869	1,487	8,963	4	683	9	1	5	167	1,764	18,952
1981	56	-	6,650	1,620	11,682	47	447	81	13	11	171	1,584	22,306
1982	52	-	5,872	1,889	10,615	21	684	17	24	16	114	1,781	21,033
1983	53	3	3,405	1,077	9,383	530	462	65	20	4	51	1,224	16,224
1984	51	-	2,673	1,315	8,943	29	406	61	5	3	423	927	14,785
1985	45	77	3,239	901	10,691	20	344	54	1	105	729	1,293	17,454
1986	28	-	1,818	694	6,084	11	82	15	-	62	106	1,093	9,965
1987	29	-	1,457	401	4,438	6	75	17	-	-	183	1,048	7,625
1988	29	-	1,368	197	4,919	3	123	-	-	-	409	782	7,801
1989	33	-	2,535	107	7,896	6	162	-	-	-	857	944	12,507
1990	17	-	808	53	2,690	-	101	-	-	-	446	170	4,268
1991	9	-	260	32	801	-	150	-	-	-	624	9	1,876
1992	8	-	219	-	866	-	17	-	-	-	40	5	1,147

NATIONAL REPORT OF MOROCCO*

by

A. Srour**

1. Description of the fishery

1.1 Fishing methods

Tunas and tuna-like species are caught mainly by traps, longliners and sporadically by purse seiners. The vessels and trawlers incidentally catch minor amount of tunas.

1.2 Fishing areas

The tuna fishing areas are located between El Hoceima and Saidia, in waters off the Strait of Gibraltar and in the areas between Essaouira and Tangiers. However, the main landing ports are Mohammedia, Larache and Tangiers in the Atlantic, and El Hoceima, Nador and Ras Kebdana in the Mediterranean.

1.3 Species caught

The main tuna species caught by the Moroccan fishery are bluefin tuna (BFT), swordfish (SWO) and small tunas such as Atlantic bonito (BON) and frigate tuna.

1.4 Catches (Table 1)

Total catches

The total catches of tunas and tuna-like species recorded during 1992 amounted to 4,518 MT, compared to 4,251 MT for the previous year, which is a slight increase of about 6%. The catch of the coastal fishery was comprised of 3,997 MT, or 88% of the total catch, and the trap catch amounted to 521 MT or 12% of the total.

In the Atlantic, Moroccan catches amounted to 2,689 MT. In the Mediterranean, the catches reached 1,829 MT, which is about 60% and 40%, respectively, for the two areas.

Bluefin tuna catches

The bluefin tuna catch series for the period 1986 to 1992 shows a progressive increase in catches from 1986 to 1991, followed by a clear decline in 1992. The increase in the catches of this species is due to more sustained activity of the traps, which have regained importance during this period. The decrease in the bluefin tuna catches in 1992 is attributed to the decline in the trap catches.

It should be noted that the catches of bluefin tuna taken by the coastal fishing vessels may be underestimated since these statistics also include other tuna species considered by the reporters as bluefin tuna. The breakdown of the catches together with the level of the landings of the coastal fishery will be considered in the future within the research program.

Swordfish catches

A study of the catch series of swordfish for the 1986 to 1992 period shows the following:

Atlantic: The catches did not vary too much between 1986 and 1992 and have remained practically stable at about 200 MT. A record catch of 352 MT was reached in 1992.

Trap catches are very minor. On the contrary, catches by longliners using driftnets are relatively important, exceeding 90% of the total catches. The fishing vessels based at Tangiers, Mohammedia and

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* Original report in French.

**Institut Scientifique des Pêches Maritimes

Mehdiya caught about 97% of the Moroccan Atlantic landings of swordfish.

Mediterranean: Swordfish fishing in the Mediterranean began in 1983. The catches recorded since that year have remained low at about 50 MT until 1988. Since 1989, the catches have increased notably to 683 MT in 1992.

The movement of some longliners deploying driftnets from the Atlantic to the Mediterranean explains the increase in swordfish catches in the Mediterranean observed since 1989.

Small tunas

The catch of these species increased considerably between 1986 and 1990, from 1,212 MT to 3,569 MT. Afterwards, catches declined in 1991 and 1992 to 2,456 MT. The catches taken in the Atlantic are slightly higher than those in the Mediterranean.

2. Research

The "Institut Scientifique des Pêches Maritimes" continues to accord special interest to the scientific monitoring of the tuna fisheries. Thus and further to the skipjack research program established during the 1980's, another program of biological monitoring of tunas is currently on-going with considerable assistance from ICCAT. This program covers the landings of frigate tuna and Atlantic bonito at the port of Mohammedia in the Atlantic and swordfish landings at the port of Nador. The operations carried out on these species are limited to size measurements. The acquisition of fish for the collection of biological parameters is very costly.

Table 1. Catch series for tunas and tuna-like fishes caught along the coasts of Morocco in 1986-92

		1986		1987		1988		1989		1990		1991		1992	
		Trap	Coastal fleet	Trap	Coastal fleet	Trap	Coastal fleet	Trap	Coastal fleet	Trap	Coastal fleet	Trap	Coastal fleet	Trap	Coastal fleet
ATLANTIC															
Bluefin tuna	BFT	166	122	101	255	235	202	304	147	228	75	759	36	84	328
Atlantic bonito	BON	5	246	18	223	2	587	3	563	8	356	1	575	1	761
Frigate tuna	FRI	10	292	11	303	3	191	113	486	238	497	347	516	91	150
Swordfish	SWO	3	178	5	192	1	195	3	219	26	177	10	182	13	339
Black skipjack	LTA	0	47	5	103	1	48	3	11	53	202	0	41	0	259
Skipjack tuna	SKJ	0	425	0	105	0	428	0	295	0	837	0	178	0	391
Plain bonito	BOP	0	33	0	487	0	1422	0	1058	0	263	0	348	0	272
Total Atlantic		184	1343	140	1668	242	3073	426	2779	553	2407	1117	1876	189	2500
MEDITERRANEAN															
Bluefin tuna	BFT	38	18	110	6	96	44	286	9	580	7	22	7	82	2
Atlantic bonito	BON	4	47	5	122	1	107	0	28	0	27	0	27	0	6
Frigate tuna	FRI	25	150	27	151	0	811	70	1107	185	1421	118	597	250	806
Swordfish	SWO	0	92	0	40	0	62	0	97	0	289	0	478	0	683
Black skipjack	LTA	0	0	0	0	0	12	0	0	0	4	0	0	0	0
Skipjack tuna	SKJ	0	2	0	13	0	0	0	0	0	0	0	0	0	0
Plain bonito	BOP	0	1	0	26	0	8	0	7	0	21	0	9	0	0
Total Medi.		67	310	142	358	97	1044	356	1248	765	1769	140	1118	332	1497
ATLANTIC + MEDITERRANEAN															
Bluefin tuna	BFT	204	140	211	261	331	246	590	156	808	82	781	43	166	330
Atlantic bonito	BON	9	293	23	345	3	694	3	591	8	383	1	602	1	767
Frigate tuna	FRI	35	442	38	454	3	1002	183	1593	423	1918	465	1113	1113	956
Swordfish	SWO	3	270	5	232	1	257	3	316	26	466	10	660	13	1022
Black skipjack	LTA	0	47	5	103	1	60	3	11	53	206	0	41	0	259
Skipjack tuna	SKJ	0	427	0	118	0	428	0	295	0	837	0	178	0	391
Plain bonito	BOP	0	34	0	513	0	1430	0	1065	0	284	0	357	0	272
TOTAL		251	1653	282	2026	339	4117	782	4027	1318	4176	1257	2994	521	3997

NATIONAL REPORT OF PORTUGAL*

by

Joao Pereira**

1. The tuna fishery

The Portuguese tuna fishery takes place mainly in the Azores and in Madeira, where the local baitboat fleet seasonally catches tunas with live bait. Off continental Portugal, the tuna catches are mainly taken as incidental catches by various gears, such as purse seine and driftnets. There is also a longline fishery directed at swordfish.

The surface longline fishery, directed mainly at swordfish, operate off continental Portugal and in the Azores. Some of the longliners based in Portugal fish in the Azores area.

The catches of tunas and tuna-like fishes amounted to 15,736 MT in 1991 and 15,427 MT in 1992. Since 1989, a strong decrease in the Azorian catches and an important increase in Madeiran catches have been observed.

Tables 1 and **2** summarize the catches of tunas and tuna-like species taken in the Azores and in Madeira during the last few years. The catches by species and by gear, taken in the EEZ of continental Portugal, are given in **Table 3**.

2. The tuna fleet

The Portuguese tuna fleet is comprised of baitboats of the Azores and Madeira, 20-25 longliners based at continental Portugal, and a dozen longliners in the Azores.

The baitboat fleet has developed these past years in the sense that it now has now greater autonomy and refrigeration capacity, which has permitted an extension of the duration of the cruises and an extension of the fishing zones. Since 1984, several new baitboats have entered the Azorian and Madeiran fisheries.

The number of baitboats, classified by gross registered tonnage (GRT), which comprise the fleets of the Azores and Madeira is given in **Tables 4** and **5**.

3. Research

Research programs on tunas are mainly carried out by the Department of Oceanography and Fisheries of the University of the Azores, the Fisheries Research Laboratory in Madeira, and the National Institute of Fisheries Research (INIP) in continental Portugal.

The collection of tuna statistics and sampling for size frequency of the principal species has continued. Since 1989, the number of tunas sampled in the Azores has increased considerably, due to more extensive coverage of the sampling points. The data are transmitted to ICCAT regularly and the scientific results are also presented to the SCRS meetings.

For several years now, radiometric maps of surface temperatures obtained by satellite have been distributed regularly to the baitboats of the Azores and Madeira.

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* Original report in French.

**Universidade dos Açores, Departamento de Oceanografia e Pescas

Table 1. Catches of tunas and tuna-like species (MT) made in the Azores, 1987-1992

Species	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*
Bigeye tuna	3877	764	2758	3447	3014	2478
Skipjack tuna	7932	13751	5921	2252	2497	2544
Albacore	401	142	127	3135	692	1209
Yellowfin tuna	--	--	1	--	--	--
Bluefin tuna	58	--	--	--	--	--
Swordfish	335	213	185	214	471	344
Atlantic bonito	58	23	31	53	52	24
TOTAL	12661	14893	8942	9102	6726	6599

Table 2. Catches of tunas and tuna-like species (MT) made in Madeira, 1987-1992

Species	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*
Bigeye tuna	593	1395	2189	2455	2475	2891
Skipjack tuna	79	357	1752	1666	5475	4862
Albacore	29	29	39	47	10	413
Yellowfin tuna	44	93	3	42	81	48
Bluefin tuna	3	29	3	12	5	4
Swordfish	10	5	7	10	17	47
Others	2	2	3	10	4	3
TOTAL	760	1910	3996	4243	8067	8268

Table 3. Catches of tunas and tuna-like species (MT), by gear and by species, in the EEZ of continental Portugal in 1992

Species	*LL*	*PS*	*SURF*	*TOTAL*
Bigeye tuna		1	103	104
Skipjack tuna		++	65	65
Albacore		++	16	16
Yellowfin tuna			13	13
Bluefin tuna			34	34
Atlantic bonito		88	20	108
Atlantic black skipjack		1	72	73
Frigate tuna			++	++
Swordfish	146	++		146
Sailfish			1	1
TOTAL	146	90	324	560

Table 4. Distribution of the baitboat fleet of Azores, by gross registered tonnage (GRT), 1985-1992

GRT	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*
< 50	11	12	14	8	5	5	2	2
50-100	19	19	19	18	15	13	12	6
>100	1	4	10	15	19	21	25	24
TOTAL	31	35	43	41	39	39	39	32

Table 5. Distribution of the baitboat fleet of Madeira, by gross registered tonnage (GRT), 1985-1992

GRT	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*
< 50	21	26	19	22	20	22	27	20
50-100	5	6	7	10	10	7	6	8
100-150					1	6	4	7
> 150					4	2	3	5
TOTAL	26	32	26	32	35	37	40	40

NATIONAL REPORT OF RUSSIA*

by

V. Z. Gaikov and M.E. Grudtsev**

1. The Fishery

In 1992, the catch of tuna and Atlantic bonito amounted 4,748 MT, including 1,862 MT of yellowfin tuna (*Thunnus albacares*), 1,110 MT of skipjack tuna (*Katsuwonus pelamis*), 814 MT of bullet tuna (*Auxis rochei*), 627 MT of frigate tuna (*Auxis thazard*), 306 MT of Atlantic black skipjack (*Euthynnus alletteratus*), and 29 MT of Atlantic bonito (*Sarda sarda*).

The purse seine fishery, in which nine vessels operated, caught 3,628 MT, including 1,862 MT of yellowfin tuna, 1,110 MT of skipjack tuna, 350 MT of frigate tuna, and 306 MT of Atlantic black skipjack. The distribution of the catch, by fishing grounds, was as follows:

- Sierra Leone area: 2,785 MT (49% yellowfin tuna, 28% skipjack tuna, 11% Atlantic black skipjack, and 12% frigate tuna);
- Equatorial Guinea area: 540 MT (65% yellowfin tuna, 33% skipjack tuna and 2% frigate tuna)
- Open area of the central east Atlantic: 303 MT (51% skipjack tuna, 48% yellowfin tuna, and 1% frigate tuna)

The trawl fleet caught the following as by-catch: 300 MT of bullet tuna, 277 MT of frigate tuna, 29 MT of Atlantic bonito and 514 MT of bullet tuna were caught in the southeastern Atlantic. Data on the tuna fishery are presented in **Table 1**; preliminary statistics for the first half of 1993 are given in **Table 2.**

2. Research

In 1992, biological samples on tunas were collected by observers on-board Russian purse seiners in the Sierra Leone area during February-May and in the Gulf of Guinea during September-November. The tunas sampled were measured and weighed, gonad maturity stage was observed, stomach fullness and food composition was studied, and age and growth rate were estimated from the first ray of the first dorsal fin.

In the Sierra Leone area, the biological samples were collected from 1,289 yellowfin tunas, 695 skipjack tunas, 546 Atlantic black skipjacks, 346 frigate tunas, and 164 bullet tunas. In the Gulf of Guinea biological samples were taken from 1,667 yellowfin tunas, 615 skipjack tunas, 78 bigeye tunas, 49 Atlantic black skipjacks, 128 frigate tunas, and 15 bullet tunas.

All the data on catch, effort and size composition of the tuna catches were sent to the ICCAT Secretariat. The results of research on the speed of the Earth's rotation in relation to yellowfin tuna stock variations were reported at the ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna (Tenerife, Canary Islands, Spain, June 3-9, 1993).

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* Original report in English.

**Atlantic Scientific Research Institute of, Marine Fisheries & Oceanography (AtlantNIRO)

Table 1. Composition of the catches of tuna species by Russia and fishing effort in the Atlantic Ocean in 1992, by areas, periods and fishing gears

Area	*Gear*	*No. of vessels*	*Period*	*Fishing effort (days at sea)*	*Catches (MT)* YFT	SKJ	LTA	FRI	BLT	TOTAL
Sierra Leone	PS	5	Feb.-May	432	1365	780	306	334	--	2785
Equatorial Guinea	PS	6	Aug.-Sept.	173	352	176	--	12	--	540
Open central-tropical Atlantic	PS	6	Aug.-Nov.	156	145	154	--	4	--	303
Western Sahara	Trawl							15	125	140
Senegal	Trawl							262	175	437
Sub-total					1862	1110	306	627	300	4205
Southeast Atlantic	Trawl								514	514
TOTAL					1862	1110	306	627	814	4719

Table 2. Russian catches (MT) of tunas in the first half of 1993 *

Yellowfin tuna	1733
Skipjack tuna	343
Atlantic black skipjack	272
Frigate tuna	228
Total	2576

* Preliminary data.

NATIONAL REPORT OF SOUTH AFRICA*

by

A. J. Penney

1. The tuna fishery

1.1 Historic catch trends

In previous reports to the ICCAT Standing Committee on Research and Statistics, it has been noted that tuna catches have been under-reported by South African tuna fishermen. Monitoring of the tuna fishery was substantially improved between 1985 and 1990 with the introduction of catch returns from tuna fishermen and the development of the National Marine Linefish System, a national linefish catch and effort database. An initial survey of information recorded by tuna dealers indicated that tuna catches were being under-reported on logbook returns, and so a system of monthly returns from major tuna dealers was introduced between 1991 and 1992. These data sources provided more complete coverage of tuna landings, but there were persistent reports that catches were still under-reported.

During 1992, determined efforts were made to obtain estimates of the degree of under-reporting during repeated consultations with major tuna operators and dealers, resulting in a fairly robust estimate that albacore catches have been under-reported by approximately 25%. In order to reflect a reasonably accurate estimate of the total South African catch, albacore catches from 1972 to 1992 were therefore scaled up by 25%, to produce the revised estimates shown in the attached **Table 2.**

1.2 Tuna catches in 1992

Catches of tuna species by the South African surface fishery in the southern Atlantic Ocean in 1992 are compared with those for 1991 in **Table 1.** The fishery remains almost completely reliant on southern albacore (*Thunnus alalunga*) caught by baitboats fishing with poles within 200 nautical miles off the Namibian and South African west coasts. Catches in 1991 were markedly reduced as a result of exclusion of South African vessels from the Tripp Seamount fishing area following Namibian independence. Subsequent negotiation of joint-venture fishing agreements has again allowed access to this area for South African tuna fishermen, resulting in a return of catches to more typical levels. The estimated 1992 catch of 6,486 MT was thus 82% higher than in 1991, although only 8% higher than in 1990.

The increase in albacore catch was not mirrored by any substantial increase in catches of other species, the total by-catch of bigeye, yellowfin and skipjack tunas only totalling 126 MT. There was no reported commercial swordfish catch, although recreational fishermen did catch 79 of these fish during 1992/93, of which 33 were tagged and released.

2. Tuna research

Initial dynamic production model stock assessments for southern albacore, presented at the 1991 SCRS meeting, indicate that the stock has been over-exploited for some time. In order to allow for validation of this assessment using other catch-at-size based methods (such as VPA), South African tuna research efforts concentrated on the collection of data required to develop a representative catch-at-size database for southern albacore.

2.1 Morphometric relationships

In response to requests from the SCRS, South Africa initiated a morphometric measurement program on southern albacore in 1991, to develop conversion formulae for length:weight and for lengths other than

* Original report in English.

fork length. During 1991/92, a total of 1,008 albacore were measured from South African and Taiwanese tuna vessels, and conversion formulae were developed for converting pre-dorsal length, pre-dorsal fork length, pectoral fork length and weight to upper-jaw fork length. These are described in Document SCRS/93/92 which was presented to the SCRS.

It is hoped that availability of these conversion formulae will make more length distribution data available for incorporation in the southern albacore catch-at-size database.

2.2 Length-frequency sampling

In addition to sampling of tuna for morphometric data, effort was also directed at collection of length-frequency data for South African albacore catches. In comparison with the 823 fish measured in 1990, 1,917 albacore were measured in 1991 and 1,394 in 1992. These data were summarised to provide annual length-frequency distributions for South African albacore catches off Namibia, the western Cape and southwestern Cape between 1985 and 1992.

2.3 Catch-at-size data base

Length-frequency data for the three regions fished by South African tuna vessels were used, together with the revised estimates of total albacore catch, to produce the first raised catch-at-size tables for the South African albacore fishery. These calculations indicate that South Africa has caught between 320,000 and 520,000 albacore, averaging 10-12 kg each in weight, annually between 1985 and 1992. It is hoped that, together with data from the other countries exploiting southern albacore, these data will allow the development of a representative catch-at-size database for this species, to be used in *ad hoc* tuned VPA or ADAPT VPA assessments.

2.4 Southern albacore stock assessment

In order to incorporate revised CPUE indices presented by Taiwan in 1992, and to add sensitivity tests and projection analyses, the dynamic production model assessment of the southern albacore resource presented to the SCRS in 1991 was updated. It is presented in SCRS/93/83, which was presented to the SCRS.

This assessment indicates that the southern albacore resource has been reduced to approximately 20% of its pre-exploitation level, and that current annual catches of approximately 28,000 MT exceed an estimated MSY of 20,000 MT. This assessment includes a recommendation for an immediate reduction of annual catches to 20,000 MT to stabilize the population.

3. Implementation of ICCAT management measures

3.1 Tuna Species Management Measures

South Africa has implemented all ICCAT recommended tuna management measures applicable to her fisheries, as detailed in the annual reports by the ICCAT Secretariat on implementation of management measures by member countries. South Africa principally catches southern albacore, which currently has no management measures, but also makes limited by-catches of bigeye and yellowfin tunas. The minimum weight limits for these species were implemented soon after their recommendation.

3.2 Swordfish management measures

South Africa currently has no targeted commercial swordfish fishery, the only commercial catch of this species resulting from occasional and un-intentional by-catches by demersal trawl nets and longlines. However, over the past three years a small recreational fishery for large swordfish has developed off Cape Point. South Africa implemented the ICCAT recommended 25 kg minimum weight limit on swordfish in October, 1992, and also promulgated a domestic regulation limiting commercial swordfish catches to less than 10% of the total catch, and prohibiting the sale of any swordfish caught beyond these limits, or caught by the recreational sector.

3.3 Port Inspection Scheme

South Africa continued to inspect the catches of her tuna vessels under the ICCAT Port Inspection Scheme. Fisheries Control staff employed by the

Department of Nature Conservation conducted inspections on 28 vessels discharging tuna in Cape Town harbour between November, 1992, and May, 1993. These were all South African vessels primarily fishing for southern albacore, with small by-catches of bigeye and yellowfin tunas. No transgressions of ICCAT management measures were observed during these inspections.

Table 1. Total South African catches (in metric tons) of tuna species by various methods during 1991 and 1992

Catch	*Albacore*		*Yellowfin*		*Bigeye*		*Skipjack*		*Swordfish*		*Total*	
Method	*1991*	*1992*	*1991*	*1992*	*1991*	*1992*	*1991*	*1992*	*1991*	*1992*	*1991*	*1992*
Pole	3355	6306	36	63	85	51	16	5	-	-	3492	6425
Longline	-	-	-	-	-	-	1	-	-	-	1	-
Purse seine	-	-	-	-	-	-	-	-	-	-	-	-
Rod & reel	55	54	10	6	-	-	1	1	-	-	66	61
Trawl	-	-	-	-	-	-	-	-	5	-	-	-
Total	3410	6360	46	69	85	51	18	6	5	0	3564	6486

Table 2. Revised estimated total South African catches of South Atlantic albacore from 1972-1992

Year	*Estimated Total Catch (MT)*
1972	100
1973	100
1974	150
1975	150
1976	150
1977	150
1978	150
1979	480
1980	1840
1981	2320
1982	3180
1983	2760
1984	3540
1985	6700
1986	5930
1987	7270
1988	6570
1989	6890
1990	5280
1991	3410
1992	6360

NATIONAL REPORT OF SPAIN*

by

Spanish Institute of Oceanography (IEO)

1. State of the fisheries

Spanish catches of tunas and swordfish amounted to 150,657 MT in 1992, which represents a slight decrease (10%) with respect to the average catch of the last four years (1988-1991) (**Table 1**). Albacore catches have declined progressively in recent years, and reached their lowest level in 1991. Bigeye catches also decreased, in comparison to 1991, as did the catches of small tunas, which have been declining gradually since 1988.

2. Fisheries and research by areas

2.1 Temperate area

-- Bluefin tuna

The 1992 catches of bluefin tuna in the Bay of Biscay (1,107 MT) decreased by 40% with respect to the average of the last four years (1,709 MT in the 1988-1991 period), whereas fishing effort remained stable. This figure is the lowest obtained since 1982.

In the south Atlantic area, trap catches (1,271 MT) continued the declining trend that started in 1988. In the Mediterranean, 1992 catches (2,144 MT) increased, mainly due to purse seine fishing, and reached 1,366 MT, which is 69% higher than in 1991 (807 MT), for similar levels of fishing effort, although in the other fisheries (hand line, longline and trap) catches declined.

Observer cruises were carried out in the Mediterranean on board purse seiners during the fishing season, in order to obtain information on sizes of the fish caught, as well as data on catch and effort by time-area strata. Part of the live bait fleet of northern Spain moved to the Mediterranean (Area 59) where 158 MT of bluefin tuna were caught and 48 MT were taken in the area close to the Strait of Gibraltar (Area 58).

The research activities carried out by the I.E.O., jointly with IFREMER (France), IBMAC (Greece), and the University of Bari (Italy), within the "Characteristics of Large Pelagic Fishes of the Mediterranean" Program (financed by the DG XIV of the EEC), included studies on the reproductive biology of bluefin tuna, the validation of growth by the fin ray spine method (this work was carried out in coordination with the School of Aquatic Products of Istanbul), and juvenile bluefin tagging cruises in the Mediterranean.

In various tagging cruises conducted in the western Mediterranean between 1990 and 1992 (financed by the EEC in 1991), 3,340 juvenile bluefin tuna (< 50 cm) were tagged, of which 1% (30 fish) have been recovered up to now. This shows an interaction between the Mediterranean (30% of the recoveries) and Atlantic (70%) fisheries, mainly in the Bay of Biscay. In 1993, new tagging cruises have been being carried out in the same area.

-- Albacore

The 1992 total catches of albacore by Spain amounted to 18,383 MT, which is only 2.2% more than 1991 catches, which was the lowest since 1984. Almost the entire catch was taken in the northeastern Atlantic and the Cantabrian Sea (16,670 MT) during the months of June to October. The baitboat fleet caught 9,323 MT, and the reminder (7,347 MT) was taken by the troll fishery, which was 18% less than that of the previous year (8,955 MT).

Baitboat fishing effort increased 14% with respect to 1991, which was 7,900 days at sea; Troll effort decreased by 12% (14,000 days at sea in 1991).

In the autumn months, part of this fleet was dispersed in two areas: the Atlantic, close to the

* Original report in Spanish.

Azores Islands, and the Mediterranean Sea. The total catches amounted to 1,414 MT, of which 1,193 MT were taken in the Atlantic, and the remaining 221 MT were taken in the western Mediterranean.

Research work was within the framework of the ICCAT Albacore Research Program. Activities carried out in 1992 included the analysis of tag/recapture data of the surface fleets of the northeastern Atlantic, and studies on albacore growth based on the same source of information.

Monitoring of the abundance of the age groups in the northeastern Atlantic surface fishery continued, by standardized indices, and preliminary studies were carried out on hard parts obtained from fish recovered that had been injected with oxytetracycline at the time of tagging. This work was conducted in collaboration with the University of Bari (Italy), within the activities of the research program financed by the DG XIV of the EEC ("Characteristics of Large Pelagic Fishes in the Mediterranean").

The ASTI-SIO (the research organization of the Autonomous Basque Government) carried out a study to determine the possible relationships between oceanographic phenomena detectable by IR teledection and the localization of catches carried out by the baitboat and troll fleets in the northeastern Atlantic area and the Bay of Biscay (1990-92).

-- Swordfish

Swordfish catches in 1992 in the Atlantic (north, south and Mediterranean) amounted to 11,855 MT, which was almost all caught by surface longline.

In the north Atlantic, catches declined in 1992 (5,395 MT) by 45% with respect to 1988 (9,799 MT). For the total Atlantic, the catch declined by 22% for the same years (1992: 11,033 MT; 1988: 14,192 MT).

In 1992, nominal effort in the north Atlantic declined about 36% relative to 1988; for the total Atlantic, the decrease in effort for the same years was 17%.

The average weight of the catch was identical to the previous year: 45 kg in the north Atlantic; 52 kg in the south Atlantic; 48 kg for the total Atlantic.

The number of fish sampled in 1992 (147,000 fish) represents 100% coverage for catch and effort and 66% coverage for size, or in individual weight.

The longline vessels which in 1990 and 1991 moved to the Pacific Ocean from the Atlantic, continued their activity in 1992.

In 1990, an observer program was initiated (Spaniards and foreigners), on board Spanish longline vessels to collect biological information, information on fishing activity, and to estimate discards. In 1992 the number of observer days was about 300. The on-board observer program continued in 1993.

The development of standardized indices of abundance continued for north and south Atlantic swordfish. In 1993, an index by sex was developed for the different time-area strata, using the Cluster analysis method.

In the Mediterranean in 1992, the Spanish surface longline fishery for swordfish reduced its nominal effort by 12%, decreasing the catches by 40% with respect to the previous year (790 MT in 1992).

Size sampling coverage is 25% and sampling for maturity and sex ratio continued, as well as the collection of samples for mitochondrial DNA genetic analysis.

2.2 Canary Islands area

-- Baitboat fishery

Catches in 1992 rose to 14,253 MT, which represents a 5.4% increase with respect to the previous year.

There was an important increase in skipjack catches, from 5,751 MT in 1991 to 7,128 MT in 1992. The next most important species in the catch was bigeye tuna (5,267 MT). There was a decline, however, of 39% in yellowfin catches, as compared to 1991 (1,493 MT in 1992).

The number of vessels in the area was 351, which is less than the previous year. Most of these vessels alternate the fishing of tunas with that for other species. At any rate, fishing effort increased for vessels in the < 50 GRT category.

Samples of the principal species are taken to obtain hard parts for age/growth studies. Also, monthly trips at sea are carried out in the commercial fisheries to obtain skipjack stomachs for studies on feeding.

2.3 Tropical area

Spanish catches in the eastern tropical Atlantic decreased notably, from 134,223 MT in 1991 to 104,877 MT in 1992.

Yellowfin tuna made up the majority of the catches (48,636 MT), followed by skipjack catches (42,768 MT), which decreased by 34% with regard to 1991. Bigeye catches amounted to 11,602 MT.

The number of purse seiners (37) remained the same as the previous year. Carrying capacity of these vessels was 23,587 MT, slightly higher than that of 1991. Fishing effort, expressed in fishing days and searching days, remained stable.

Two Spanish purse seiners fished during six months in the western Atlantic and caught 2,731 MT (1,290 MT of yellowfin tuna, 1,120 MT of bigeye tuna, and 321 MT of other species).

Yellowfin tuna has been sampled during various year to carry out morphometric studies. Gonad indices of yellowfin tuna were compared for the different fishing areas and sex ratio analyses of this species were carried out.

Using the results obtained after analyzing the sampling scheme applicable to the catches of the eastern Atlantic tropical surface fleets, an analytical assessment was carried out on the stock of yellowfin tuna in the eastern Atlantic, which was used during the Yellowfin Working Group Meeting.

-- Baitboat fishery

In 1992, two Spanish baitboats, based at Dakar, caught 583 MT of tunas (yellowfin, skipjack and bigeye).

3. ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna

The ICCAT Working Group to Evaluate Atlantic Yellowfin Tuna was held from June 3 to 9, 1993, at the "Centro Oceangráfico" of the Spanish Institute of Oceanography (IEO) in Tenerife, Canary Islands.

Table 1. Spanish catches (MT) of tunas and swordfish, 1988-1992

Species	*1988*	*1989*	*1990*	*1991*	*1992*
Yellowfin tuna	46517	61640	68605	59773	51684
Skipjack tuna	52188	35300	47834	72642	51083
Bigeye tuna	7083	7660	10355	18537	9575
Albacore	27735	25447	25876	18166	20074
Bluefin tuna	5708	5012	4629	3664	4526
Swordfish	15954	16485	13959	12558	11855
Small tunas	7730	5077	6052	3664	1860
TOTAL	162915	156621	177310	189004	150657

NATIONAL REPORT OF THE UNITED STATES*

by

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Marine Fisheries Service-Southeast Fisheries Science Center

1. Fisheries monitoring

1.1 Tropical tunas

Yellowfin tuna. Yellowfin tuna is the principal species of tropical tuna landed by U.S. fisheries in the western north Atlantic. Total landings increased to 6,501 MT in 1992, from the 1991 landings, revised to 6,336 MT. Approximately 71% of the U.S. yellowfin landings resulted from fish caught (mainly by longline) in the Gulf of Mexico.

Skipjack tuna. Skipjack tuna are also caught by U.S. vessels in the western north Atlantic. Total skipjack landings declined from 806 MT in 1991 (revised) to 525 MT in 1992. Most of the catch is by purse seiners and is taken off the U.S. east coast (NW Atlantic) between Cape Hatteras and Long Island.

Bigeye tuna. Bigeye tuna is the other large tropical tuna caught by U.S. vessels in the western north Atlantic. These vessels caught 721 MT of bigeye in 1992, as compared to 962 MT in 1991. Most of the U.S. bigeye catch comes from the area off the U.S. east coast from Cape Hatteras to Massachusetts. The catch is mainly by longline.

1.2 Temperate tunas

Bluefin tuna. The U.S. bluefin tuna fishery continues to be regulated by quotas, limits on catches per trip, and size limits. To varying degrees, these regulations are designed to restrict total U.S. landings to preserve the monitoring nature of the fishery, and to direct effort at large bluefin (> 196 cm SFL). Regulations governing the U.S. fishery were updated in 1992 to be in conformity with the 1991 ICCAT agreements for additional conservation measures for this species.

In 1992, regulations were promulgated that: prohibited landing of bluefin tuna in excess of ICCAT recommendations; limited incidentally-caught bluefin tuna in the southern longline fishery to one fish per trip, provided 2,500 lbs of other species were landed and sold; reduced the rod and reel daily catch of small bluefin from four to two per person, with further reductions depending on vessel type (private, charter or party boats); prohibited the sale of bluefin tuna less than 70 inches; and prohibited the retention of bluefin tuna less than 26 inches.

These and other regulatory actions were necessary to improve management and monitoring of the U.S. Atlantic tuna fisheries, to conform more closely to the 1991 ICCAT recommendations, and to enhance collection of data to improve assessment of the environmental, economic, and social impacts of the fisheries and of fishery policy.

U.S. vessels fishing in the northwestern Atlantic in 1992 killed an estimated 1,156 MT of bluefin tuna. Those estimated landings represented a decrease of 425 MT from the estimated 1991 level, and were 613 MT lower than the estimated landed catch in 1989. The 1992 landings by gear were: 300 MT by purse seine, 105 MT by harpoon, 218 MT by hand line, 136 MT by longline (of which 112 MT were from the Gulf of Mexico), 396 MT by rod and reel (of which 116 MT was the estimated catch of the small bluefin fishery off the northeastern U.S.), and 1 MT was taken by other gears. The estimated catch of small bluefin tuna (< 145 cm SFL). 116 MT, was substantially lower than in

* Original report in English.

recent years as a result of ICCAT's recommendation that landings of bluefin less than 115 cm SFL be decreased. In addition to landed catch, an estimated 434 bluefin (about 44 MT) were discarded dead by U.S. longline vessels. Of those discards, an estimated 79 fish (about 19 MT) were caught in the Gulf of Mexico, which is of the same order of magnitude as the estimates from recent years (45 MT and 11 MT in 1990 and 1991, respectively).

Uncertainty about the catch of bluefin less than 145 cm SFL taken by rod and reel was estimated by incorporating variability in the samples from the fishery. A thousand independent bootstrap estimates of that total catch were made, the median of the estimates was 8,406 fish (115.9 MT) compared to 29,648 fish (483 MT) in 1991. The empirical 90% confidence interval about the 1992 estimate was roughly 6,900-11,450 fish.

In response to new (1992) regulations limiting the allowable catch of small fish by U.S. fishermen, in conformity with ICCAT agreements, enhanced monitoring of the rod and reel fishery was implemented for the purpose of providing near real-time advice on catch levels by this fishery. This monitoring activity continued in 1993.

Albacore. Catches of albacore by U.S. fishermen were generally very low prior to 1985, averaging about 16 MT. Since 1986, Since 1986, U.S. catches rose substantially and nearly 97% of the production has come from the northeastern U.S. coast in most years. Reported catches of albacore were 377 MT in 1992, a minor decline from the 1991 catch of 482 MT (revised). The proportion of albacore taken as incidental tuna catch has increased in recent years. The proportion taken by pair-trawl vessels also increased in 1992. In 1986, the harvest by longline, handline, and gillnet boats was 24% of the total albacore harvest, while the proportion of the 1992 harvest was 41%. In 1992, 29% of the catch was taken by a new, experimental fishery using pair trawls. Albacore are a direct target of recreational fishermen off the northeastern U.S. coast. This fishery is seasonal with the estimated catch of this fishery component being 103 MT)27% of the total yield) in 1992.

1.3 Swordfish

U.S. vessels landed 3,833 MT of swordfish in 1992, an 11% decline from the revised landing figure of 4,292 MT for 1991. This decline was due, at least in part, to the U.S. impending regulations in June, 1991, on the Atlantic swordfish fishery which includes the entire north Atlantic Ocean north of 5°N latitude. The regulations established an annual quota of 4,560 MT and a minimum size of 25 kg while weight or 78.7 cm carcass length, measured along the body contour from the cleithrum to the anterior portion of the caudal keel, with a 15% tolerance for under-sized swordfish based on the total number of swordfish landed per trip. These regulations were based on the 1990 swordfish stock assessment and ICCAT-adopted measures to reduce fishing mortality on swordfish. The landings by ICCAT area for 1992 (compared to 1991) were: 624 MT (701 MT) from the Gulf of Mexico (Area 91); 1,596 MT (1,788 MT) from the northwestern Atlantic (Area 92); 640 MT (798 MT) from the Caribbean Sea (Area 93); and 973 MT (1,005 MT) from the north central Atlantic (Area 94A). U.S. swordfish landings are monitored and tracked from reports submitted by dealers, vessel owners and captains, NMFS port agents, and mandatory daily loghook reports submitted by U.S. vessels permitted to fish for swordfish.

The total weight of swordfish sampled for sizing U.S. landings in 1991 by longline, gillnet, and harpoon gears was 3,339 MT, 78 MT, and 2 MT, respectively, as compared to 3,266 MT, 76 MT, and 1 MT in 1992. IN 1991, the weight of the sampled swordfish landings represented 80%, 95%, and 100% of the U.S. total reported annual landings for longline, gillnet, and harpoon gears, respectively, whereas 1992 sampled swordfish landings were 88%, 88%, and 100% of the total U.S. reported annual landings of swordfish by gear, respectively. In 1991, two additional gear types were used for sizing the landings. The total weight of swordfish sampled by otter trawl and pair trawl was 9 MT and 31 MT, which represented 90% and 97% of the U.S. total U.S. reported annual landings of swordfish, whereas 1992 sampled swordfish landings for these two gear types were 5 MT and 11 MT, which represented 46% and 85% of the total U.S. reported annual landings by these gears. The decrease in pair trawl landings in 1992 was attributed to regulations which established a landed limit of 2 swordfish per vessel per trip.

This fishery is also being monitored via a scientific observer sampling program, instituted in 1992. Approximately 5% of the fleet-wide fishing effort is randomly selected for observation during the fishing year. Daily catch and effort reports for the permitted U.S. fleet indicated that about 19,300 swordfish were

discarded dead in 1992, which is estimated to represent approximately 302 MT of swordfish. Comparison of scientific observer data with the daily reported catch and effort data indicated that the daily reports may under-represent the actual number of fish that were discarded dead. The observer sampling data supports estimates of from 37,000 to 42,000 fish discarded dead in 1992, representing an estimated 580 to 659 MT of swordfish which are not included in the U.S. swordfish landings estimates. The reported number of swordfish caught, but released alive by U.S. fishermen was about 12,700 for 1992. Comparison of scientific observer data with the daily reported catch and effort data indicated that the daily reports may over-represent the actual number of fish that were thrown back alive by the U.S. fleet. The observer sampling data supports estimates of from 7,900 to 9,750 fish caught, but thrown back alive in 1992. These estimates, combined with the estimate of swordfish < 25 kg landed by U.S. vessels in 1992 (about 12,000 fish) fall within the range of U.S. annual landings of swordfish < 25 kg during 1986-1990 (50,000-80,000 fish), before the ICCAT minimum size was put into effect.

1.4 Billfishes

Blue marlin, white marlin, and sailfish are landed by recreational rod and reel fishermen and are a major by-catch of the U.S. commercial tuna and swordfish longline fisheries. This year (1992) represents the fourth full year of compliance under the regulations of the U.S. Fisheries Management Plan for Atlantic Billfishes, which was implemented in October, 1988. The Plan allows that billfish caught by recreational gear (rod and reel) may only be landed if the fish is larger than the size limit specified for each species covered by the Plan. Recreational landings of each billfish species are estimated using two data sources: (a) the Large Pelagics Recreational Survey conducted by the Northeast Fisheries Science Center and the SEFSC provides estimates of total billfish catch from waters along the northeastern U.S. (north of 35°N latitude); and (b) the SEFSC Recreational Billfish Survey which provides the number of billfish caught during tournaments held along the southeastern U.S. coast (south of 35°N latitude), in the Gulf of Mexico, and U.S. Caribbean Sea regions (i.e., U.S. Virgin Islands and Puerto Rico).

In addition to restrictions on U.S. recreational harvest, the Management Plan also imposed regulations on commercial fisheries by prohibiting retention and sale of the three species at U.S. ports. For this reason, no official U.S. commercial landings were reported for any of the three Atlantic billfish species. However, estimates of by-catch mortality in the U.S. longline fleet are made in part, using the data from mandatory pelagic logbooks completed by U.S. captains and owners in which numbers of billfish species caught and kept or discarded are reported. The proportion of billfish caught and retrieved dead on longline gear was estimated in 1992 from observer trips taken on various vessels (SCRS/90/86) and is used in estimating by-catch mortality of billfish caught on longliners, based on species and geographical area.

The preliminary estimates of 1992 U.S. recreational catches for these billfish species, combining the geographical areas of the Gulf of Mexico (Area 91), the northwestern Atlantic west of 60°W longitude (Area 92), and the Caribbean Sea (Area 93) are 49.2 MT for bluefin marlin, 8.1 MT for white marlin, and 5.1 MT for sailfish. The estimates for 1991 were 24.8 MT, 16.7 MT, and 1.2 MT, respectively, for the three species. The estimates for the U.S. recreational catch (landings) assume that the recreational data base includes all billfish landed and does not include any estimates of mortality of released fish. It thus assumes that there is no substantial mortality of billfish released (or tagged and released) in the recreational fishery.

Preliminary estimates of billfish that were discarded by-catch in the U.S. commercial longline fishery in 1992 in Areas 91, 92, 93 and 94 (the north central Atlantic), and presumed to be dead, were 127.1 MT for blue marlin, 22.9 MT for white marlin, and 10.6 MT for sailfish. The estimated 1991 U.S. commercial longline by-catch kill of billfish was 205.0 MT, 39.4 MT, and 20.5 MT, respectively, for the three species.

1.5 Mackerels

Both mackerel species are harvested by commercial and recreational fishermen. U.S. fisheries for Spanish and king mackerel are regulated through federal quotas on commercial and medium size restrictions and personal bag limits for recreational fisheries. In addition to these conservation actions, in recent years trip specific commercial landing limits and geographical quota limits have been implemented in

some states. Management policies are defined for separate migratory groups, the Atlantic and Gulf of Mexico resource groups, that have been placed under a rigid rebuilding plan since 1985 because three of the four stocks exploited are considered over-fished. Currently, the Gulf of Mexico Spanish mackerel stock and the Gulf of Mexico king mackerel stock are considered over-fished. Intense gillnet and recreational rod and reel fisheries have taken place on both mackerel species since the early 1960's throughout their range.

Harvest of both species has generally stabilized in recent years although large fluctuations in recreational catches in some years have occurred. The stabilization in yields is thought to be the direct impact of regulations which have been implemented in an effort to sustain future production. The primary factors contributing to fluctuations in annual recreational harvests include difficulties of enforcement of differential bag limits imposed in individual states and the large inter-annual variances in harvest estimated. King mackerel yields have ranged from 4,363 MT to 7,264 MT since 1983, with an average production of 5,651 MT since 1989. Removals of Spanish mackerel have ranged from 2,784 MT to 5,957 MT over the same period and since 1986 have averaged 4,646 MT. Landings for 1992 are preliminary and incomplete and are not included in these averages.

1.6 Sharks

Shark landings for 1992 increased to 7,633 MT from 5,729 MT in 1991, probably due to increased fishing and dealer demand for shark fins in anticipation of a fishery closure in early 1993. Anticipation of individual transferrable quotas also drove fishermen to increase their landings in expectation of higher individual quotas later. In December, 1992, the U. S. Fishery Management Plan for Sharks of the Atlantic Ocean (FMP) was released. This plan aims at stabilizing and regulating the rapidly growing shark fishery. The plan includes management measures for 39 of the most frequently caught sharks and divides them into three groups: large coastal species (22 species), small coastal sharks (7 species), and pelagic species (10 species). The plan includes an annual commercial quota of 2,436 MT (dressed weight) for the large coastal group and 580 MT for the pelagic group. For the recreational fishery the plan establishes a trip limit of four large coastal and pelagic species combined, and a daily bag limit of five sharks per person for the small coastal species. Other management measures include a prohibition of finning (landing only the fins and discarding the carcass), the live release of sharks not landed, and the establishment of data collection procedures.

The U.S. commercial shark fishery is primarily a southern coastal fishery extending from North Carolina to Texas. The shark landings in the southeastern area were 5,570 MT, or about 75% of the total U.S. landings. The most sought after species in this fishery are sandbar, blacktip, dusky, and spinner sharks.

In response to an ICCAT request for information on the by-catch of sharks in U.S. fisheries for swordfish and tunas, reported catch and retention rates of shark species were compiled for the permitted U.S. large pelagic fleet from mandatory logbook reports. In total for 1992, the reported by-catch of sharks in the U.S. permitted large pelagic fleet was about 106,000 fish, representing at least 19 different species. This number of fish represents approximately one-third of the total reported catch by these vessels. Of the reported shark catch, approximately 10% (in numbers) was kept by the vessels, about 15% was thrown back to the sea dead, and the remainder (75%) was reportedly thrown back alive.

2. Research activities

2.1 Bluefin tuna research

Ichthyoplankton surveys in the Gulf of Mexico were continued in 1992 and 1993. Data resulting from these surveys are applied to develop a fishery-independent index of the abundance of spawning west Atlantic bluefin tuna. This index has continued to provide one measure of bluefin abundance that is used in SCRS assessments of the status of the resource. In addition, NMFS scientists initiated a review of all scombrid larvae collected in samples from warm-core rings collected over many years by various scientific organizations from a broad area but partially off the northeast coast; no bluefin larvae were found; it is anticipated that a complete report will be available for the 1994 SCRS meeting.

As part of its commitment to the Bluefin Year Program, research supported by the U.S.has concentrated on reproductive biology and stock structure.

The research on reproductive biology is centered at the New England Aquarium's Edgerton Research Laboratory and is a component of the Aquarium's federally funded study of basic biology and productivity of bluefin tuna. That program has successfully maintained small bluefin in a close sea water system for more than a year.

Studies related to stock structure of Atlantic bluefin are being coordinated by the NMFS laboratory in Charleston, South Carolina. Research will concentrate on regions in the mtDNA or genomic DNA that contain a sufficient amount of genetic variation to be information in stock structure analyses. Once regions of variability have been identified, analysis of larval and juvenile (not yet migrating) samples will be used to determine the putative sub-populations of Atlantic bluefin. A paper describing the approach was submitted to the 1993 SCRS meeting on bluefin in September.

Additionally, U.S. scientists worked with Japanese scientists to plan a joint study of bluefin ichthyoplankton in the Gulf of Mexico in 1994 which is part of a broader study of Atlantic bluefin catch rates in the two known bluefin spawning areas, the Gulf and the Mediterranean. The purposes of these studies will be: (1) to compare catch rates between different boats with different fishing methods; (2) to compare catch rates between the two spawning areas; and (3) to obtain samples from each spawning area for genetic studies.

In preparation for the 1993 SCRS assessment of western Atlantic bluefin, the U.S. scientific delegation (NMFS and non-governmental) prepared manuscripts on bluefin biology, on indices of abundance, on assessment methods, and one document directly related to the Commission's request for advice on management targets and recovery scenarios.

2.2. Swordfish Research

In response to ICCAT recommendations, randomized observer sampling in the U.S. large pelagic fleet was continued into 1993. Using the fishing vessel performance information provided through the submission of the 1991 and 1992 mandatory pelagic logbooks by vessel owners and captains, a list of randomly selected vessels was used to derive a sampling fraction of 5% (about 800 observer days per year) of the fleet in the Gulf of Mexico, Caribbean Sea, and Atlantic Ocean for 1992 and 1993, respectively. Sampling by the SEFSC Miami Laboratory's Pelagic Longline Observer Program (PLOP) successfully deployed observers aboard 31 longline vessels during 1992 (170 sets observed) and 41 vessels (297 sets observed) during the first half (January 1-June 30) of 1993. The data from observer samples were compared against self-reported information from the U.S. large pelagic mandatory logbook system and estimates of the amount of discard mortality of swordfish in the U.S. fleet were developed from the analysis for the 1993 SCRS.

Sex ratio-at-size data on Atlantic swordfish have been collected since 1989 by the SEFSC in collaboration with volunteer captains in the U.S. longline fleet. These data continue to be collected in response to ICCAT recommendations, and may provide a basis for stratifying swordfish landings by sex, as well as by size. Utilizing observer coverage by the Miami Laboratory PLOP program, working through the assistance of the observer program at Louisiana State University, the NEFSC observer program, and cooperative vessels captains and crews, biological material for swordfish reproduction analysis, as well as other forms of biological analyses (i.e., age and growth, stock identification, etc.) have been collected. Morphometric (length and weight) and biological data have primarily been collected within the U.S. Exclusive Economic Zone of the northwest Atlantic Ocean, the Gulf of Mexico, and the Caribbean Sea, since 1990. Additionally, swordfish data collected by the ICCAT-sponsored Venezuelan observer program aboard Venezuelan longline vessels fishing the lower Caribbean Sea has continued since 1991.

Sex ration information has been collected from over 6,000 Atlantic swordfish specimens sampled during 1990 through early 1993. Since the beginning of the reproductive study, about 2,300 paired ovaries are available for assessment of sexual maturity. Continuation of the assessment of ovarian development, maturity stages, and fecundity estimates for female swordfish based on microscopic examination of whole oocytes will be reported to ICCAT this year. Direct ageing of swordfish in the U.S. catch using anal spines has been undertaken through a cooperative agreement with the University of Miami's Cooperative Unite for Fisheries Education and Research. Initial cleaning and sectioning of over 2,000 swordfish anal spines collected through the observer program and through voluntary sample submission was started in June, 1993. This research will continue through 1993 and 1994 and may provide a basis for direct development of sex-specific age-length keys for ageing

the swordfish catch, which has been recommended by SCRS working groups.

A method of analysis which directly incorporates catch-at-size information into the sequential population analyses (VPA) procedure used for estimating stock abundance from catch and abundance index information was developed for application to swordfish. This method was documented in a manuscript submitted to the ICCAT Workshop on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age, held at the Canadian Department of Fisheries and Oceans, St. Andrew's Biological Station, in July. The method makes use of abundance index data by size class (5 cm LJFL intervals were used). This method is undergoing sensitivity testing using simulated data with known characteristics and may provide an important approach for swordfish stock assessments.

Analysis of catch rate data, used for tuning the various stock assessment models was also continued. Both age- and size-specific CPUE analyses were conducted and reported upon in manuscripts prepared for the 1993 SCRS.

Research into the genetic diversity of swordfish is continuing through cooperative work undertaken by FISHTEC, a research consortium involving the SEFSC Charleston Laboratory and several university research laboratories. Approximately 2,000 samples of swordfish tissues collected from the U.S. fleet are presently under analysis using mtDNA and other genetic-based approaches. Results of these analyses are expected during 1994 and will be reported to SCRS as they become available.

2.3 Albacore research

During the ICCAT Albacore Stock Assessment Session held in October, 1992, ten research recommendations were formally identified as important in future albacore work. Several of these research areas were considered during 1993 by the U.S. The use of the non-equilibrium production model approach used in the ASPIC program was investigated as another method for investigating the condition for the albacore stock for the 1993 ICCAT working group meetings. A manuscript on this application was prepared for the 1993 SCRS meeting. During the summer of 1993, cooperative research between scientists from the U.S. and Spain was undertaken in Miami for the purpose of analyzing growth patterns and updating previous growth parameter estimates from tag recapture samples from earlier Albacore Research Program work of 1989 and for analyzing differential rate of return of tags by surface fleets. Two manuscripts describing these research activities were prepared under joint authorship of Spanish and U.S. scientists.

2.4 Mackerels and small tunas research

Research on small tunas taken by U.S. fishermen continued to be directed mainly on king and Spanish mackerel stocks. The main research areas are collection of basic fisheries catch statistics, and biological sample data, and fishery age samples. Important areas of auxiliary research include the development of catch per effort abundance indices. The current status of the mackerel resources exploited by U.S. fishermen was investigated using these data. Since management is conducted for separate geographical units, continued research on migration of king mackerel in particular is important. Tagging studies implemented in 1991 are being continued. Chief research questions on concern include: (1) uncertainty in the abundance of juvenile fish of all stocks; (2) lack of adequate abundance indices for adult fish for Spanish mackerel in all areas; (3) concern about low sampling rates for Spanish mackerel fisheries in particular; (4) lack of accuracy in predicting recreational harvests; and (5) precise data on the present degree of mixing between different geographical units of king mackerel. Continued monitoring of Mexican king and Spanish mackerel fisheries continue under a cooperative bio-statistical sampling program initiated in 1985.

2.5 Billfish research

Routine sampling of recreational billfish tournaments continued along the U.S. east coast, Gulf of Mexico, Bahamas, and Caribbean Sea. A total of 137 billfish tournaments were sampled in 1992, representing over 86,000 hours of fishing effort, a slight decrease from 144 tournaments sampled in 1991 which represented 89,000 hours of fishing effort. Additionally, recreational billfish fishermen were surveyed at 10 docks in the northern Gulf of Mexico, representing an additional 8,000 hours of fishing effort; eight docks were sampled in 1991. Morphometric measurements of sexed billfish landings were also taken in conjunction

with the ICCAT Enhanced Research Program for Billfish. A summary of these efforts has been documented in a report of SEFSC billfish research and will be distributed late in 1993. A magnetic tape of the entire historical recreational billfish survey, including catch per unit effort and size frequency data from 1971-1992, were provided to ICCAT in July, 1993, in an effort to assist the Secretariat in compiling a centralized billfish data base.

The NMFS SEFSC again played a substantial role in the ICCAT Enhanced Research Program for Billfish in 1992/93, with SEFSC scientists acting as general coordinator and coordinator for the western Atlantic Ocean. Major accomplishments in 1993 include the following: (1) completion of 31 observer trips in 1992; (2) the billfish working group completed the first SCRS assessments on blue and white marlin in over a decade (as reported in the 1992 SCRS report on billfish); (3) continuation of the swordfish observer program and biological sampling in Venezuela; (4) continuation of recreational shore-based sampling in St. Maarten, Grenada, Jamaica, Senegal, Côte d'Ivoire, and Las Palmas, and expansion of the shore-based sampling in Venezuela; (5) continuation of work on shore-based sampling in Trinidad; (6) completion of two joint tagging cruises on small longline vessels out of Grenada with members of CARICOM; (7) development of plans for at-sea sampling in Grenada; and (8) preparation of the proceedings of the Second ICCAT Billfish Workshop (containing the workshop report and accompanying figures and tables, 27 working documents submitted at the workshop, and about 15 working documents submitted at the 1992 SCRS).

2.6 Tagging

Cooperators in the Southeast Fisheries Center's Cooperative Game Fish Tagging Program (CGFTP) tagged an released 7,985 billfishes and 1,870 tunas in 1992. This represents an increase of 2.6% over 1991 levels for billfish, but a decrease of 25.9% for tunas. Among billfish releases, 1,633 were blue marlin, 1,166 were white marlin, 3,736 were sailfish, and 1,399 were swordfish. For tunas, there were 997 bluefin tuna, 511 yellowfin tuna, and 362 releases of other tuna species.

There were 127 billfish recaptures in 1992 (16 blue marlin, 27 white marlin, 72 sailfish, and 11 swordfish). The ICCAT Enhanced Research Program for Billfish in the western Atlantic Ocean has assisted in the acquisition of numerous tag-recapture data, particularly from Venezuela (Cumaná, in particular), Barbados, and Grenada (13 of the tag-recaptured billfish listed above came from this program). A total of 18 bluefin tuna and 26 yellowfin tuna were also recaptured in 1992.

Several important movements by tagged billfish were observed in 1992. A white marlin tagged off St. Thomas, U.S. Virgin Islands, was recaptured 576 days later off Mohammedia, Morocco. This was the first transatlantic movement documented for this species. A blue marlin tagged off South Carolina (with a South Carolina tag) was recaptured by a Japanese longline vessel off the coast of Brazil, 5° south of the equator. Another fish, apparently a blue marlin, was recaptured off the Indian Ocean island of Mauritius, having traveled from the U.S. east coast in 1,108 days (a little over 3 years). Both these blue marlin movements were the first trans-equatorial movements for this species and the second movement was the first intra-ocean movement documented by any species targeted by the Cooperative Gam Fish Tagging Program in its 39 year history.

As in past years, a magnetic tape of the CGFTP tagging data base for the year was made available to ICCAT to supplement its data base. In addition, discussions are underway concerning the participation of ICCAT in the Southeast Fisheries Service Center's Cooperative Tagging System (CTS). The CTS is intended to act as a central depository for all tag release and recapture data from marine tagging programs in the Atlantic, Gulf of Mexico, and Caribbean Sea. A CTS user workshop was held in October in Miami, Florida, to assist users of the CTS software for making data extractions and summary reports. Plans were for scientists and data managers to attend from other marine tagging programs in the southeast U.S., Canada, Mexico, and St. Vincent.

The annual newsletter for the CGFTP, which provides more detailed information on 1992 tagging activities, will be distributed to program participants in late 1993.

2.7 Fishery observer deployments

Domestic fishery observers. During the spring of 1992, the SEFSC Miami Laboratory initiated the Pelagic Longline Observer Program (PLOP). This program, similar to the NEFSC Woods Hole

Laboratory observer program, provides observer coverage aboard swordfish and tuna longline vessels fishing in the Atlantic Ocean (primarily south of 35°N latitude), the Gulf of Mexico, and the Caribbean Sea. The Louisiana State University observer program, working in conjunction with NMFS and responsible for characterizing the longline fleet in the northern Gulf of Mexico, assisted the PLOP in coverage of several vessels during the first half of 1993. A total of 467 swordfish and tuna longline sets (72 vessels) have been observed since 1992.

The Northeast Fisheries Science Center (NEFSC) conducted observer coverage aboard 14 different domestic longline vessels in calendar year 1992. Fourteen observer trips, totaling 296 days, were made on these vessels during May-December. By-catch from this fishery included yellowfin tuna, bigeye tuna and sharks. The NEFSC contractor provided observers for coverage of this fishery.

NEFSC also placed observers aboard 10 different domestic drift gillnet vessels targeting swordfish, tuna and sharks in calendar year 1992. Since the Atlantic swordfish, tuna and shark drift gillnet fishery is classified as Category I under the U.S. Marine Mammal Protection Act, the NEFSC selected vessels for a mandatory observer placement. Twenty trips totaling 172 days were conducted on these vessels during January-April, June-September, and December. Personnel for observer coverage of this fishery were provided from NEFSC staff, through direct contracting with individual observers by NEFSC and through the NEFSC contractor.

Foreign fishery observers. There was no foreign fishing activity in the U.S. Exclusive Economic Zone (EEZ) off the east coast during 1992. Russian fishing companies submitted applications to conduct fishing and joint venture operations, however, no permits were issued by the U.S. Government.

2.8 Special working groups and scientific meetings

One U.S. scientist participated in the *Working Group to Evaluate Atlantic Yellowfin Tuna* held at the at the laboratory of the "Centro Oceanográfico de Canarias" of the "Instituto Español de Oceanografía" in Tenerife, Canary Islands, Spain. Two manuscripts were submitted by the U.S. scientific delegation.

Five U.S. scientists attended the *ICCAT Workshop on the Technical Aspects of Methodologies Which Account for Individual Growth Variability by Age* at the St. Andrews Biological Station, Department of Fisheries and Oceans, New Brunswick, Canada. Two manuscripts were submitted by members of the U.S. scientific delegation.

Fifteen manuscripts were submitted by members of the U.S. scientific delegation to the *ICCAT SCRS Western Atlantic Bluefin Assessment*, which was convened at the ICCAT Secretariat in Madrid, from September 24 to October 1. The U.S. delegation included representatives from East Coast Tuna, a U.S. tuna fishing industry association, the University of Washington, the University of Cape Town, South Africa, the NMFS SEFSC and the NMFS Office of Senior Scientist.

Table 1. Catches and landings (MT) of Atlantic tunas and tuna-like fishes, excluding billfishes, by U.S. fishermen, 1967-1992[1]

Year	BFT[2]	YFT[3,4]	ALB	BET[3]	LTA	SKJ[3]	BON	SWO[5]	SSM[6]	KGM[6]	OTH[7]	TOTAL[8]
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	3,638	5,621	13	865	51	19,973	92	1,125	4,990	4,747	1	41,116
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	1,848	9,747	9	248	113	8,492	224	3,684	3,310	2,507	31	30,213
1979	2,297	3,182	11	212	12	3,102	502	4,618	2,926	6,293	11	23,167
1980	1,505	2,118	21	202	88	3,589	195	5,624	5,429	10,726	513	30,010
1981	1,530	1,866	54	152	97	5,373	333	4,529	2,748	12,565	200	29,447
1982	812	883	126	377	87	731	209	5,086	3,747	9,863	962	22,883
1983	1,394	226	18	255	107	589	253	4,801	2,784	7,069	453	17,949
1984	1,320	1,252	25	408	41	817	217	4,538	3,904	7,264	883	20,669
1985	1,423	6,259	17	353	74	1,786	109	4,618	3,984	6,010	247	24,880
1986	1,680	5,775	162	747	103	1,004	83	5,100	5,957	5,682	337	26,630
1987	1,561	6,993	270	1,008	118	650	130	5,160	5,071	5,628	386	26,975
1988	1,500	9,361	115	702	204	36	88	6,129	5,097	5,809	430	29,471
1989	1,732	7,381	260	762	128	56	278	6,385	4,443	4,363	334	26,122
1990	1,769	5,287	386	650	173	240	298	5,494	4,272	5,936	390	24,895
1991	1,780	6,336	482	962	227	806	469	4,292	4,930	5,877	367	26,528
1992	1,200	6,501	377	721	593	525	494	3,833	4,930	5,877	553	25,604

[1] Estimates of recreational catches off the northeast U.S. are included for all years for bluefin tuna and for all other tunas since 1986.
[2] Includes estimated bluefin dead discards since 1986. (The 1986 estimate covered only some times and areas.) Catch revised for 1986-89.
[3] Prior to 1981, figures include some catches of purse seiners flying other flags (Bermuda, Netherlands Antilles, Nicaragua, and Panama).
[4] Includes small quantities of bigeye tuna prior to 1975.
[5] Swordfish landings revised for 1991.
[6] Does not include recreationally-caught Spanish (1967-83) and king (1967-78) mackerel. 1992 landings are set equal to 1991, since 1992 data are still preliminary.
[7] 1991 landings revised for all tunas.
[8] Total revised for 1991.